Computational Geometry, a Community Bibliography

August 2002

1 ?? Era. An electronic reading automaton. *Electronic Engineering*, ??:189–190, April 1957. [-eera-57]

2 Algorithmen in der kombinatorischen Geometrie. In *Tagungsber. Math. Forschungsinst. Oberwolfach*, number 5, pages 1–14a. 1987. seminar abstracts. [-akg-87]

3 Autodesk, Inc. *AutoCAD Reference Manual*, 1992. [-arm-92]

4 Diskrete Geometrie. In *Tagungsber. Math. Forschungsinst. Oberwolfach*, number 25, pages 1–18. 1987. seminar abstracts. [-dg-87]

5 Fast convex polygons. *Doctor Dobbs J.*, 16(3):129–147, 1991. [-fcp-91] *Keywords:* convex polygon, rendering, computer graphics, implementation.

6 Grand challenges: High performance computing and communications. Report, Committee in Physical, Mathematical, and Engineering Sciences. Federal Council for Science, Engineering, and Technology, 1992. The FY 1992 U.S. Research and Development Program. [-gchpc-92]

7 *IEEE Standard for binary floating point arithmetic, ANSI/IEEE Std* 754 − 1985. New York, NY, 1985. Reprinted in SIGPLAN Notices, 22(2):9–25, 1987. [-isbfp-85]

8 Technion. *IRIT* 6.0 *User's Manual*, 1996. [-i6um-96] *URL:* http://www.cs.technion.ac.il/~irit.

9 Lab. Comput. Sci., Massachusetts Inst. Tech., Cambridge, MA. *MACSYMA Reference Manual*, 1983. [-mrm-83]

10 Symbolic Computation Group, Univ. Waterloo, Waterloo, Canada. *Maple* 4.0 *Reference Manual*, 1985. [-m4rm-85]

11 The MathWorks, Inc., Natick, MA. *MATLAB Reference Guide*, 1992. [-mrg-92]

12 Automotive Industry Action Group, Southfield, MI. *NURBS White Paper*, 1991. [-nwp-91]

13 Adobe Systems Incorporated. *POSTSCRIPT Language Tutorial and Cookbook*, 1985. [-pltc-85]

14 Technomatics, N. V. *Robface: The universal Rob-Cad programming interface*, 1988. [-rurcp-88]

15 Shape Data Ltd., Cambridge, UK. *Romulus Programmers Manual: Version 4*, 1982. [-rpmv4-82]

16 Special issue: Cutting and packing. *European J. Oper. Res.*, 44(2):134–299, 1990. [-sicp-90] *Keywords:* packing cutting.

17 Special issue on legged locomotion. *Internat. J. Robot. Res.*, 3(2), 1984. [-sill-84]

18 Special issue on legged locomotion. *Internat. J. Robot. Res.*, 9(2), 1990. [-sill-90]

19 Step on a page. [-sp-] *URL:* http://www.nist.gov/sc5/soap/.

20 3D Systems, Inc., Valencia, CA. *Stereolithography interface specification*, 1989. p/n 50065-S01-00. [-sis-89]

21 Inst. Precision Engg., Hokkaido Univ., Sapporo, Japan. *TIPS-1*, 1978. [-t1-78]

K. Aardel. See also [12167].

22 C. Aarmstrong. Abstraction and meshing of 3d stress analysis models. Progress report, SERC Directorate, UK, 1991. [a-am3sa-91]

E. H. L. Aarts. See also [8442].

23 H. L. Abbott. Some results in combinatorial geometry. *Discrete Math.*, 9:199–204, 1974. [a-srcg-74]

24 A. Abdullah. Bottleneck identification in general junctions. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 26–28, 1991. [a-bigj-91] *Cites:* ahu-dsa-83, aaghi-vdp-86, c-tsplt-90i, cw-oaimd-83, gm-osacv-87, ghlst-ltavs-87, h-ovgat-89, kkt-ptots-90i, l-prp-78, mz-lubgj-88, mt-fmvdb-83, ps-cgi-85, s-fmdbt-81, w-cvgnl-85, mz-rgj-89, p-orrc-81, ZZZ.

S. Abe. See also [3194].

25 T. Abe, K. Inoue, J. Takanami, and H. Taniguchi. A parallel algorithm for the construction of Voronoi diagrams. In *Meet. Techn. Group on Automata and Languages, IECE Japan*. 1987. [aitt-pacvd-87] *Keywords:* Voronoi diagram, parallel computation.

26 D. J. Abel and D. M. Mark. A comparative analysis of some two-dimensional orderings. *Intl. J. Geographic Informations Systems*, 4:21–31, 1990. [am-castd-90]

27 D. J. Abel and J. L. Smith. A data structure and algorithm based on linear key for a rectangle retrieval problem. *Comput. Vision Graph. Image Process.*, 24(1):1–13, 1983. [as-dsabl-83] *Keywords:* searching, rectangle retrieval, orthogon, data structuring.

28 Manuel Abellanas. Delaunay graphs on a prescribed graph. In *Abstracts 15th European Workshop Comput. Geom.*, pages 101–103. INRIA Sophia-Antipolis, 1999. [a-dgpg-99]

29 M. Abellanas, J. García, G. Hernández, F. Hurtado, and O. Serra. Onion polygonizations. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 127–131, 1992. [aghhs-op-92] *Cites:* acns-cfs-82, c-clps-85, ds-ppsp-88, h-lbocf-87, h-rsr-72, mr-ulbnm-90, nm-ocfhc-80, obw-cdnh-87, ps-cgi-85, t-cm-88, t-nrcgr-86, ZZZ.

30 M. Abellanas, J. García, G. Hernández, F. Hurtado, O. Serra, and J. Urrutia. Updating polygonizations. *Comput. Graph. Forum*, 12(3):143–152, 1993. [aghhsu-up-93]

31 M. Abellanas, J. García-López, and F. Hurtado. Consecutive guards. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 393–398, 1994. [agh-cg-94] *Cites:* o-agta-87, c-ctpg-75, f-spcwt-78, s-rrag-92, ll-ccagp-86, h-ragp-90, hkk-agtph-91, jl-agtls-93, ZZZ.

32 Manuel Abellanas, Francisco Gómez, Ferran Hurtado, and Pedro Ramos. On the tolerance of some geometric structures. In *Abstracts 10th European Workshop Comput. Geom.*, pages 64–67. Universidad de Cantabria, Santander, 1994. [agrh-tsgs-94]

33 M. Abellanas, F. Gómez, F. Hurtado, and P. Ramos. Structural tolerance and Delaunay triangulation. Technical Report MA2-IR-93-11, Dept. Mat. Aplicada II, Univesitat Politècnica de Catalunya. [aghr-stdt-]

34 Manuel Abellanas, G. Hernandes, Rolf Klein, V. Neumann-Lara, and Jorge Urrutia. A combinatorial property of convex sets. Technical Report 176, Department of Computer Science, FernUniversität Hagen, Germany, 1995. [ahknu-cpcs-95] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr176.pdf. *Precedes:* ahknu-cpcs-97.

35 Manuel Abellanas, G. Hernandes, Rolf Klein, V. Neumann-Lara, and Jorge Urrutia. A combinatorial property of convex sets. *Discrete Comput. Geom.*, 17(3):307–318, 1997. [ahknu-cpcs-97] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr176.pdf. *Succeeds:* ahknu-cpcs-95.

36 Manuel Abellanas, G. Hernandes, Rolf Klein, V. Neumann-Lara, and Jorge Urrutia. Voronoi-diagrams and containment of families of convex sets on the plane. Technical Report 173, Department of Computer Science, FernUniversität Hagen, Germany, 1995. [ahknu-vdcfc-95t] *Precedes:* ahknu-vdcfc-95.

37 Manuel Abellanas, G. Hernandez, Rolf Klein, V. Neumann-Lara, and Jorge Urrutia. Voronoi diagrams and containment of families of convex sets on the plane. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 71–78, 1995. [ahknu-vdcfc-95] *Keywords:* convex distance functions. *Succeeds:* ahknu-vdcfc-95t. *Cites:* bl-cppe-90, bssu-crapb-89, cd-vdbcd-85, ehs-cttpt-88, f-ioco-88, hrw-sercc-89, h-nccp-89, iklm-cdf3s-93, kmm-ricav-93a, l-cnp-94, l-artcn-94, nu-crpcp-88, ssu-congo-88, u-poeg-89, ZZZ.

38 Manuel Abellanas, Ferran Hurtado, Christian Icking, Rolf Klein, Elmar Langetepe, Lihong Ma, Belén Palop, and Vera Sacristán. Smallest color-spanning objects. Technical Report 283, Department of Computer Science, FernUniversität Hagen, Germany, 2001. [ahiklmps-scso-01t] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr283.pdf. *Precedes:* ahiklmps-scso-01. *Cites:* aesw-emstb-91, aiks-fkpmd-91, dlss-sdakp-95, ddg-fsp-83, esz-cskec-94, ee-innfm-94, eorw-fmakg-92, es-blbda-95, go-copcg-95, gh-appcp-93, hks-uevsi-93, m-gofvc-94, m-ekpc-95, m-gspno-00, mnsw-cnnsq-00, ol-mcp-81, ps-cgi-85, sk-ekpsa-98, sa-dsstg-95, s-fkpse-92, ZZZ.

39 Manuel Abellanas, Ferran Hurtado, Christian Icking, Rolf Klein, Elmar Langetepe, Lihong Ma, Belén Palop, and Vera Sacristán. Smallest color-spanning objects. In *Proc. 9th Annu. European Sympos. Algorithms*, volume 2161 of *Lecture Notes Comput. Sci.*, pages 278–289. Springer-Verlag, 2001. [ahiklmps-scso-01] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr283.pdf. *Succeeds:* ahiklmps-scso-01t.

40 Manuel Abellanas, Ferran Hurtado, Christian Icking, Rolf Klein, Elmar Langetepe, Lihong Ma, Belén Palop, and Vera Sacristán. The farthest color Voronoi diagram and related problems. In *Abstracts 17th European Workshop Comput. Geom.*, pages 113–116. Freie Universität Berlin, 2001. [ahiklmps-fcvdr-01] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/ahiklmps-fcvdr-01.pdf. *Cites:* aesw-emstb-91, aiks-fkpmd-91, ak-vd-00, dlss-sdakp-95, ddg-fsp-83, ee-innfm-94, go-copcg-95, gh-appcp-93, hks-uevsi-93, m-lpltw-84, m-gspno-00, mnsw-cnnsq-00, ol-mcp-81, ps-cgi-85, sa-dsstg-95, w-sedbe-91a, ZZZ.

41 M. Abellanas, F. Hurtado, and P. Ramos. Tolerance of geometric structures. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 250–255, 1994. [ahr-tgs-94] *Cites:* aghhsu-up-93, aghr-stdt-, a-sdcgp-85, abmmrss-tsp-93, gss-egbra-89, gss-cscah-93, l-cbagd, lm-cschu-90, ms-tgmst-91, r-tegc, cegs-ablsp-89, ms-rcibt-88, lmr-pvdcb-93, v-plcpt-, ZZZ.

42 M. Abellanas, F. Hurtado, and P. A. Ramos. Redrawing a graph within a geometric tolerance. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 246–253. Springer-Verlag, 1995. [ahr-rgwgt-95] *Keywords:* graph drawing, Delaunay triangulation.

43 Manuel Abellanas and Eugenio Roanes-Lozano. Voronoi diagrams for infinite sets generated by consecutive stretches. In *Abstracts 11th European Workshop Comput. Geom.*, pages 13–16. Universität Linz, 1995. [ar-vdisg-95]

44 J. Abello and Ö. Eğecioğlu. Visibility graphs of staircase polygons with uniform step length. Manuscript, ??, 1991. [ae-vgspu-91] *Precedes:* ae-vgspu-93.

45 J. Abello and Ö. Eğecioğlu. Visibility graphs of staircase polygons with uniform step length. *Internat. J. Comput. Geom. Appl.*, 3:27–37, 1993. [ae-vgspu-93] *Keywords:* visibility graph, staircase polygon, orthogonal convex fan, uniform step length. *Succeeds:* ae-vgspu-91.

46 J. Abello, Ö. Eğecioğlu, and K. Kumar. Recognizing visibility graphs of staircase polygons. Manuscript, ??, 1991. [aek-rvgsp-91]

47 James Abello, Vladimir Estivill-Castro, Thomas Shermer, and Jorge Urrutia. Illumination of orthogonal polygons with orthogonal floodlights. *Internat. J. Comput. Geom. Appl.*, 8:25–38, 1998. [aesu-iopof-98] *Succeeds:* aesu-iof-95.

48 James Abello, Vladimir Estivill-Castro, Thomas Shermer, and Jorge Urrutia. Illumination with orthogonal floodlights. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 362–371. Springer-Verlag, 1995. [aesu-iof-95] *Precedes:* aesu-iopof-98.

49 J. Abello and K. Kumar. Visibility graphs and oriented matroids. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 147–158. Springer-Verlag, 1995. [ak-vgom-95] *Keywords:* graph drawing, visibility.

50 J. Abello, H. Lin, and S. Pisupati. On visibility graphs of simple polygons. *Congr. Numer.*, 90:119–128, 1992. [alp-vgsp-92]

51 H. Abelson and A. A. diSessa. *Turtle Geometry*. MIT Press, Cambridge, 1980. [ad-tg-80]

52 O. Aberth. *Computable analysis*. McGraw-Hill, New York, 1980. [a-ca-80]

53 S. Abhyankar. Good points of a hypersurface. *Adv. Math.*, 68(2):87–256, 1988. [a-gph-88]

54 S. Abhyankar. Historical ramblings in algebraic geometry and related algebra. *Amer. Math. Monthly*, 83(6):409–448, 1976. [a-hragr-76]

55 S. Abhyankar and C. Bajaj. Automatic rational parameterization of curves and surfaces II: Cubics and cubicoids. *Comput. Aided Design*, 19(2):499–502, 1987. [ab-arpcs2-87]

56 S. Abhyankar and C. Bajaj. Computations with algebraic curves. In *Proc. Internat. Sympos. on Symbolic and Algebraic Computation*, volume 358 of *Lecture Notes Comput. Sci.*, pages 279–284. Springer-Verlag, 1989. [ab-cac-89]

57 S. Abhyankar and C. Bajal. Automatic rational parameterization of curves and surfaces III: Algebraic plane curves. Technical Report CSD-TR-619, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1986. [ab-arpcs3-86]

S. Abhyankar. See also [1251].

58 S. S. Abhyankar. Algebraic space curves. *Montreal Lecture Notes*, ??, 1970. [a-asc-70]

59 S. S. Abhyankar and C. Bajaj. Automatic rational parameterization of curves and surfaces I: conics and conicoids. *Comput. Aided Design*, 19:11–14, 1987. [ab-arpcs-87] *Keywords:* algebraic geometry, design of algorithms, computer graphics, CAD.

60 S. S. Abhyankar and S. Chandrasekar. Improper intersection of algebraic curves. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 10, 1989. [ac-iiac-89]

61 S. S. Abhyankar, S. Chandrasekar, and V. Chandru. Degree complexity bounds on the intersection of algebraic curves. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 88–93, 1989. [acc-dcbia-89] *Cites:* a-asc-70, acc-iasc-88, acc-iiac-88, d-icds-86, g-mrtii-85, h-ac-85, as-tsbac-88, e-acg-87, cegsw-ccbac-88, sr-iag-49, ZZZ.

62 S. S. Abhyankar, S. Chandrasekar, and V. Chandru. Improper intersection of algebraic curves. Technical Report CC-88-24, Purdue University, September 1988. [acc-iiac-88]

63 S. S. Abhyankar, S. Chandrasekar, and V. Chandru. Intersection of algebraic space curves. Technical Report CC-88-13, Dept. Math., Purdue Univ., West Lafayette, IN, 1988. [acc-iasc-88] *Precedes:* acc-iasc-91.

64 S. S. Abhyankar, S. Chandrasekar, and V. Chandru. Intersection of algebraic space curves. *Discrete Appl. Math.*, 31(2):81–96, 1991. [acc-iasc-91] *Keywords:* algebraic curves, intersection. *Succeeds:* acc-iasc-88.

65 S. S. Abi-Ezzi. The priority tree: A hidden-line / hidden-surface approach to "PHIGS". *Comput. Graph. Forum*, 5(4):283–289, 1986. [a-pthlh-86] *Keywords:* hidden line/surface elimination, priority tree.

66 S. S. Abi-Ezzi and L. A. Shirman. Tessellation of curved surfaces under highly varying transformations. In F. H. Post and W. Barth, editors, *Proc. Eurographics '91*, pages 385–397, Vienna, Austria, September 1991. Elsevier Science. [as-tcshv-91]

67 E. E. Abola, F. C. Bernstein, S. H. Bryant, T. F. Koetzle, and J. Weng. Protein data bank. In F. H. Allen, G. Bergerhoff, and R. Seivers, editors, *Crystallographic Databases: Information Content, Software Systems, Scientific Applications*. Data Comission of the International Union of Crystallography, Bonn/Cambridge/Chester, 1987. [abbkw-pdb-87]

C. T. Abraham. See also [5925].

68 Karl Abrahamson. On the modality of convex polygons. *Discrete Comput. Geom.*, 5:409–419, 1990. [a-mcp-90] *Annote:* Random convex polygon defined by hull of n points from (1) uniform on disc and (2) 2d normal distribution. Expected modality shown to be $\Theta(\log h / \log\log h)$, where h is expected number of hull vertices.

69 K. Abrahamson, N. Dadoun, D. G. Kirkpatrick, and T. Przytycka. A simple parallel tree contraction algorithm. *J. Algorithms*, 10:287–302, 1989. [adkp-sptca-89]

70 S. Abramowski. Collision avoidance for nonrigid objects. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 168–179. Springer-Verlag, 1988. [a-cano-88] *Keywords:* motion planning. *Annote:* 4th Intern. Workshop Comput. Geom.

71 S. Abramowski, B. Lang, and H. Müller. Moving regular k-gons in contact. In *Proc. 14th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 344 of *Lecture Notes Comput. Sci.*, pages 229–242. Springer-Verlag, 1989. [alm-mrkgp-89] *Keywords:* motion planning, contact, regular polygon.

72 S. Abramowski and H. Müller. 1-d queries in 3-d space. Report 09/85, Fakultät Inform., Univ. Karlsruhe, Karlsruhe, West Germany, 1985. [am-1dq3d-85]

73 S. Abramowski and H. Müller. Collision avoidance for nonrigid objects. *Oper. Res.*, 32:165–186, 1984. [am-cano-84]

74 S. Abramowski and H. Müller. *Geometrisches Modellieren*. BI-Wissenschaftsverlag, Mannheim, 1991. [am-gm-91]

75 S. Abramowski and H. Müller. Searching connected components in very large grid graphs. In *Proc. 12th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 246 of *Lecture Notes Comput. Sci.*, pages 118–130. 1987. [am-sccvl-87] *Keywords:* grid graph, motion planning, connected component.

76 Aaron Abrams and Robert Shrist. Finding topology in a factory: Configuration spaces. *Amer. Math. Monthly*, 109(2):140–150, 2002. [ag-ftfcf-02] *Comments:* Several robots.

G. D. Abrams. See also [5634].

77 S. L. Abrams, L. Bardis, C. Chryssostomidis, N. M. Patrikalakis, S. T. Tuohy, F.-E. Wolter, and J. Zhou. The geometric modeling and interrogation system praxiteles. *Journal of Ship Production*, 11(2):116–131, 1995. [abcptwz-gmisp-95]

S. L. Abrams. See also [7541, 9868].

A. Abrous. See also [4896].

M. A. G. Abushagur. See also [2755].

78 W. Ackermann. Zum Hilbertschen Aufbau der reellen Zahlen. *Mathematical Annals*, 99:118–133, 1928. [a-zhadr-28] *Keywords:* Ackermann function.

79 D. M. Acketa, V. Hauk, and D. Surla. On the intersection of two convex polygons. *Informatica*, 13(4):52–57, 1989. [ahs-itcp-89] *Keywords:* intersection, convex polygon.

80 D. M. Acketa and J. Žunić. On the maximal number of edges of convex digital polygons included into a square grid. *Pocitace a umela inteligencia*, 1(6):549–558, December 1982. [vk-mnecd-82a]

81 D. M. Acketa and J. Žunić. On the maximal number of edges of convex digital polygons included into a square grid. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 215–218, August 1991. [az-mnecd-91] *Cites:* bl-ndsls-88, hw-itn-68, vk-mnecd-82a, ZZZ.

82 Bruno Adam, Pierre Kauffmann, Dominique Schmitt, and Jean-Claude Spehner. An increasing–circle sweep–algorithm to construct the Delaunay diagram in the plane. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 268–273, 1997. [akss-icsac-97]

83 Andrew Adamatzky. Voronoi-like partition of a lattice in cellular automata. *Mathematical and Computer Modelling*, 23, 1996. [a-vlplc-96] *Keywords:* image processing, Voronoi diagram, cellular automata. *Abstract:* In this paper, we discuss an automata model for parallel approximation of the discrete Voronoi diagram. Given a subset of the n labeled nodes of a two-dimensional lattice of $m \times m$ nodes, we wish to construct a Voronoi cell for every given node, i.e., mark such nodes that form Voronoi edges and vertices. Our technique is based in the wave generation in the cellular automata lattice, their spreading and interactions. The waves are generated in such sites that are corresponded to lattice nodes of a given set (which should be separated). In the result of wave interactions a stationary structure is produced — it represents the required elements of the discrete Voronoi diagram. We show how to construct a Voronoi-like structure in two-dimensional cellular automata with $O(1)$ and $O(n)$ cell states and 4 (in metric L_1) or 8 (in metric L_8) size of cell neighborhood in $O(m)$ time.

84 R. Adamec, M. Klazar, and P. Valtr. Generalized Davenport-Schinzel sequences with linear upper bound. *Discrete Math.*, 108:219–229, 1992. [akv-gdssl-92]

85 M. Adamowich and A. Albano. Nesting twodimensional shapes in rectangular modules. *Comput. Aided Design*, 2(1):27–33, 1976. [aa-ntsrm-76] *Keywords:* packing.

86 C. Adams and W. Sherman. Minimum ideal triangulations of hyperbolic 3-manifolds. *Discrete Comput. Geom.*, 6:135–153, 1991. [as-mith3-91]

87 C. C. Adams. *The Knot Book*. W. H. Freeman, New York, 1994. [a-kb-94]

88 J. A. Adams and L. M. Billow. Combining descriptive and computational geometry. *CIME*, 4(6):69–76, 1986. [ab-cdcg-86] *Keywords:* descriptive geometry, three-dimensional.

J. A. Adams. See also [11323, 11324].

N. I. Adams. See also [11093].

89 Udo Adamy, Joachim Giesen, and Matthias John. The λ-complex and surface reconstruction. In *Abstracts 16th European Workshop Comput. Geom.*, pages 14–17. Ben-Gurion University of the Negev, 2000. [agj-lcsr-00]

90 Udo Adamy and Raimund Seidel. On the exact worst case query complexity of planar point location. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 609–618, 1998. [as-ewcqc-98]

91 John Adegeest, Mark Overmars, and Jack Snoeyink. Minimum-link c-oriented paths: Single-source queries. *Internat. J. Comput. Geom. Appl.*, 4(1):39–51, 1994. [aos-mlcps-94] *Keywords:* shortest path, link distance, rectilinear link distance. *Annote:* They consider a set of obstacles given by n line segments having disjoint interiors, and being at c different fixed orientations. For a fixed source point, they build a data structure (SPM) of size $O(cn)$ that supports min-link queries from the source to any query point in time $O(c \log n)$ (with additional time $O(k)$ to report a path, if it has k links). Here, link distance is C-oriented link distance. The preprocessing is done with $O(c^2 n \log n)$ time and space, OR with $O(c^2 n \log^2 n)$ time and $O(c^2 n)$ space.

92 I. Adler. *Abstract Polytopes*. PhD thesis, Dept. Operations Research, Stanford University, 1971. [a-ap-71] *Keywords:* doctoral thesis.

93 I. Adler and P. A. Beling. Polynomial algorithms for linear programming over the algebraic numbers. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 483–494, 1992. [ab-palpa-92]

94 I. Adler and G. B. Dantzig. Maximum diameter of abstract polytopes. *Math. Programming Studies*, 1:20–40, 1974. [ad-mdap-74]

95 I. Adler, G. B. Dantzig, and K. Murty. Existence of a-avoiding a-paths in abstract polytopes. *Math. Programming Studies*, 1:41–42, 1974. [adm-eaaap-74]

96 I. Adler, R. Karp, and R. Shamir. A simplex variant solving an $m \times d$ linear program in $O(\min(m^2, d^2))$ expected number of pivot steps. Report UCB/CSD 83/158, Comput. Sci. Div., Univ. California, Berkeley, CA, 1983. [aks-svsml-83]

97 I. Adler and N. Megiddo. A simplex algorithm whose average number of steps is bounded between two quadratic functions of the smaller dimension. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 312–323, 1984. [am-sawan-84] *Precedes:* am-sawan-85.

98 I. Adler and N. Megiddo. A simplex algorithm whose average number of steps is bounded between two quadratic functions of the smaller dimension. *J. ACM*, 32:871–895, 1985. [am-sawan-85] *Keywords:* average-case analysis, linear programming. *Succeeds:* am-sawan-84.

99 I. Adler, N. Megiddo, and M. J. Todd. New results on the behavior of simplex algorithms. *Bull. Amer. Math. Soc.*, 11:378–382, 1984. [amt-nrbsa-84] *Keywords:* average-case analysis, linear programming.

100 I. Adler and R. Saigal. Long monotone paths in abstract polytopes. *Math. Oper. Res.*, 1(1):89–95, 1976. [as-lmpap-76]

101 I. Adler and R. Shamir. A randomization scheme for speeding up algorithms for linear and convex quadratic programming problems with a high constraints-to-variables ratio. Technical Report 21-90, Rutgers Univ., New Brunswick, NJ, May 1990. [as-rssua-90]

102 I. Adler and R. Shamir. A randomization scheme for speeding up algorithms for linear and convex quadratic programming problems with a high constraints-to-variables ratio. *Math. Prog.*, 61:39–52, 1993. [as-rssua-93]

103 M. Adler, J. W. Byers, and R. M. Karp. Parallel sorting with limited bandwidth. In *Proc. 7th ACM Sympos. Parallel Algorithms Architect.*, pages 129–136, 1995. [abk-pslb-95]

104 F. Affentranger and R. Schneider. Random projections of regular simplices. *Discrete Comput. Geom.*, 7:219–226, 1992. [as-rprs-92]

105 F. Affentranger and J. A. Wieacker. On the convex hull of uniform random points in a simple d-polytope. *Discrete Comput. Geom.*, 6:291–305, 1991. [aw-churp-91]

106 Pankaj Agarwal, Otfried Schwarzkopf, and Emo Welzl. Euclidean minimum spanning trees and bichromatic closest pairs. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 3. Universität Siegen, 1990. [asw-emstb-90] *Precedes:* aesw-emstb-90.

Pankaj Agarwal. See also [827, 3414, 12742, 13181].

107 Pankaj K. Agarwal. A deterministic algorithm for partitioning arrangements of lines and its applications. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 11–22, 1989. [a-dapal-89] *Cites:* a-pal1e-90, a-pal2a-90, a-rsoas-89, as-rbida-88, aks-scps-83, aegs-ibcmf-89, c-rcsi-86, c-prsig-87, c-tbsns-88, ce-oails-88, cf-dvrsi-88, cw-rsvdc-88, c-sdsno-84, c-narsc-87, c-arscg-88, cegsw-ccbac-88, cs-adpch-88, ctv-flvat-88i, csss-oss-88, e-acg-87, eghsssw-irals-89, egs-cmfal-88, egs-oplms-86, eos-calha-86, ew-cbtda-86, gos-ilsrs-88, hw-ensrq-86, ms-rcibt-88, m-cen-89, m-splcn-91, m-apcad-83, m-fppa1-88, ps-cgi-85, st-pplup-86, st-epdg-83, w-mksfs-86, w-pttco-88, w-enh-88, ZZZ.

108 Pankaj K. Agarwal. Applications of a new space partition technique. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 379–392, 1991. [a-anspt-91] *Keywords:* d-dimensional, ray tracing, hidden line/surface elimination, minimal spanning tree, space partition.

109 Pankaj K. Agarwal. Geometric algorithms. M.Sc. thesis, Dept. Comput. Sci., Univ. California, Santa Barbara, CA, 1985. Report TRCS 85-17. [a-ga-85] *Keywords:* master thesis.

110 Pankaj K. Agarwal. Geometric partitioning and its applications. Report CS-1991-27, Dept. Comput. Sci., Duke Univ., Durham, NC, 1991. [a-gpia-91t] *Keywords:* random sampling, partition, arrangement, point location. *Precedes:* a-gpia-91i.

111 Pankaj K. Agarwal. Geometric partitioning and its applications. In J. E. Goodman, R. Pollack, and W. Steiger, editors, *Computational Geometry: Papers from the DIMACS Special Year*. American Mathematical Society, 1991. [a-gpia-91i] *Keywords:* random sampling, partition, arrangement, point location. *Comments:* survey paper — cuttings, range search. *Succeeds:* a-gpia-91t.

112 Pankaj K. Agarwal. *Intersection and decomposition algorithms for arrangements of curves in the plane*. PhD thesis, Dept. Comput. Sci., New York Univ., August 1989. [a-idaac-89] *Keywords:* doctoral thesis.

113 Pankaj K. Agarwal. *Intersection and decomposition algorithms for planar arrangements*. Cambridge University Press, New York, NY, 1991. [a-idapa-91] *Keywords:* arrangement, partition, Davenport-Schinzel sequences.

114 Pankaj K. Agarwal. On stabbing lines for polyhedra in 3d. Technical Report CS-1993-09, Department Computer Science, Duke University, 1993. [a-slp3d-93]

115 P. K. Agarwal. On stabbing lines for polyhedra in 3d. *Comput. Geom. Theory Appl.*, 4:177–189, 1994. [a-slp3d-94]

116 Pankaj K. Agarwal. Partitioning arrangements of lines: I. An efficient deterministic algorithm. *Discrete Comput. Geom.*, 5:449–483, 1990. [a-pal1e-90] *Keywords:* deterministic partitioning, random sampling, arrangements of lines.

117 Pankaj K. Agarwal. Partitioning arrangements of lines: II. Applications. *Discrete Comput. Geom.*, 5:533–573, 1990. [a-pal2a-90] *Keywords:* random sampling, arrangements, divide-and-conquer.

118 Pankaj K. Agarwal. Range searching. Report CS-1996-05, Dept. Comput. Sci., Duke Univ., Durham, NC, 1996. [a-rs-96]

119 Pankaj K. Agarwal. Range searching. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 31, pages 575–598. CRC Press LLC, Boca Raton, FL, 1997. [a-rs-97]

120 Pankaj K. Agarwal. Ray shooting and other applications of spanning trees with low stabbing number. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 315–325, 1989. [a-rsoas-89] *Precedes:* a-rsoas-92. *Cites:* a-dapal-89, a-palle-90, a-pal2a-90, a-rsoas-92, cw-rsvdc-88, c-tbsns-88, c-prsig-87, cg-vippg-85, cg-fc1ds-86, cg-fc2a-86, c-narsc-87, cegsw-ccbac-88, c-sssl-86, d-qbhle-86, dessio-87, dsst-mdsp-89, eg-tsa-89, egppss-acptc-88, eghsssw-irals-88, egs-cmfal-88, egs-oplms-86, eoscalha-86, ew-hrsls-86, ghlst-ltavs-87, gos-ilsrs-88t, gss-gmppt-88, gy-tsr-83, hw-ensrq-87, k-osps-83, m-wcohs-87, m-cen-89, m-splcn-91, pss-stsps-88, so-wcoac-86, st-pplup-86, w-pttco-88, ZZZ.

121 Pankaj K. Agarwal. Ray shooting and other applications of spanning trees with low stabbing number. *SIAM J. Comput.*, 21:540–570, 1992. [a-rsoas-92] *Keywords:* ray shooting, visibility, spanning trees, partition trees. *Succeeds:* a-rsoas-89.

122 Pankaj K. Agarwal, A. Aggarwal, B. Aronov, S. R. Kosaraju, B. Schieber, and Subhash Suri. Computing external-farthest neighbors for a simple polygon. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 45, 1989. [aaakss-cefns-89] *Keywords:* furthest neighbors, geodesic distance, simple polygon, diameter. *Precedes:* aaakss-cefns-91.

123 Pankaj K. Agarwal, A. Aggarwal, B. Aronov, S. R. Kosaraju, B. Schieber, and Subhash Suri. Computing external farthest neighbors for a simple polygon. *Discrete Appl. Math.*, 31(2):97–111, 1991. [aaakss-cefns-91] *Keywords:* furthest neighbors, geodesic distance, simple polygon, diameter. *Succeeds:* aaakss-cefns-89.

124 Pankaj K. Agarwal, N. Alon, B. Aronov, and Subhash Suri. Can visibility graphs be represented compactly? In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 338–347, 1993. [aaas-cvgbr-93] *Cites:* ast-apsgo-94, as-pm-92, as-cldsp-90, c-tpca-82, c-lbors2-90, c-lbcpr-89, cegs-ablsp-94, cg-vippg-89, cr-ccpso-91, et-psant-41, f-lbcor-81, gm-osacv-91, hw-itn-79, ks-pgt-67, s-tfpgs-38, t-cgcbs-84, w-cvgnl-85, ZZZ.

125 Pankaj K. Agarwal, N. Alon, B. Aronov, and Subhash Suri. Can visibility graphs be represented compactly? *Discrete Comput. Geom.*, 12:347–365, 1994. [aaas-cvgbr-94]

126 Pankaj K. Agarwal, Nina Amenta, Boris Aronov, and Micha Sharir. Largest placements and motion planning of a convex polygon. In Jean-Paul Laumond and Mark Overmars, editors, *Algorithms for Robotic Motion and Manipulation*, pages 143–154, Wellesley, MA, 1997. A. K. Peters. [aaas-lpmpc-97] *Precedes:* aas-mpcpp-97. *Annote:* Proc. 1996 Workshop on the Algorithmic Foundations of Robotics.

127 Pankaj K. Agarwal, Nina Amenta, and Micha Sharir. Largest placement of one convex polygon inside another. *Discrete Comput. Geom.* [aas-lpocp-98] *Succeeds:* aas-mpcpp-97.

128 P. K. Agarwal, N. Amenta, and Micha Sharir. Placement of one convex polygon inside another. Tech. Report CS-1995-29, Duke University, 1995. [aas-pocpi-95] *Keywords:* collision detection, motion planning.

129 P. K. Agarwal, N. Amenta, and M. Sharir. Placement of one convex polygon inside another. *Discrete Comput. Geom.*, 19:95–104, 1998. [aas-pocpi-98]

130 Pankaj K. Agarwal, Lars Arge, G. Brodal, and Jeffrey S. Vitter. I/o-efficient dynamic point location in monotone subdivisions. In *Proc. 10th ACM-SIAM Sympos. Discrete Algorithms*, pages 11–20, 1999. [aabv-iedpl-99]

131 P. K. Agarwal, L. Arge, and J. Erickson. Indexing moving points. In *Proc. Annu. ACM Sympos. Principles Database Syst.*, 2000. 175–186. [aae-imp-00]

132 P. K. Agarwal, L. Arge, J. Erickson, P. G. Franciosa, and J. S. Vitter. Efficient searching with linear constraints. In *Proc. Annu. ACM Sympos. Principles Database Syst.*, 1998. to appear. [aaefv-eslc-98]

133 Pankaj K. Agarwal, Lars Arge, T. M. Murali, Kasturi R. Varadarajan, and Jeffrey S. Vitter. I/O-efficient algorithms for contour-line extraction and planar graph blocking. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 117–126, 1998. [aamvv-ieacl-98]

134 Pankaj K. Agarwal and B. Aronov. Counting facets and incidences. Report 90-38, DIMACS, Rutgers Univ., New Brunswick, NJ, 1989. [aa-cfi-89] *Keywords:* combinatorial geometry, combinatorial complexity, hyperplane arrangements, triangle arrangements. *Precedes:* aa-cfi-92.

135 Pankaj K. Agarwal and B. Aronov. Counting facets and incidences. *Discrete Comput. Geom.*, 7:359–369, 1992. [aa-cfi-92] *Keywords:* combinatorial geometry, combinatorial complexity, hyperplane arrangements, triangle arrangements. *Succeeds:* aa-cfi-89.

136 P. K. Agarwal, B. Aronov, T. M. Chan, and M. Sharir. On levels in arrangements of lines, segments, planes, and triangles. *Discrete Comput. Geom.*, 19:315–331, 1998. [aacs-lalsp-98]

137 Pankaj K. Agarwal, Boris Aronov, Sariel Har-Peled, and Micha Sharir. Approximation and exact algorithms for minimum-width annuli and shells. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 380–389, 1999. [aahs-aeamw-99]

138 Pankaj K. Agarwal, B. Aronov, J. O'Rourke, and C. Schevon. Star unfolding of a polytope with applications. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 251–263. Springer-Verlag, 1990. [aaos-supa-90] *Keywords:* motion planning, shortest paths, polytopes, diameter, edge sequences, unfolding of polytopes. *Precedes:* aaos-supa-93.

139 Pankaj K. Agarwal, B. Aronov, J. O'Rourke, and C. Schevon. Star unfolding of a polytope with applications. Technical Report 031, Dept. Comput. Sci., Smith College, Northampton, MA, July 1993. [aaos-supa-93] *Keywords:* motion planning, shortest paths, polytopes, diameter, edge sequences, unfolding of polytopes. *Succeeds:* aaos-supa-90. *Precedes:* aaos-supa-97.

140 Pankaj K. Agarwal, Boris Aronov, Joseph O'Rourke, and Catherine A. Schevon. Star unfolding of a polytope with applications. *SIAM J. Comput.*, 26:1689–1713, 1997. [aaos-supa-97] *Keywords:* motion planning, shortest paths, polytopes, diameter, edge sequences, unfolding of polytopes. *Succeeds:* aaos-supa-93.

141 Pankaj K. Agarwal, Boris Aronov, Janos Pach, Richard Pollack, and Micha Sharir. Quasi-planar graphs have a linear number of edges. Report CS-1995-30, Dept. Comput. Sci., Duke Univ., Durham, NC, 1996. [aapps-qpghl-95] *Precedes:* aapps-qpghl-96.

142 Pankaj K. Agarwal, Boris Aronov, Janos Pach, Richard Pollack, and Micha Sharir. Quasi-planar graphs have a linear number of edges. In *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 1–7. Springer-Verlag, 1996. [aapps-qpghl-96] *Succeeds:* aapps-qpghl-95. *Precedes:* aapps-qpghl-97.

143 Pankaj K. Agarwal, Boris Aronov, Janos Pach, Richard Pollack, and Micha Sharir. Quasi-planar graphs have a linear number of edges. *Combinatorica*, 17:1–9, 1997. [aapps-qpghl-97] *Succeeds:* aapps-qpghl-96.

144 Pankaj K. Agarwal, Boris Aronov, and Micha Sharir. Computing envelopes in four dimensions with applications. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 348–358, 1994. [aas-cefda-94] *Precedes:* aas-cefda-97. *Cites:* am-rsps-93, am-rsss-92, ass-oleia-93, ast-apsgo-94, agps-rss-92, as-nvpt-93, as-tsbac-90, bdsty-arsol-92, bd-olrcu-93, cegs-ablsp-94, cegs-dwclp-93, cegss-cfals-93, cs-agpli-90, cksw-vdl3s-, cs-arscg-89, bds-lric-94, efnn-rauvd-89, es-vda-86, hs-nblet-93, hw-ensrq-87, ht-cws-85, m-apcad-83, ms-rsast-93, m-fppa-90, m-fppa2-91, pt-eplcs-92, hrr-araga-91, s-atubl-93, sa-dsstg-95, ZZZ.

145 Pankaj K. Agarwal, Boris Aronov, and Micha Sharir. Computing envelopes in four dimensions with applications. *SIAM J. Comput.*, 26:1714–1732, 1997. [aas-cefda-97] *Succeeds:* aas-cefda-94.

146 Pankaj K. Agarwal, Boris Aronov, and Micha Sharir. Exact and approximation algorithms for minimum-width cylindrical shells. In *Proc. 11th ACM-SIAM Sympos. Discrete Algorithms*, pages 510–517, 2000. [aas-eaamw-00]

147 P. K. Agarwal, B. Aronov, and M. Sharir. Exact and approximation algorithms for minimum-width cylindrical shells. *Discrete Comput. Geom.*, 26:307–320, 2001. [aas-eaamw-01]

148 Pankaj K. Agarwal, Boris Aronov, and Micha Sharir. Line traversals of balls and smallest enclosing cylinders in three dimensions. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 483–492, 1997. [aas-ltbse-97] *Precedes:* aas-ltbse-99.

149 Pankaj K. Agarwal, Boris Aronov, and Micha Sharir. Line traversals of balls and smallest enclosing cylinders in three dimensions. *Discrete Comput. Geom.*, 21:373–388, 1999. [aas-ltbse-99] *Succeeds:* aas-ltbse-97.

150 Pankaj K. Agarwal, Boris Aronov, and Micha Sharir. Motion planning for a convex polygon in a polygonal environment. Tech. Report CS-1997-17, Department of Computer Science, Duke University, 1997. [aas-mpcpp-97] *Succeeds:* aaas-lpmpc-97. *Precedes:* aas-lpocp-98. *Annote:* Corrects and supercedes parts of [126].

151 P. K. Agarwal, B. Aronov, and M. Sharir. Motion planning for a convex polygon in a polygonal environment. *Discrete Comput. Geom.*, 22:201–221, 1999. [aas-mpcpp-99]

152 Pankaj K. Agarwal, B. Aronov, Micha Sharir, and Subhash Suri. Selecting distances in the plane. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 321–331, 1990. [aass-sdp-90] *Keywords:* selection problems, parametric search. *Precedes:* aass-sdp-93. *Cites:* bo-arcgi-79, bfprt-tbs-73, c-ntcos-85, cl-cpp-86, cegsw-ccbac-90, cs-arscg-89, c-sdsno-87, cv-dctao-86, e-acg-87, egppss-acptc-88, egs-oplms-86, lf-ppc-80, hs-ndssg-86, m-cha-90i, m-apcad-83, m-ptlp-85, ps-cgi-85, s-spcg-87, spp-fm-76, sv-fmmsp-81, tv-epba-85, tv-opatc-89t, v-pcp-75, v-spcs-83, y-cmstk-82, ZZZ.

153 Pankaj K. Agarwal, B. Aronov, Micha Sharir, and Subhash Suri. Selecting distances in the plane. *Algorithmica*, 9:495–514, 1993. [aass-sdp-93] *Succeeds:* aass-sdp-90.

154 Pankaj K. Agarwal, Boris Aronov, and Subhash Suri. Stabbing triangulations by lines in 3d. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 267–276, New York, NY, USA, June 1995. ACM Press. [aas-stl3d-95] *Keywords:* ray shooting, contrained triangulation, tetrahedra. *Cites:* am-stl3s-95, as-tsbac-90, be-mgot-92i, b-ct-93, c-cpplb-84, ceg-ccc-89, cp-tncp-90, cs-bst-94, cw-qorss-89, dk-fdpi-82, dk-ladsc-85, e-t-91, hs-parss-95, m-ept-92, mms-qsrs-94, o-agta-87, rs-dt3dn-89, w-stlcn-92t, ZZZ.

155 Pankaj K. Agarwal, J. Basch, L. J. Guibas, J. Hershberger, and L. Zhang. Deformable free space tiling for kinetic collision detection. In *Proc. 4th Workshop Algorithmic Found. Robot.*, 2000. To appear. [abghz-dfstk-00]

156 P. K. Agarwal, M. de Berg, D. Halperin, and Micha Sharir. Efficient generation of k-directional assembly sequences. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 122–131, 1996. [abhs-egkda-96] *Keywords:* depth order, translational motion, rotational motion, assembly planning, stack products, upper envelope searching, maximality.

157 Pankaj K. Agarwal, M. de Berg, J. Matoušek, and O. Schwarzkopf. Constructing levels in arrangements and higher order Voronoi diagrams. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 67–75, 1994. [abms-claho-94] *Cites:* as-solri-92, as-pm-92, ass-sulbl-89, bdt-schov-93, ce-iacko-87, c-narsc-87, c-racpq-88, cs-arscg-89, csy-khrp-87, bds-lric-94, e-acg-87, erk-oalla-93, hw-ensrq-87, m-fppa2-91, m-lavd-91, m-cgitr-93, pss-ubnpk-92, s-ksacs-91, ZZZ.

158 P. K. Agarwal, M. de Berg, J. Matoušek, and O. Schwarzkopf. Constructing levels in arrangements and higher order Voronoi diagrams. *SIAM J. Comput.*, 27:654–667, 1998. [abms-claho-98]

159 Pankaj K. Agarwal, Binay K. Bhattacharya, and Sandeep Sen. Output-sensitive algorithms for uniform partitions of points. In *Proc. 10th Intl. Sympos. Algorithms and Computation*, page ??, 1999. [abs-osaup-99]

160 Pankaj K. Agarwal, Therese Biedl, Sylvain Lazard, Steve Robbins, Subhash Suri, and Sue Whitesides. Curvature-constrained shortest paths in a convex polygon. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, page to appear, 1998. [ablrsw-ccspc-98]

161 Pankaj K. Agarwal and Pavan K. Desikan. An efficient algorithm for terrain simplification. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 139–147, 1997. [ad-aats-97]

162 Pankaj K. Agarwal and P. K. Desikan. Approximation algorithms for layered manufacturing. In *Proc. 11th ACM-SIAM Sympos. Discrete Algorithms*, pages 528–537, 2000. [ad-aalm-00]

163 Pankaj K. Agarwal, H. Edelsbrunner, O. Schwarzkopf, and Emo Welzl. Euclidean minimum spanning trees and bichromatic closest pairs. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 203–210, 1990. [aesw-emstb-90] *Succeeds:* asw-emstb-90. *Precedes:* aesw-emstb-91. *Cites:* c-fetaa-84, cegsw-ccbac-90, cs-arscg-89, e-acg-87, egs-oplms-86, es-hipac-90, gbt-srtgp-84, ps-cgi-85, pt-espl-89, s-chaop-81, st-pplup-86, s-lpchm-90, sh-cpp-75, v-famst-84, y-cmstk-82, ZZZ.

164 Pankaj K. Agarwal, H. Edelsbrunner, O. Schwarzkopf, and Emo Welzl. Euclidean minimum spanning trees and bichromatic closest pairs. *Discrete Comput. Geom.*, 6(5):407–422, 1991. [aesw-emstb-91] *Keywords:* proximity, minimum spanning trees, random sampling, geometric graphs, Voronoi diagrams, three-dimensional, closest pairs, red-blue. *Succeeds:* aesw-emstb-90.

165 Pankaj K. Agarwal, Alon Efrat, and Micha Sharir. Vertical decomposition of shallow levels in 3-dimensional arrangements and its applications. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 39–50, 1995. [aes-vdsl3-95] *Keywords:* curved surfaces, range searching, nearest neighbor, segment center, bipartite matching, smallest stabbing disk, parametric search, convex distance functions. *Cites:* abms-claho-94, aest-cscpp-93, am-dhsrr-95, am-rsps-93, am-rsss-94, ass-oletd-95, ass-sulbl-89, abkks-emcmu-92, bcm-prsss-93, by-lotmc-94, cegs-sessr-89, c-narsc-87, cs-arscg-89, bgh-vdt3s-94, e-acg-87, es-vda-86, es-nlaps-96, e-demst-95, g-pvc-56, hs-nblet-94, hs-ndssg-86, hw-ensrq-87, ily-sccp-92, ls-pptmc-87, k-hmap-55, l-conm-76, l-tdvdl-80, ld-gvdp-81, ms-fmapp-91, m-aogdc-91, m-rph-92, ms-rscp-93, m-apcad-83, m-cgitr-93, s-atubl-94, sa-dsstg-95, t-mnlcf-92, v-ghm-89, v-pcp-75, ZZZ.

166 P. K. Agarwal, A. Efrat, and M. Sharir. Vertical decomposition of shallow levels in 3-dimensional arrangements and its applications. *SIAM J. Comput.*, 29:912–953, 1999. [aes-vdsl3-99]

167 P. K. Agarwal, A. Efrat, Micha Sharir, and S. Toledo. Computing a segment center for a planar point set. Manuscript DUKE–TR–1991–33, Department of Computer Science, Duke University, 1991. [aest-cscpp-91] *URL:* ftp://ftp.cs.duke.edu/dist/techreport/1991/1991-33.ps.Z. *Abstract:* Given a set S of n points in the plane and a segment e, a *center placement* of e is a placement (allowing translation and rotation) that minimizes the maximum distance from e to the points of S. We present an algorithm for computing a center placement for S, whose running time is $O(n^2\alpha(n)\log^3 n)$, where $\alpha(n)$ is the inverse Ackermann function. The algorithm makes use of the parametric searching technique of Megiddo.

168 Pankaj K. Agarwal, A. Efrat, Micha Sharir, and S. Toledo. Computing a segment center for a planar point set. *J. Algorithms*, 15(2):314–323, 1993. [aest-cscpp-93] *Keywords:* points, center, placement.

169 Pankaj K. Agarwal, D. Eppstein, L. J. Guibas, and M. Henzinger. Parametric and kinetic minimum spanning trees. In *Proc. 39th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 596–605, 1998. [aegm-pkmst-98]

170 Pankaj K. Agarwal, D. Eppstein, and J. Matoušek. Dynamic half-space reporting, geometric optimization, and minimum spanning trees. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 80–89, 1992. [aem-dhsrg-92] *Succeeds:* am-dhsrr-91.

171 Pankaj K. Agarwal and Jeff Erickson. Geometric range searching and its relatives. Tech. Report CS-1997-11, Department of Computer Science, Duke University, 1997. [ae-rsir-97]

172 Pankaj K. Agarwal and Jeff Erickson. Geometric range searching and its relatives. In B. Chazelle, J. E. Goodman, and R. Pollack, editors, *Advances in Discrete and Computational Geometry*, volume 223 of *Contemporary Mathematics*, pages 1–56. American Mathematical Society, Providence, RI, 1999. [ae-rsir-99]

173 P. K. Agarwal, J. Erickson, and L. J. Guibas. Kinetic binary space partitions in R^3. In preparation, 1997. [aeg-kbspr-97]

174 Pankaj K. Agarwal, Jeff Erickson, and Leonidas J. Guibas. Kinetic BSPs for intersecting segments and disjoint triangles. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 107–116, 1998. [aeg-kbisd-98]

175 P. K. Agarwal, M. T. Goodrich, S. R. Kosaraju, F. P. Preparata, R. Tamassia, and J. S. Vitter. Applicable and robust geometric computing. Project proposal (u. s. army research office grant daah04-96-1-0013), Center for Geometric Computing, 1995. http://www.cs.brown.edu/cgc/. [agkptv-argc-95] *URL:* http://www.cs.brown.edu/cgc/.

176 P. K. Agarwal, E. F. Grove, T. M. Murali, and J. S. Vitter. Binary space partitions for fat rectangles. In *Proc. 37th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 482–491, October 1996. [agmv-bspfr-96]

177 P. K. Agarwal, E. F. Grove, T. M. Murali, and J. S. Vitter. Binary space partitions for fat rectangles. *SIAM J. Comput.*, 29:1422–1448, 2000. [agmv-bspfr-00]

178 P. K. Agarwal, L. Guibas, M. Pellegrini, and M. Sharir. Ray shooting among spheres. Manuscript, ??, 1992. [agps-rss-92]

179 Pankaj K. Agarwal, L. J. Guibas, S. Har-Peled, A. Rabinovitch, and M. Sharir. Computing the penetration depth of two convex polytopes in 3d. In *Proc. 7th Scandanavian Workshop on Algorithmic Theory*, page ??, 2000. [aghrs-cpdtc-00]

180 Pankaj K. Agarwal, Leonidas J. Guibas, John Hershberger, and Eric Veach. Maintaining the extent of a moving point set. In *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 31–44. Springer-Verlag, 1997. [aghv-memps-97]

181 Pankaj K. Agarwal, Leonidas J. Guibas, T. M. Murali, and Jeffrey Scott Vitter. Cylindrical static and kinetic binary space partitions. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 39–48, 1997. [agmv-cskbs-97] *Cites:* aeg-kbspr-97, agmv-bspfr-96, as-sagp-94, a-iurbw-90, b-mpbsp-93, bgh-dsmd-97, c-mgdii-91, csm-nocpt-95, cgl-pgd-85, cf-nrtsg-89, cf-fopsg-92, c-sc3di-96, cs-arscg-89, b-lsbsp-95, e-acg-87, fkn-vsgpt-80, hw-ensrq-87, mm-aagtn-95, mf-csbra-97, nat-mbtyp-90, nt-abtrt-86, n-sismt-90, n-isgpt-92, py-ebsph-90, py-obspo-92, sbgs-sacgi-69, s-barga-93, t-vcdop-92, tn-sopub-87, t-obspa-90, ZZZ.

182 Pankaj K. Agarwal, S. Har-Peled, and M. Karia. Computing approximate shortest paths on convex polytopes. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 270–279, 2000. [ahk-caspc-00]

183 Pankaj K. Agarwal, Sariel Har-Peled, Micha Sharir, and Kasturi R. Varadarajan. Approximate shortest paths on a convex polytope in three dimensions. Report CS-1996-12, Dept. Comput. Sci., Duke Univ., Durham, NC, 1996. [ahsv-aspcp-96] *Precedes:* ahsv-aspcp-97.

184 P. K. Agarwal, S. Har-Peled, M. Sharir, and K. R. Varadarajan. Approximate shortest paths on a convex polytope in three dimensions. *J. ACM*, 44:567–584, 1997. [ahsv-aspcp-97] *Succeeds:* ahsv-aspcp-96.

185 Pankaj K. Agarwal, M. Katz, and Micha Sharir. Computing depth orders for fat objects and related problems. *Comput. Geom. Theory Appl.*, 5:187–206, 1995. [aks-cdofo-95] *Succeeds:* aks-cdorp-94.

186 Pankaj K. Agarwal, M. J. Katz, and Micha Sharir. Computing depth orders and related problems. In *Proc. 4th Scand. Workshop Algorithm Theory*, pages 1–12, 1994. [aks-cdorp-94] *Precedes:* aks-cdorp-95.

187 Pankaj K. Agarwal, M. J. Katz, and Micha Sharir. Computing depth orders and related problems. *Comput. Geom. Theory Appl.*, 5:187–206, 1995. [aks-cdorp-95] *Succeeds:* aks-cdorp-94.

188 Pankaj K. Agarwal, L. E. Kavraki, and M. T. Mason, editors. *Robotics: The Algorithmic Perspective*. A. K. Peters, Wellesley, 1998. [akm-rap-98]

189 Pankaj K. Agarwal, Lars Knipping, Marc van Kreveld, Tycho Strijk, and Alexander Wolf. A simple and efficient algorithm for high-quality line labeling. In *Abstracts 15th European Workshop Comput. Geom.*, pages 93–96. INRIA Sophia-Antipolis, 1999. [akksw-seahq-99]

190 Pankaj K. Agarwal and Marc van Kreveld. Connected component and simple polygon intersection searching. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 36–47. Springer-Verlag, 1993. [ak-ccspi-93]

191 Pankaj K. Agarwal and M. van Kreveld. Implicit point location in arrangements of line segments, with an application to motion planning. Report RUU-CS-92-15, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1992. [ak-iplal-92t] *Precedes:* ak-iplal-92i.

192 Pankaj K. Agarwal and M. van Kreveld. Implicit point location in arrangements of line segments, with an application to motion planning. In *Proc. 12th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, 1992. [ak-iplal-92i] *Succeeds:* ak-iplal-92t.

193 Pankaj K. Agarwal and M. van Kreveld. Implicit point location in arrangements of line segments, with an application to motion planning. *Internat. J. Comput. Geom. Appl.*, 4:369–383, 1994. [ak-iplal-94] *Keywords:* point location, motion planning, arrangements.

194 Pankaj K. Agarwal and Marc van Kreveld. Polygon and connected component intersection searching. *Algorithmica*, 15:626–660, 1996. [ak-pccis-96]

195 Pankaj K. Agarwal, M. van Kreveld, and M. Overmars. Intersection queries for curved objects. Manuscript, 1990. [ako-iqco-90]

196 Pankaj K. Agarwal, M. van Kreveld, and M. Overmars. Intersection queries for curved objects. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 41–50, 1991. [ako-iqco-91] *Keywords:* range searching, partition trees, intersection. *Precedes:* ako-iqco-93. *Cites:* a-rsoas-89, a-dapal-89, ako-iqco-90, ass-sulbl-89, ahl-sqrpc-90, c-fsnaq-86, ceggss-rspug-90, cg-fc1ds-86, cg-fc2a-86, csw-qoubs-90, cw-qorss-89, de-ssio-87, dsst-mdsp-89, e-acg-87, ew-hrsls-86, gos-rsipl-89, hw-ensrq-87, koa-iqsd-90i, m-mcast-90, mw-gscpt-89, oss-slspt-90, s-ksacs-91, w-pr-82, ydep-psrq-89, ZZZ.

197 Pankaj K. Agarwal, M. van Kreveld, and M. Overmars. Intersection queries in curved objects. *J. Algorithms*, 15(2):229–266, 1993. [ako-iqco-93] *Keywords:* intersection, searching, curvilinear, ray shooting, partition trees, geometric transformations. *Succeeds:* ako-iqco-91.

198 Pankaj K. Agarwal, Mark van Kreveld, and Subhash Suri. Label placement by maximum independent set in rectangles. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 233–238, 1997. [aks-lpmis-97]

199 P. K. Agarwal, J.-C. Latombe, R. Motwani, and P. Raghavan. Nonholonomic path planning for pushing a disk among obstacles. In *Intl. Conf. Robotics and Auto.*, 1997. [almr-npppd-97]

200 Pankaj K. Agarwal and J. Matoušek. Dynamic half-space range reporting and its applications. Tech. Report CS-1991-43, Duke University, 1991. [am-dhsrr-91] *Precedes:* aem-dhsrg-92.

201 P. K. Agarwal and J. Matoušek. Dynamic half-space range reporting and its applications. *Algorithmica*, 13:325–345, 1995. [am-dhsrr-95] *Keywords:* arrangements, cuttings, range-searching, dynamization.

202 Pankaj K. Agarwal and J. Matoušek. On range searching with semialgebraic sets. In *Proc. 17th Internat. Sympos. Math. Found. Comput. Sci.*, volume 629 of *Lecture Notes Comput. Sci.*, pages 1–13. Springer-Verlag, 1992. [am-rsss-92] *Keywords:* range search, partition tree, cutting, algebraic surface, semialgebraic set, Tarski cell. *Precedes:* am-rsss-94.

203 Pankaj K. Agarwal and J. Matoušek. On range searching with semialgebraic sets. *Discrete Comput. Geom.*, 11:393–418, 1994. [am-rsss-94] *Succeeds:* am-rsss-92.

204 P. K. Agarwal and J. Matoušek. Ray shooting and parametric search. Technical Report CS-1991-22, Dept. Comput. Sci., Duke Univ., Durham, NC, 1991. [am-rsps-91]

205 Pankaj K. Agarwal and J. Matoušek. Ray shooting and parametric search. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 517–526, 1992. [am-rsps-92] *Keywords:* ray tracing, range search, intersection, partition trees.

206 Pankaj K. Agarwal and J. Matoušek. Ray shooting and parametric search. *SIAM J. Comput.*, 22(4):794–806, 1993. [am-rsps-93] *Succeeds:* am-rsps-92.

207 Pankaj K. Agarwal and J. Matoušek. Relative neighborhood graphs in 3-d. Report CS-1991-19, Dept. Comput. Sci., Duke Univ., Durham, NC, 1991. [am-rng3d-91] *Keywords:* pattern recognition, geometric graphs. *Precedes:* am-rngtd-92i.

208 Pankaj K. Agarwal and J. Matoušek. Relative neighborhood graphs in three dimensions. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 58–65, 1992. [am-rngtd-92i] *Keywords:* pattern recognition, geometric graphs. *Succeeds:* am-rng3d-91. *Precedes:* am-rngtd-92a.

209 Pankaj K. Agarwal and J. Matoušek. Relative neighborhood graphs in three dimensions. *Comput. Geom. Theory Appl.*, 2(1):1–14, 1992. [am-rngtd-92a] *Keywords:* pattern matching, geometric graphs, arrangements, random sampling, closest pairs. *Succeeds:* am-rngtd-92i.

210 Pankaj K. Agarwal, J. Matoušek, and O. Schwarzkopf. Computing many faces in arrangements of lines and segments. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 76–84, 1994. [ams-cmfal-94] *URL:* ftp://ftp.cs.ruu.nl/pub/RUU/CS/techreps/CS-1994/1994-39.ps.gz. *Precedes:* ams-cmfal-98. *Cites:* a-pal2a-90, aegs-nemfl-92, bds-lric-94, c-talp-69, cegghss-rspug-91, cegss-cfals-93, cf-dvrsi-90, c-csfas-90, cegsw-ccbac-90, cs-arscg-89, e-acg-87, egs-ccmfa-90, ew-mnemf-86, gs-caa-93, hs-parss-93, hw-ensrq-87, m-mdscg-84, m-fppa-90, m-fppa2-91, st-epdg-83, ZZZ.

211 Pankaj K. Agarwal, J. Matoušek, and O. Schwarzkopf. Computing many faces in arrangements of lines and segments. *SIAM J. Comput.*, 27(2):491–505, 1998. [ams-cmfal-98] *Succeeds:* ams-cmfal-94.

212 Pankaj K. Agarwal, J. Matoušek, and Subhash Suri. Farthest neighbors, maximum spanning trees and related problems in higher dimensions. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 105–116. Springer-Verlag, 1991. [ams-fnmst-91] *Precedes:* ams-fnmst-92.

213 Pankaj K. Agarwal, J. Matoušek, and Subhash Suri. Farthest neighbors, maximum spanning trees and related problems in higher dimensions. *Comput. Geom. Theory Appl.*, 1(4):189–201, 1992. [ams-fnmst-92] *Keywords:* proximity, partition, maximal spanning tree, minimal spanning tree, d-dimensional, furthest neighbors, approximation, bichromatic. *Succeeds:* ams-fnmst-91.

214 Pankaj K. Agarwal, T. Murali, and J. Vitter. A new algorithm for constructing binary space partitions for orthogonal rectangles. In *Proc. European Sympos. Algortihms*, 1998. [amv-nacbs-98]

215 Pankaj K. Agarwal, T. Murali, and J. Vitter. Practical techniques for constructing binary space partitions for orthogonal rectangles. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 382–384, 1997. [amv-ptcbs-97] *Cites:* agmv-bspfr-96, a-iurbw-90, fkn-vsgpt-80, py-obspo-92, sbgs-sacgi-69, t-vcdop-92, tn-sopub-87, ZZZ.

216 Pankaj K. Agarwal, M. Pellegrini, and Micha Sharir. Counting circular arc intersections. *SIAM J. Comput.*, 22(4):778–793, 1993. [aps-ccai-93] *Keywords:* intersection, counting, circles, circular arc arrangement, point location, random sampling, partition trees, geometric transformations. *Succeeds:* as-ccai-91.

217 Pankaj K. Agarwal and Cecilia M. Procopiuc. Approximation algorithms for projective clustering. In *Proc. 11th ACM-SIAM Sympos. Discrete Algorithms*, pages 538–547, 2000. [ap-aapc-00]

218 Pankaj K. Agarwal and Cecilia M. Procopiuc. Exact and approximation algorithms for clustering. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 658–667, 1998. [ap-eaac-98]

219 Pankaj K. Agarwal, P. Raghavan, and H. Tamaki. Motion planning for a steering-constrained robot through moderate obstacles. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 343–352, 1995. [art-mpscr-95]

220 P. K. Agarwal, O. Schwarzkopf, and M. Sharir. The overlay of lower envelopes and its applications. Manuscript, ??, 1993. [ass-oleia-93]

221 P. K. Agarwal, O. Schwarzkopf, and Micha Sharir. The overlay of lower envelopes and its applications. *Discrete Comput. Geom.*, 15:1–13, 1996. [ass-oleia-96]

222 P. K. Agarwal, O. Schwarzkopf, and M. Sharir. The overlay of lower envelopes in three dimensions and its applications. Manuscript, ??, 1994. [ass-oletd-94]

223 Pankaj K. Agarwal, Otfried Schwarzkopf, and Micha Sharir. The overlay of lower envelopes in three dimensions and its applications. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 182–189, 1995. [ass-oletd-95] *URL:* ftp://ftp.cs.ruu.nl/pub/RUU/CS/techreps/CS-1994/1994-40.ps.gz. *Keywords:* curved surfaces. *Cites:* as-erasg-95, ass-sulbl-89, a-sdcgp-85, bd-olrcu-93, cgppsw-ctct-94, cegs-sessr-89, cs-arscg-89, bds-lric-94, e-acg-87, egs-ueplf-89, es-mnwsn-90, gpw-gtt-93, gpw-bngpi-94, hs-nblet-94, hs-atubs-95, hs-ndssg-86, hrr-araga-91, s-atubl-94, sa-dsstg-95, ZZZ.

224 Pankaj K. Agarwal and Sandeep Sen. Selection in monotone matrices and computing k-th nearest neighbors. *J. Algorithms*, 20:581–601, 1996. [as-smmck-96]

225 P. K. Agarwal and Micha Sharir. Algorithmic techniques for geometric optimization. In *??*, volume 1000 of *Lecture Notes Comput. Sci.*, pages 234–253. Springer-Verlag, 1995. [as-atgo-95]

226 Pankaj K. Agarwal and Micha Sharir. Applications of a new partitioning scheme. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 379–391. Springer-Verlag, 1991. [as-anps-91] *Keywords:* random sampling, range searching, ray tracing, hidden line/surface elimination. *Precedes:* as-anspt-93.

227 P. K. Agarwal and Micha Sharir. Applications of a new space partition technique. Manuscript, 1991. [as-anspt-91]

228 Pankaj K. Agarwal and Micha Sharir. Applications of a new space-partitioning technique. *Discrete Comput. Geom.*, 9:11–38, 1993. [as-anspt-93] *Keywords:* random sampling, range searching, ray tracing, hidden line/surface elimination, partition trees. *Succeeds:* as-anps-91.

229 Pankaj K. Agarwal and Micha Sharir. Arrangements and their applications. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 49–119. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [as-aa-00] *Annote:* Chapter 2 of su-hcg-00.

230 Pankaj K. Agarwal and Micha Sharir. Circle shooting in a simple polygon. Technical Report 90-56, DIMACS, Rutgers Univ., 1990. [as-cssp-90]

231 Pankaj K. Agarwal and Micha Sharir. Circle shooting in a simple polygon. *J. Algorithms*, 14:69–87, 1993. [as-cssp-93] *Succeeds:* as-cssp-90.

232 Pankaj K. Agarwal and Micha Sharir. Circular visibility of a simple polygon from a fixed point. *Internat. J. Comput. Geom. Appl.*, 3:1–25, March 1993. [as-cvspf-93] *Keywords:* visibility, simple polygon. *Succeeds:* as-cvspp-90.

233 Pankaj K. Agarwal and Micha Sharir. Circular visibility of a simple polygon from a point. Report 90-61, DIMACS, Rutgers Univ., New Brunswick, NJ, 1990. [as-cvspp-90] *Keywords:* visibility, simple polygon. *Precedes:* as-cvspf-93.

234 P. K. Agarwal and Micha Sharir. Counting circular arc intersections. Technical Report CS-1991-04, Dept. Comput. Sci., Duke Univ., Durham, NC, January 1991. [as-cci-91]

235 Pankaj K. Agarwal and Micha Sharir. Counting circular arc intersections. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 10–20, 1991. [as-ccai-91] *Keywords:* intersection, circles, random sampling. *Cites:* a-pal1e-90, a-pal2a-90, aass-sdp-90, as-cci-91, bo-arcgi-79, c-rcsi-86, ce-oails-88, cegs-sessr-89, cegs-ablsp-89, cs-agpli-90, csw-qoubs-90, c-narsc-87, cegsw-ccbac-90, cs-arscg-89, e-acg-87, egs-oplms-86, gos-crial-89, hw-ensrq-87, m-cen-90, m-cha-90i, m-fppa1-88, ZZZ.

236 Pankaj K. Agarwal and Micha Sharir. Davenport-Schinzel sequences and their geometric applications. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 1–47. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [as-dssga-00] *Annote:* Chapter 1 of su-hcg-00.

237 P. K. Agarwal and M. Sharir. Efficient algorithms for geometric optimization. Technical Report CS-1996-19, Dept. Computer Science, Duke University, 1996. [as-eago-96]

238 Pankaj K. Agarwal and Micha Sharir. Efficient algorithms for geometric optimization. *ACM Comput. Surv.*, 30:412–458, 1998. [as-eago-98]

239 Pankaj K. Agarwal and Micha Sharir. Efficient randomized algorithms for some geometric optimization problems. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 326–335, 1995. [as-erasg-95] *Keywords:* vertical decompositions, width of point sets, minimum-width annulus, biggest stick problem. *Cites:* aas-cefda-94, ass-oletd-95, ast-apsgo-94, as-cldsp-90, bc-ossc-94, cegs-dwclp-93, cegs-sessr-89, cs-agpli-90, cegsw-ccbac-90, cs-arscg-89, dmn-rass-92, bds-lric-94, bgh-vdt3s-94, efnn-rauvd-89, hs-nblet-94, hw-ensrq-87, ht-cws-88, ks-osse-93, ks-ebago-93, m-roass-91, m-apcad-83, s-atubl-94, sa-dsstg-95, sj-wrspp-94, ZZZ.

240 Pankaj K. Agarwal and Micha Sharir. Efficient randomized algorithms for some geometric optimization problems. *Discrete Comput. Geom.*, 16:317–337, 1996. [as-erasg-96]

241 Pankaj K. Agarwal and Micha Sharir. Motion planning of a ball amid polyhedral obstacles in three dimensions. In *Proc. 10th ACM-SIAM Sympos. Discrete Algorithms*, pages 21–30, 1999. [as-mpbpo-99]

242 P. K. Agarwal and M. Sharir. Motion planning of a ball amidst segments in three dimensions. unpublished manuscript, 1998. [as-mpbas-98]

243 Pankaj K. Agarwal and Micha Sharir. Off-line dynamic maintenance of the width of a planar point set. Report 90-64, DIMACS, Rutgers Univ., New Brunswick, NJ, 1990. [as-oldmw-90] *Precedes:* as-oldmw-91.

244 Pankaj K. Agarwal and Micha Sharir. Off-line dynamic maintenance of the width of a planar point set. *Comput. Geom. Theory Appl.*, 1:65–78, 1991. [as-oldmw-91] *Keywords:* off-line problem, dynamization, width, convex hull. *Succeeds:* as-oldmw-90.

245 Pankaj K. Agarwal and Micha Sharir. On the number of views of polyhedral terrains. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 55–60, 1993. [as-nvpt-93] *Cites:* bhok-sanvp-91, bd-agisr-90, cf-cvbtd-82, cs-vppt-89, c-agrv-85, gcs-ecrag-91, hs-nblet-93, kd-svm-76, pd-acag-86, pd-voag-90, s-atubl-93, s-nvapo-91, ZZZ.

246 P. K. Agarwal and Micha Sharir. On the number of views of polyhedral terrains. *Discrete Comput. Geom.*, 12:177–182, 1994. [as-nvpt-94]

247 Pankaj K. Agarwal and Micha Sharir. Pipes, cigars, and kreplach: The union of Minkowski sums in three dimensions. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 143–153, 1999. [as-pckum-99]

248 Pankaj K. Agarwal and Micha Sharir. Pipes, cigars, and kreplach: The union of Minkowski sums in three dimensions. *Discrete Comput. Geom.*, 24(4):645–685, 2000. [as-pckum-00]

249 Pankaj K. Agarwal and Micha Sharir. Planar geometric location problems. Report 90-58, DIMACS, Rutgers Univ., New Brunswick, NJ, 1990. [as-pglp-90] *Precedes:* as-pglpm-91.

250 Pankaj K. Agarwal and Micha Sharir. Planar geometric location problems. *Algorithmica*, 11:185–195, 1994. [as-pglp-94] *Keywords:* location problems, arrangements, width, parametric search techniques. *Succeeds:* as-pglpm-91.

251 Pankaj K. Agarwal and Micha Sharir. Planar geometric location problems and maintaining the width of a planar set. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 449–458, 1991. [as-pglpm-91] *Keywords:* location problems, arrangements, width, parametric search techniques. *Succeeds:* as-pglp-90.

252 P. K. Agarwal and Micha Sharir. Ray shooting amidst convex polygons in 2D. *J. Algorithms*, 21:508–519, 1996. [as-rsacp-96i]

253 P. K. Agarwal and Micha Sharir. Ray shooting amidst convex polyhedra and polyhedral terrains in three dimensions. *SIAM J. Comput.*, 25:100–116, 1996. [as-rsacp-96ii] *Succeeds:* as-rsacp-93.

254 Pankaj K. Agarwal and Micha Sharir. Ray shooting amidst convex polytopes in three dimensions. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 260–270, 1993. [as-rsacp-93] *Precedes:* as-rsacp-96ii.

255 P. K. Agarwal and M. Sharir. Red-blue intersection detection algorithms, with applications to motion planning and collision detection. Manuscript, ??, 1988. [as-rbida-88t]

256 Pankaj K. Agarwal and Micha Sharir. Red-blue intersection detection algorithms, with applications to motion planning and collision detection. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 70–80, 1988. [as-rbida-88] *Keywords:* motion planning, red-blue intersection. *Precedes:* as-rbida-90. *Cites:* as-rbida-88t, ass-sulbl-87, a-sdcgp-85, bo-arcgi-79, bk-cmpgm-87, c-fsram-85, cg-vippg-85, c-narsc-87, cegsw-ccbac-88t, c-dic-36, eghsssw-irals-88, egs-cmfal-88, ghlst-ltavs-87, gss-gmppt-88, hs-ndssg-86, hw-ensrq-87, klps-ujrcf-86, l-bc-61, my-mpacc-86, ZZZ.

257 Pankaj K. Agarwal and Micha Sharir. Red-blue intersection detection algorithms, with applications to motion planning and collision detection. *SIAM J. Comput.*, 19(2):297–321, 1990. [as-rbida-90] *Keywords:* intersection, motion planning, Davenport-Schinzel sequences, sweeping, red-blue, random sampling, ray shooting, curve arrangements. *Succeeds:* as-rbida-88.

258 P. K. Agarwal, M. Sharir, and P. W. Shor. Sharp upper and lower bounds on the length of general Davenport-Schinzel sequences. Technical Report 332, Department of Computer Science, New York University, 1987. [ass-sulbl-87]

259 P. K. Agarwal, Micha Sharir, and S. Toledo. An efficient multi-dimensional searching technique and its applications. Tech. Report CS-1993-20, Dept. Comp. Sci., Duke University, 1993. [ast-emst-93]

260 Pankaj K. Agarwal, Micha Sharir, and Sivan Toledo. Applications of parametric searching in geometric optimization. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 72–82, 1992. [ast-apsgo-92] *Keywords:* parametric search. *Precedes:* ast-apsgo-94.

261 Pankaj K. Agarwal, Micha Sharir, and S. Toledo. Applications of parametric searching in geometric optimization. *J. Algorithms*, 17:292–318, 1994. [ast-apsgo-94] *Keywords:* parametric search. *Succeeds:* ast-apsgo-92.

262 Pankaj K. Agarwal, Micha Sharir, and Emo Welzl. The discrete 2-center problem. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 147–155, 1997. [asw-d2cp-97] *Cites:* a-slp3d-94, aass-sdp-93, as-pglp-94, cegsw-ccbac-90, cs-arscg-89, e-fcptc-97, hs-ftp-91, jk-eaetc-94, ks-ebago-93, klps-ujrcf-86, m-apcad-83, ms-cscgl-84, r-dcikc-88a, s-nlap2-97, t-icbcl-88, ZZZ.

263 Pankaj K. Agarwal, Micha Sharir, and P. W.Shor. Sharp upper and lower bounds on the length of general Davenport-Schinzel sequences. *J. Combin. Theory Ser. A*, 52(2):228–274, 1989. [ass-sulbl-89] *Keywords:* Davenport-Schinzel sequences, Ackermann's function, combinatorial geometry.

264 Pankaj K. Agarwal and M.-T. Shing. Efficient special cases of rectilinear Steiner trees: Points on the boundary of a rectilinear rectangle. *Networks*, 20:453–485, 1990. [as-escrs-90] *Keywords:* Steiner trees.

265 Pankaj K. Agarwal and Subhash Suri. Surface approximation and geometric partitions. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 24–33, 1994. [as-sagp-94] *Keywords:* triangulation, ray shooting.

266 P. K. Agarwal and S. Suri. Surface approximation and geometric partitions. *SIAM J. Comput.*, 27:1016–1035, 1998. [as-sagp-98]

267 P. K. Agarwal and Kasturi R. Varadarajan. Efficient algorithms for approximating polygonal chains. *Discrete Comput. Geom.*, 23:273–291, 2000. [av-eaapc-00]

P. K. Agarwal. See also [1810, 8326, 8342, 8343, 10526, 12070, 13179, 13182–13184, 13189, 13369].

268 R. Agarwala and D. Fernández-Baca. Weighted multidimensional search and its applications to convex optimization. *SIAM J. Comput.*, 25:83–99, 1996. [af-wmsia-96]

A. Agathos. See also [7118].

269 A. Aggarwal. Lecture notes in computational geometry. *MIT Reserch Seminar Series MIT/LCS/RSS*, 3, August 1988. [a-lncg-88]

270 A. Aggarwal. Optimal bounds for finding maximum on array of processors with k global buses. *IEEE Trans. Comput.*, C-35:62–64, 1986. [a-obfma-86]

271 A. Aggarwal. Research topics in computational geometry. *Bull. EATCS*, 39:388–408, 1989. [a-rtcg-89] *Keywords:* problem collection.

272 Alok Aggarwal. *The art gallery problem: Its variations, applications, and algorithmic aspects.* PhD thesis, Dept. of Comput. Sci., Johns Hopkins University, Baltimore, MD, 1984. [a-agpiv-84] *Keywords:* visibility.

273 A. Aggarwal, B. Alpern, A. K. Chandra, and M. Snir. A model for hierarchical memory. In *Proc. 19th Annu. ACM Sympos. Theory Comput.*, pages 305–313, 1987. [aacs-mhm-87]

274 A. Aggarwal, A. Bar-Noy, S. Khuller, D. Kravets, and B. Schieber. Efficient minimum cost matching using quadrangle inequality. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 583–592, 1992. [abkks-emcmu-92]

275 A. Aggarwal, H. Booth, J. O'Rourke, Subhash Suri, and C. K. Yap. Finding minimal convex nested polygons. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 296–304, 1985. [abosy-fmcnp-85] *Keywords:* packing, visibility. *Precedes:* abosy-fmcnp-89. *Cites:* cy-psppo-84, da-frkec-84, db-ccppf-83, kl-fstcg-85, o-fmeb-84, so-fmnp-85t, t-sgprc-83, ZZZ.

276 A. Aggarwal, H. Booth, J. O'Rourke, Subhash Suri, and C. K. Yap. Finding minimal convex nested polygons. *Inform. Comput.*, 83(1):98–110, October 1989. [abosy-fmcnp-89] *Keywords:* packing, visibility, convex polygons, extremal figures. *Succeeds:* abosy-fmcnp-85.

277 A. Aggarwal and A. K. Chandra. Virtual memory algorithms. In *Proc. 20th Annu. ACM Sympos. Theory Comput.*, pages 173–185, 1988. [ac-vma-88]

278 A. Aggarwal, A. K. Chandra, and M. Snir. Communication complexity of PRAMs. *Theoret. Comput. Sci.*, 71:3–28, 1990. [acs-ccp-90]

279 A. Aggarwal, A. K. Chandra, and M. Snir. Hierarchical memory with block transfer. In *Proc. 28rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 204–216, 1987. [acs-hmbt-87]

280 A. Aggarwal, J. S. Chang, and C. K. Yap. Minimum area circumscribing polygons. *Visual Comput.*, 1:112–117, 1985. [acy-macp-85] *Keywords:* extremal figures, polygons.

281 A. Aggarwal and Bernard Chazelle. Efficient algorithm for partitioning a polygon into star-shaped polygons. Report ??, IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1984. [ac-eapps-84]

282 A. Aggarwal, Bernard Chazelle, Leonidas J. Guibas, C. Ó'Dúnlaing, and C. Yap. Parallel computational geometry. *Algorithmica*, 3:293–327, 1988. [acgoy-pcg-88] *Succeeds:* acgoy-pcg-85.

283 A. Aggarwal, Bernard Chazelle, Leonidas J. Guibas, C. Ó'Dúnlaing, and C. K. Yap. Parallel computational geometry. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 468–477, 1985. [acgoy-pcg-85] *Precedes:* acgoy-pcg-88.

284 Alok Aggarwal, Don Coppersmith, Sanjeev Khanna, Rajeev Motwani, and Baruch Schieber. The angular-metric traveling salesman problem. In *Proceedings of the Eighth Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 221–229, January 1997. [ackms-amtsp-97] *Annote:* An earlier version, titled 'The Angle-TSP Problem and the Weighted Linear Matroid Parity Problem' was accepted to STOC96, but apparently was withdrawn, as it never appeared there.

285 A. Aggarwal, D. Coppersmith, S. Khanna, R. Motwani, and B. Schieber. The angular-metric traveling salesman problem. *SIAM J. Comput.*, 29:697–711, 1999. [ackms-amtsp-99]

286 A. Aggarwal, H. Edelsbrunner, P. Raghavan, and P. Tiwari. Optimal time bounds for some proximity problems in the plane. *Inform. Process. Lett.*, 42(1):55–60, 1992. [aert-otbsp-92] *Keywords:* proximity, lower bounds.

287 A. Aggarwal, S. K. Ghosh, and R. K. Shyamasundar. Computational complexity of restricted polygon decompositions. In G. T. Toussaint, editor, *Computational Morphology*, pages 1–11. North-Holland, Amsterdam, Netherlands, 1988. [ags-ccrpd-88] *Keywords:* polygons, decomposition, watchman problem.

288 A. Aggarwal, L. J. Guibas, J. Saxe, and P. W. Shor. A linear time algorithm for computing the Voronoi diagram of a convex polygon. In *Proc. 19th Annu. ACM Sympos. Theory Comput.*, pages 39–45, 1987. [agss-ltacv-87] *Precedes:* agss-ltacv-89.

289 A. Aggarwal, L. J. Guibas, J. Saxe, and P. W. Shor. A linear-time algorithm for computing the Voronoi diagram of a convex polygon. *Discrete Comput. Geom.*, 4(6):591–604, 1989. [agss-ltacv-89] *Keywords:* convex polygons, Voronoi diagram. *Succeeds:* agss-ltacv-87.

290 A. Aggarwal, M. Hansen, and T. Leighton. Solving query-retrieval problems by compacting Voronoi diagrams. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, pages 331–340, 1990. [ahl-sqrpc-90] *Keywords:* Voronoi diagram, searching, separator, filtering search, probabilistic geometry. *Comments:* Submitted to J. ACM.

291 A. Aggarwal and M. Hawrylycz. On computing the closest boundary point on the convex hull. *Inform. Process. Lett.*, 31:311–314, 1989. [ah-ccbpc-89] *Keywords:* proximity, points, convex hull, lower bound.

292 A. Aggarwal, H. Imai, N. Katoh, and Subhash Suri. Finding k points with minimum diameter and related problems. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 283–291, 1989. [aiks-fkpmd-89] *Precedes:* aiks-fkpmd-91. *Cites:* agss-ltacv-87, asfacle-87, a-imtpr-72, abky-cabmm-88, ddg-fsp-83, h-ca-75, hs-ftp-89, ia-eaggs-86, l-knnvd-82, mosfmrio-85, ZZZ.

293 A. Aggarwal, H. Imai, N. Katoh, and Subhash Suri. Finding k points with minimum diameter and related problems. *J. Algorithms*, 12:38–56, 1991. [aiks-fkpmd-91] *Succeeds:* aiks-fkpmd-89.

294 A. Aggarwal and M. M. Klawe. Applications of generalized matrix searching to geometric algorithms. *Discrete Appl. Math.*, 27:3–23, 1987. [ak-agmsg-87] *Keywords:* monotone matrix, proximity, polygons.

295 A. Aggarwal, M. M. Klawe, D. Lichtenstein, N. Linial, and A. Wigderson. A lower bound on the area of permutation layouts. *Algorithmica*, 6:241–255, 1991. [akllw-lbapl-91] *Succeeds:* akllw-mlge-85.

296 A. Aggarwal, M. M. Klawe, D. Lichtenstein, N. Linial, and A. Wigderson. Multilayer grid embeddings. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 186–196, 1985. [akllw-mlge-85] *Precedes:* akllw-lbapl-91.

297 A. Aggarwal, M. M. Klawe, S. Moran, P. W. Shor, and R. Wilber. Geometric applications of a matrix searching algorithm. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 285–292, 1986. [akmsw-gamsa-86] *Precedes:* akmsw-gamsa-87. *Cites:* acy-macp-85, am-fcmp-86, atb-mdcp-82, bddg-fep-85, dkssu-owbr-81, lp-annpc-78, mos-fmrio-85, p-scg-77, sd-sgslw-81, s-gc-75, sh-cpp-75, t-ccu-84, t-safnp-83, tb-gaufn-81, ZZZ.

298 A. Aggarwal, M. M. Klawe, S. Moran, P. W. Shor, and R. Wilber. Geometric applications of a matrix-searching algorithm. *Algorithmica*, 2:195–208, 1987. [akmsw-gamsa-87] *Keywords:* polygons, furthest neighbors, convex polygons, routing. *Succeeds:* akmsw-gamsa-86.

299 A. Aggarwal and D. Kravets. A linear time algorithm for finding all farthest neighbors in a convex polygon. *Inform. Process. Lett.*, 31(1):17–20, 1989. [ak-ltafa-89] *Keywords:* convex polygons, furthest neighbors.

300 A. Aggarwal, D. Kravets, J. K. Park, and S. Sen. Parallel searching in generalized Monge arrays with applications. In *Proc. 2nd ACM Sympos. Parallel Algorithms Architect.*, pages 259–268, 1990. [akps-psgma-90]

301 A. Aggarwal and R. Melville. Fast computation of the modality of polygons. *J. Algorithms*, 7(3):369–381, 1986. [am-fcmp-86] *Keywords:* polygons, modality.

302 A. Aggarwal, S. Moran, P. W. Shor, and Subhash Suri. Computing the minimum visible vertex distance between two polygons. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 115–134. Springer-Verlag, 1989. [amss-cmvvd-89] *Keywords:* proximity, visibility, polygons.

303 A. Aggarwal and J. K. Park. Notes on searching in multidimensional monotone arrays. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 497–512, 1988. [ap-nsmma-88] *Comments:* To appear in J. Algorithms as two papers.

304 A. Aggarwal and J. K. Park. Parallel searching in multidimensional monotone arrays. Manuscript, ??, 1989. [ap-psmma-89]

305 A. Aggarwal and J. K. Park. Sequential searching multidimensional monotone arrays. Technical report, June 1989. [ap-ssmma-89]

306 A. Aggarwal and C. G. Plaxton. Optimal parallel sorting in multi-level storage. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 659–668, 1994. [ap-opsml-94]

307 A. Aggarwal, P. Raghavan, and P. Tiwari. Lower bounds for closest pair and related problems in simple polygons. Technical report, IBM Thomas J. Watson Research Center, Yorktown Heights, NY, 1987. [art-lbcpr-87]

308 A. Aggarwal and P. Raghawan. Deferred data structures for the nearest-neighbor problem. *Inform. Process. Lett.*, 40(3):119–122, 1991. [ar-ddsnn-91] *Keywords:* convex hull, Voronoi diagram, proximity, nearest neighbor, furthest neighbor, deferred data structures.

309 A. Aggarwal, B. Schieber, and T. Tokuyama. Finding a minimum weight k-link path in graphs with Monge property and applications. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 189–197, 1993. [ast-fmwkl-93] *Precedes:* ast-fmwkl-94. *Cites:* akmsw-gamsa-87, ap-nsmma-88, at-ciqdp-93, a-dpi-91, blp-despp-92, bddg-fep-85, cegs-dwclp-92, c-sdsno-87, cl-flwsf-90, f-oatp-91, k-sltac-89, kk-altag-88, lh-llc-90, lp-pctow-91, ls-oldpa-91, m-apcad-83, v-pcp-75, w-oqms-91, ZZZ.

310 A. Aggarwal, B. Schieber, and T. Tokuyama. Finding a minimum-weight k-link path in graphs with the concave Monge property and applications. *Discrete Comput. Geom.*, 12:263–280, 1994. [ast-fmwkl-94] *Succeeds:* ast-fmwkl-93.

311 A. Aggarwal and S. Suri. Computing the longest diagonal of a simple polygon. Research Report 14775 (#66232), IBM, July 1989. [as-cldsp-89]

312 A. Aggarwal and Subhash Suri. Computing the longest diagonal of a simple polygon. *Inform. Process. Lett.*, 35(1):13–18, 1990. [as-cldsp-90] *Keywords:* polygon, diagonal.

313 A. Aggarwal and Subhash Suri. Fast algorithms for computing the largest empty rectangle. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 278–290, 1987. [as-facle-87] *Keywords:* orthogon, extremal figures, empty rectangle. *Cites:* akmsw-gamsa-86, af-nfmer-86, cdl-cler-86, mos-fmrio-85, nhl-merp-84, ZZZ.

314 Alok Aggarwal and Takeshi Tokuyama. An improved algorithm for the traveler's problem. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 476–485. Springer-Verlag, 1993. [at-iatp-93]

315 Alok Aggarwal and Takeshi Tokuyama. Consecutive interval query and dynamic programming on intervals. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 466–475. Springer-Verlag, 1993. [at-ciqdp-93]

316 A. Aggarwal and J. S. Vitter. The input/output complexity of sorting and related problems. *Commun. ACM*, 31:1116–1127, 1988. [av-iocsr-88]

317 A. Aggarwal and J. Wein. Computational geometry. Report RSS-3, Lab. Comput. Sci., Massachusetts Inst. Tech., Cambridge, MA, 1988. [aw-cg-88] *Keywords:* lecture notes. *Annote:* lecture notes for course 18.409.

A. Aggarwal. See also [122, 123, 3986, 10389, 10390].

J. Aggarwal. See also [3198, 8052].

J. K. Aggarwal. See also [3199, 9214, 13377].

318 Michael E. Agishtein and Alexander A. Migdal. Smooth surface reconstruction from scattered data points. *Comput. Graph. (UK)*, 15(1):29–39, 1991. [am-ssrsd-91] *Keywords:* triangulation, rational interpolation, surface smoothing, surface reconstruction. *Annote:* Uses incremental flip algorithm. Extra point at infinity. Points are ordered by a plane filling fractal to speed point location. Extra points are added at cc centres until tris are small enough. *Abstract:* We describe here a new technique and a package for rapid reconstruction of smooth surfaces from scattered data points. This method is based on a fast recurrent algorithm for the Delaunay triangulation followed by rational interpolation inside triangles. Preprocessing of data includes sorting and takes N log(N) time. Afterwards the computational cost is a linear function of the amount of data. This technique enables a user to construct a surface of any class of smoothness and degree of convergence. Our package reconstructs surfaces that can be uniquely projected either on a plane or a plane or on a sphere. The graphical section of this package includes three dimensional transformations, shading, hidden surface removal, interactive adding points into triangulation by mouse, etc. The graphics has been implemented on Iris-4D, SUN-4 and IBM-5080. (Author abstract) 17 Refs.

319 S. Agmon. The relaxation method for linear inequalities. *Canad. J. Math.*, 6:382–392, 1954. [a-rmli-54]

320 M. Agoston. *Algebraic Topology: A First Course*. Lecture Notes in Pure and Applied Mathematics. Marcel Dekker, New York, NY, 1976. [a-atfc-76]

321 M. K. Agoston. *Algebraic Topology*. Marcel Dekker Inc, New York, NY, 1976. [a-at-76]

322 Amitabh Agrawal and Aristides A. G. Requicha. A paradigm for the robust design of algorithms for geometric modelling. *Comput. Graph. Forum*, 13(3):33–44, 1994. Proc. EUROGRAPHICS '94. [ar-prdag-94] *Keywords:* geometric modeling, robustness, interval arithmetic, constructive solid geometry.

A. Agrawal. See also [9925].

323 R. Agrawal, C. Faloutsos, and A. Swami. Efficient similarity search in sequence databases. In *Proc. 4th Internat. Conf. Foundations of Data Organization and Algorithms*, 1993. [afs-esssd-93]

324 R. Agrawal, J. Gehrke, D. Gunopulos, and P. Raghavan. Automatic subspace clustering of high dimensional data for data mining applications. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 94–105, 1998. [aggr-aschd-98]

325 R. Agrawal, A. Ghosh, T. Imielinski, B. Iyer, and A. Swami. An interval classifier for database mining applications. In *Proceedings of the 18th Conference on Very Large Databases*, pages 560–573. Morgan Kauffman, August 1992. [ag-icdma-92] *Annote:* marketing example; creates decision rules; compared with CART and ID3; splits continuous values into weak and strong intervals.

326 R. Agrawal, K.-I. Lin, H. S. Sawhney, and S. Shim. Fast similarity search in the presence of noise, scaling and translation in time-series databases. In *Proc. 21st VLDB Conference*, pages 490–501, 1995. [alss-fsspn-95]

R. Agrawal. See also [6961, 6962, 12001].

R. Agrawarl. See also [12153].

327 R. Aharoni, P. Erdős, and N. Linial. Dual linear programs and the relationship between their optima. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 476–482, 1985. [ael-dlptr-85] *Precedes:* ael-dlptr-88.

328 R. Aharoni, P. Erdős, and N. Linial. Dual linear programs and the relationship between their optima. *Combinatorica*, 8:13–20, 1988. [ael-dlptr-88] *Succeeds:* ael-dlptr-85.

329 U. Ahlfeld and H.-D. Hecker. Algorithmen zur Unimodalität Bestimmung einfacher Polygone. In *Wiss. Beiträge Martin-Luther-Univ. Halle-Wittenberg*, volume 55, pages 139–146. ??, Germany, 1989. [ah-azube-89] *Keywords:* polygon, unimodal.

330 U. Ahlfeld and H.-D. Hecker. Eine Hierarchie einfacher Polygone. In *Wiss. Beiträge Martin-Luther-Univ. Halle-Wittenberg*, volume 60, pages 45–56. ??, Germany, 1991. [ah-ehep-91] *Keywords:* simple polygons, taxonomy.

331 U. Ahlfeld and H.-D. Hecker. Minimal watchman graphs in polygons. *Research in Informatics*, 4:126–130, 1991. Geobild '91. [ah-mwgp-91] *Keywords:* watchman problem, polygons, visibility.

332 U. Ahlfeld and H.-D. Hecker. Strenge Unimodalität und strenge monotonie einfacher Polygone. *Wiss. Z. Pädagog. Hochschule "K. W. F. Wander", Dresden. Math. Naturwiss. R.*, 22:29–33, 1988. [ahh-suusm-88] *Keywords:* polygon, monotone, unimodal.

333 U. Ahlfeld and H.-D. Hecker. The computational complexity of some guard sets in polygons. *J. Information Processing and Cybernetics*, 28(6):331–342, 1992. [ah-ccsgs-92] *Keywords:* watchman problem, NP-completeness, polygons.

334 L. V. Ahlfors. *Complex Analysis*. McGraw-Hill, 1966. [a-ca-66]

335 H.-K. Ahn, M. de Berg, P. Bose, S.-W. Cheng, D. Halperin, J. Matoušek, and O. Schwarzkopf. Separating an object from its cast. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 221–230, 1997. [abbchms-soc-97] *Cites:* abbgotwz-fds-93, b-gcamp-95, bbk-dcsp-94, bkt-fpm-93, bt-gcamp-94, ccw-pdmdd-93, e-cit-88, fm-gaim-93, g-oppws-93, gs-pmgsc-85, h-cgpm-91, h-gamp-97, ht-mdsoh-92, k-caplp-92, mgj-cfufp-96, m-ept-92, ms-tdctd-93, orsw-ipaw-95, ps-cgi-85, p-mrisf-87, rr-mcp-92, t-mss-85, wo-ich-81, wl-grama-94, ZZZ.

336 H.-K. Ahn, S.-W. Cheng, and O. Cheong. Casting with skewed ejection direction. In *Proc. 9th Annu. Internat. Sympos. Algorithms Comput.*, volume 1533 of *Lecture Notes Comput. Sci.*, pages 139–148. Springer-Verlag, 1998. [acc-csed-98]

337 Hee-Kap Ahn, Otfried Cheong, Jiří Matoušek, and Antoine Vigneron. Reachability by paths of bounded curvature in convex polygons. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 251–259, 2000. [acmv-rpbcc-00]

338 Hee-Kap Ahn, Otfried Cheong, and Chan-Su Shin. Bridging convex regions and related problems. In *Abstracts 17th European Workshop Comput. Geom.*, pages 53–56. Freie Universität Berlin, 2001. [acs-bcrrp-01]

339 J. Ahn and H. Freeman. A program for automatic name placement. *Cartographica*, 21(2–3):101–109, 1984. [af-panp-84]

340 A. V. Aho. Algorithms for finding patterns in strings. In *Algorithms and Complexity*, volume A of *Handbook of Theoretical Computer Science*, pages 255–400. Elsevier, 1990. [a-afps-90]

341 A. V. Aho, M. R. Garey, and F. K. Hwang. Rectilinear Steiner trees: efficient special case algorithms. *Networks*, 7:37–58, 1977. [agh-rstes-77] *Keywords:* Steiner trees, L_1-metric.

342 A. V. Aho, J. E. Hopcroft, and J. D. Ullman. *Data Structures and Algorithms*. Addison-Wesley, Reading, MA, 1983. [ahu-dsa-83]

343 A. V. Aho, J. E. Hopcroft, and J. D. Ullman. *The Design and Analysis of Computer Algorithms*. Addison-Wesley, Reading, MA, 1974. [ahu-daca-74]

344 A. V. Aho and J. D. Ullman. Optimal partial-match retrieval when fields are independently specified. *ACM Trans. Database Syst.*, 4:168–179, 1979. [au-opmrw-79]

N. Ahuia. See also [12448].

345 A. Ahuja and C. Nash. Octree representation of moving objects. *Comput. Vision Graph. Image Process.*, 26:207–216, 1984. [an-ormo-84] *Keywords:* data structuring, octree.

346 D. V. Ahuja and S. A. Coons. Geometry for construction and display. *IBM Syst. J.*, 7:188–205, 1968. [ac-gcd-68]

347 N. Ahuja. Dot pattern processing using Voronoi polygons as neighborhoods. In *Proc. 5th IEEE Internat. Conf. Pattern Recogn.*, pages 1122–1127, 1980. [a-dppuv-80] *Precedes:* a-dppuv-82.

348 N. Ahuja. Dot pattern processing using Voronoi polygons as neighborhoods. *IEEE Trans. Pattern Anal. Mach. Intell.*, 4:336–343, 1982. [a-dppuv-82] *Succeeds:* a-dppuv-80.

349 N. Ahuja, B. An, and B. Schachter. Image representation using Voronoi tessellation. *Comput. Vision Graph. Image Process.*, 29:286–295, 1985. [aas-iruvt-85] *Annote:* Suggests using Voronoi cells as primitives to represent an image.

350 N. Ahuja, R. T. Chien, R. Yen, and N. Birdwell. Interference detection and collision avoidance among three dimensional objects. In *Proc. 1st Nat. Conf. Artificial Intell.*, pages 44–48, 1980. [acyb-idcat-80]

351 N. Ahuja and W. Hoff. Augmented medial axis transform. In *Proceedings of Workshop on Computer Vision, Representation and Control*, pages 251–256, 1984. [ah-amat-84] *Annote:* Representation of 2D shape by MAT (overlapping blocks). AMAT adds adjacency info for blocks. Build from DT of block centres.

352 N. Ahuja and S. Swamy. Multiprocessor pyramid architectures for bottom-up image analysis. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-6:463–474, 1984. [as-mpabu-84]

353 N. Ahuja and J. Veenstra. Generating octrees from object silhouettes in orthographic views. *IEEE Trans. Pattern Anal. Mach. Intell.*, 11:137–149, 1989. [av-gooso-89]

N. Ahuja. See also [7281, 13204].

354 R. K. Ahuja, T. L. Magnanti, and J. B. Orlin. Network flows. In G. L. Nemhauser, A. H. G. Rinnooy Kan, and M. J. Todd, editors, *Optimization*, volume 1 of *Handbooks in Operations Research and Management*, pages 211–360. North-Holland, 1990. [amo-nf-90]

355 R. K. Ahuja, T. L. Magnanti, and J. B. Orlin. *Network Flows: Theory, Algorithms, and Applications*. Prentice Hall, Englewood Cliffs, NJ, 1993. [amo-nftaa-93]

356 Oswin Aichholzer. Efficient {0,1}-string searching based on pre-clustering. In *Abstracts 14th European Workshop Comput. Geom.*, pages 11–13. Universitat Polytènica de Catalunya, Barcelona, 1998. [a-e01ss-98]

357 Oswin Aichholzer. Local properties of triangulations. In *Abstracts 11th European Workshop Comput. Geom.*, pages 33–36. Universität Linz, 1995. [a-lpt-95]

358 Oswin Aichholzer. The path of a triangulation. In *Abstracts 13th European Workshop Comput. Geom.*, pages 1–3. Universität Würzburg, 1997. [a-pt-97] *Cites:* ZZZ.

359 Oswin Aichholzer. The path of a triangulation. In *Proc. 15th Ann. Sympos. Comput. Geom.*, pages 14–23, 1999. [a-pt-99]

360 O. Aichholzer, D. Alberts, F. Aurenhammer, and B. Gärtner. A novel type of skeleton for polygons. *J. Universal Comput. Sci.*, 1(12):752–761, 1995. [aaag-ntsp-95]

361 Oswin Aichholzer, Lyuba S. Alboul, and Ferran Hurtado. On flips in polyhedral surfaces. In *Abstracts 17th European Workshop Comput. Geom.*, pages 27–30. Freie Universität Berlin, 2001. [aah-fps-01]

362 Oswin Aichholzer and Franz Aurenhammer. Classifying hyperplanes in hypercubes. In *Abstracts 10th European Workshop Comput. Geom.*, pages 53–57. Universidad de Cantabria, Santander, 1994. [aa-chh-94]

363 O. Aichholzer and F. Aurenhammer. Straight skeletons for general polygonal figures. Technical Report 432, Inst. for Theor. Comput. Sci., Graz Univ. of Technology, Graz, Austria, 1995. [aa-skfgpf-95] *Precedes:* aa-ssgpf-96.

364 Oswin Aichholzer and Franz Aurenhammer. Straight skeletons for general polygonal figures in the plane. In *Proc. 2nd Ann. Internat. Conf. Computing and Combinatorics*, volume 1090 of *Lecture Notes Comput. Sci.*, pages 117–126. Springer-Verlag, 1996. [aa-ssgpf-96] *Succeeds:* aa-skfgpf-95.

365 O. Aichholzer and F. Aurenhammer. Straight skeletons for general polygonal figures in the plane. In P. Engel and H. Syta, editors, *Voronoi's Impact on Modern Science, Book 2*, pages 7–21. Institute of Mathematics of the National Academy of Sciences of Ukraine, Kyiv, 1998. [aa-ssgpf-98] *Succeeds:* aa-ssgpf-96.

366 O. Aichholzer, F. Aurenhammer, D. Chen, D. Lee, A. Mukhopadhyay, and E. Papadopoulou. Voronoi diagrams for direction-sensitive distances. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 418–420, 1997. [aaclmp-vddsd-97] *Cites:* ak-eama-87, cd-vdbcd-85, f-savd-87, ks-ossaf-85, k-cavd-89, ld-gvdp-81, mmp-dgp-87, mp-wrpfs-91, s-icpps-85, s-vdr-92, ZZZ.

367 Oswin Aichholzer, Franz Aurenhammer, Siu-Wing Cheng, Naoki Katoh, Michael Taschwer, Günter Rote, and Yin-Feng Xu. Triangulations intersect nicely. *Discrete Comput. Geom.*, 16:339–359, 1996. [aacktrx-tin-96] *Keywords:* matching, minimum weight triangulation, greedy triangulation. *Succeeds:* aatr-tin-95, cx-cistp-95. *Abstract:* We show that there is a matching between the edges of any two triangulations of a planar point set such that an edge of one triangulation is matched either to the identical edge in the other triangulation or to an edge that crosses it. This theorem also holds for the triangles of the triangulations and in general independence systems. As an application we give some lower bounds for the minimum weight triangulation which can be computed in polynomial time by matching and network flow techniques. We exhibit an easy-to-recognize class of point sets for which the minimum-weight triangulation coincides with the greedy triangulation.

368 Oswin Aichholzer, Franz Aurenhammer, Ferran Hurtado, and Hannes Krasser. Towards compatible triangulations. *Theoret. Comput. Sci.*, ??:??–??, 2002. http://www.cis.TUGraz.at/igi/oaich/. [aahk-tct-02] *URL:* http://www.cis.TUGraz.at/igi/oaich/publications.html. *Succeeds:* aak-ctps-01.

369 Oswin Aichholzer, Franz Aurenhammer, Christian Icking, Rolf Klein, Elmar Langetepe, and Günter Rote. φ-self-approaching curves. Technical Report 226, Department of Computer Science, FernUniversität Hagen, Germany, 1997. [aaiklr-psac-97] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr226.pdf. *Precedes:* aaiklr-gsac-98.

370 Oswin Aichholzer, Franz Aurenhammer, Christian Icking, Rolf Klein, Elmar Langetepe, and Günter Rote. Generalized self-approaching curves. In *Abstracts 14th European Workshop Comput. Geom.*, pages 15–17. Universitat Polytènica de Catalunya, Barcelona, 1998. [aaiklr-gsac-98] *Succeeds:* aaiklr-psac-97. *Precedes:* aaiklr-gsac-98p.

371 Oswin Aichholzer, Franz Aurenhammer, Christian Icking, Rolf Klein, Elmar Langetepe, and Günter Rote. Generalized self-approaching curves. In *Proc. 9th Annu. Internat. Sympos. Algorithms Comput.*, volume 1533 of *Lecture Notes Comput. Sci.*, pages 317–326. Springer-Verlag, 1998. [aaiklr-gsac-98p] *Succeeds:* aaiklr-gsac-98. *Precedes:* aaiklr-gsac-01.

372 Oswin Aichholzer, Franz Aurenhammer, Christian Icking, Rolf Klein, Elmar Langetepe, and Günter Rote. Generalized self-approaching curves. *Discrete Appl. Math.*, 109:3–24, 2001. [aaiklr-gsac-01] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr226.pdf. *Succeeds:* aaiklr-gsac-98p. *Cites:* admss-esstl-95, cfg-upg-90, ik-skpcs-95, ikl-sac-99, lc-tasso-99, lsksc-ncssu-97, ls-pinos-97, r-cic-94, rs-addce-91, ZZZ.

373 Oswin Aichholzer, Franz Aurenhammer, and Hannes Krasser. Enumerating order types for small point sets with applications. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 11–18, 2001. [aak-eotsp-01]

374 Oswin Aichholzer, Franz Aurenhammer, and Hannes Krasser. On compatible triangulations of point sets. In *Abstracts 17th European Workshop Comput. Geom.*, pages 23–26. Freie Universität Berlin, 2001. [aak-ctps-01]

375 Oswin Aichholzer, Franz Aurenhammer, Günter Rote, and Yin-Feng Xu. Constant-level greedy triangulations approximate the mwt well. In Ding-Zhu Du, Xiang-Sun Zhang, and Kan Cheng, editors, *Proc. Second Internat. Symp. Operations Research and its Applications, Guilin, China, December 11–13, 1996*, volume 2 of *Lecture Notes in Operations Research*, pages 309–318, Beijing, 1996. World Publishing Corp. [aarx-clgta-96] *Precedes:* aarx-clgta-97.

376 Oswin Aichholzer, Franz Aurenhammer, Günter Rote, and Yin-Feng Xu. Constant-level greedy triangulations approximate the MWT well. In *??*, volume 2?, pages ??–??, 1998? to appear. [aarx-clgta-97] *Succeeds:* aarx-clgta-96. *Abstract:* Exploiting the concept of so-called light edges, we introduce a new way of defining the greedy triangulation GT(S) of a point set S. It provides a decomposition of GT(S) into levels, and the number of levels allows us to bound the total edge length of GT(S). In particular, we show —GT(S)— ¡= $3 \times 2^{k+1}$ —MWT(S)—, where k is the number of levels and MWT(S) is the minimum-weight triangulation of S. This constitutes the first non-trivial upper bound on —GT(S)— for general points sets S.

377 Oswin Aichholzer, Franz Aurenhammer, Michael Taschwer, and Günter Rote. Triangulations intersect nicely. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 220–229, 1995. [aatr-tin-95] *Keywords:* matching, minimum weight triangulation, greedy triangulation. *Precedes:* aacktrx-tin-96. *Cites:* b-gtic-79, cx-cistp-95, dfpn-stdt-88, ddmw-fgta-94, dds-saeid-92, dra-sltgt-95, e-atccd-90, gj-cigtn-79, g-segta-89, hk-nammb-73, k-csmwt-94, ll-fagt-92, l-esta-94, l-conm-76, l-scsi-77, t-dsna-83, w-eucdt-93, x-mwtpp-92, yxy-cdapp-94, ZZZ.

378 Oswin Aichholzer, David Bremner, Erik D. Demaine, Henk Meijer, Vera Sacristán, and Michael Soss. Long proteins with unique optimal foldings in the H-P model. In *Abstracts 17th European Workshop Comput. Geom.*, pages 59–62. Freie Universität Berlin, 2001. [abdmss-lpuof-01]

379 Oswin Aichholzer, Carmen Cortés, Erik D. Demaine, Vida Dujmović, Jeff Erickson, Henk Meijer, Mark Overmars, Belén Palop, Suneeta Ramaswami, and Godfried T. Toussaint. Flipturning polygons. In *Proc. Japan Conf. Discrete Comput. Geom.*, Lecture Notes Comput. Sci., November 2000. To appear in *Discrete Comput. Geom.*. [acddemoprt-fp-00]

380 O. Aichholzer, E. D. Demaine, J. Erickson, F. Hurtado, M. Overmars, M. Soss, and G. T. Toussaint. Reconfiguring convex polygons. *Comput. Geom. Theory Appl.*, 20:85–95, 2001. [adehost-rcp-01]

381 Oswin Aichholzer and Ferran Hurtado. Edge operations on non-crossing spanning trees. In *Abstracts 16th European Workshop Comput. Geom.*, pages 121–125. Ben-Gurion University of the Negev, 2000. [ah-eoncs-00]

382 Oswin Aichholzer and Günter Rote. New greedy triangulation algorithms. In *Abstracts 12th European Workshop Comput. Geom.*, pages 11–14. Universität Münster, 1996. [ar-ngta-96v]

Oswin Aichholzer. See also [564–566, 4436, 6563].

383 M. Aigner and G. M. Ziegler. *Proofs from THE BOOK*. Springer-Verlag, Berlin, 1998. [az-pftb-98]

P. J. Ainslie. See also [9120].

384 John Milligan Airey. *Increasing Update Rates in the Building Walkthrough System with Automatic Model-space Subdivision and Potentially Visible Set Calculations*. PhD thesis, Dept. of Computer Science, University of North Carolina, Chapel Hill, 1990. [a-iurbw-90] *Keywords:* doctoral thesis.

385 J. M. Airey, J. H. Rohlf, and F. P. Brooks, Jr. Towards image realism with interactive update rates in complex virtual building environments. *ACM Siggraph Special Issue on 1990 Symposium on Interactive 3D Graphics*, 24(2):41–50, 1990. [arb-tiriu-90]

K. Aizawa. See also [10031–10033].

386 V. G. Ajjanagadde and L. M. Patniak. Design and performance evaluation of a systolic architecture for hidden surface removal. *Comput. Graph. (UK)*, 12(1):71–74, 1988. [ap-dpesa-88] *Keywords:* hidden line/surface elimination, parallel computation.

387 M. Ajtai. A lower bound for finding predecessors in Yao's cell probe model. *Combinatorica*, 8(3):235–247, 1988. [a-lbfpy-88]

388 M. Ajtai, V. Chvátal, M. Newborn, and E. Szemerédi. Crossing-free subgraphs. *Ann. Discrete Math.*, 12:9–12, 1982. [acns-cfs-82]

389 M. Ajtai, J. Komlós, W. Steiger, and E. Szemerédi. Deterministic selection in $O(\log\log n)$ time. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 188–195, 1986. [akss-dsot-86]

390 M. Ajtai, J. Komlos, W. L. Steiger, and E. Szemeredi. Optimal parallel selection has complexity $o(\log\log n)$. *J. Comput. Syst. Sci.*, 38(1):125–133, 1989. [akss-opshc-89] *Keywords:* parallel computation, selection, lower bound.

391 M. Ajtai, J. Komlós, and E. Szemerédi. An $O(n \log n)$ sorting network. In *Proc. 15th Annu. ACM Sympos. Theory Comput.*, pages 1–9, 1983. [aks-osn-83]

392 M. Ajtai, J. Komlós, and E. Szemerédi. Sorting in $c \log n$ parallel steps. *Combinatorica*, 3:1–19, 1983. [aks-scps-83]

393 M. Ajtai, J. Komlós, and G. Tusnády. On optimal matchings. *Combinatorica*, 4:259–264, 1984. [akt-om-84]

394 M. Ajtai and N. Megiddo. A deterministic $poly(\log\log n)$-time n-processor algorithm for linear programming in fixed dimension. *SIAM J. Comput.*, 25:1171–1195, 1996. [am-dptnp-96]

395 M. Ajtai and N. Megiddo. A deterministic $poly(\log\log n)$-time n-processor algorithm for linear programming in fixed dimensions. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 327–338, 1992. [am-dptnp-92]

T. Akama. See also [12680].

396 Kurt Akeley. Reality engine graphics. In *Proc. SIGGRAPH '93*, In *Comput. Graph.* Proceedings, Annual Conference Series, pages 109–116. ACM SIGGRAPH, Addison-Wesley, 1993. [a-reg-93]

397 S. Akella, W. Huang, K. M. Lynch, and M. T. Mason. Sensorless parts feeding with a one joint robot. In J.-P. Laumond and M. H. Overmars, editors, *Algorithms for Robotic Motion and Manipulation*. A. K. Peters, Wellesley, MA, 1996. [ahlm-spfoj-96]

398 S. Akella and M. T. Mason. Posing polygonal objects in the plane by pushing. In *Proc. 9th IEEE Internat. Conf. Robot. Autom.*, pages 2255–2268, 1992. [am-ppopp-92]

399 S. B. Akers, D. Harel, and B. Krishnamurthy. The star graph: An attractive alternative to the n-cube. In *Proc. Int. Conf. on Parralel Processing*, pages 393–400, 1987. [ahk-sgaan-87]

400 S. B. Akers and B. Krishnamurthy. A group theoretic model for symmetric interconnection networks. In *Proc. Internat. Conf. Parallel Process.*, pages 216–223, 1986. [ak-gtmsi-86]

401 S. B. Akers and B. Krishnamurthy. A group theoretic model for symmetric interconnection networks. *IEEE Trans. Comput.*, 38(4):555–566, 1989. [ak-gtmsi-38]

402 S. B. Akers and B. Krishnamurthy. The fault tolerance of star graphs. In *Proc. 2nd International Conference on Supercomputing*, 1987. [ak-ftsg-87]

403 H. Akima. A method of bivariate interpolation on smooth surface fitting for irregularly distributed data points. *ACM Trans. Math. Softw.*, 4:148–159, 1978. [a-mbiss-78] *Precedes:* a-a526b-78. *Annote:* Fits a 5th degree polynomial in each triangle. Uses DT. Incremental algorithm—adds points outside the convex hull.

404 H. Akima. Algorithm 526: Bivariate interpolation and smooth surface fitting for irregularly distributed data points. *ACM Trans. Math. Softw.*, 4(2):160–164, 1978. [a-a526b-78] *Succeeds:* a-mbiss-78.

405 H. Akima. On estimating partial derivatives for bivariate interpolation of scattered data. *Rocky Mountain J. Math.*, 14(1):41–52, 1984. [a-epdbi-84]

A. P. Akimov. See also [406].

406 I. Ya. Akimova and A. P. Akimov. Weighted Voronoi partitions. *Soviet Journal of Computer and Systems Sciences (English translation of Tekhnicheskaya Kibernetika)*, 26(6):75–80, November 1988. [aa-wvp-88] *Keywords:* weighted euclidean metric, Voronoi partitions, Voronoi diagrams, geometrical problems, point set. *Annote:* Multiplicative weights in n dimensions. Incremental algorithm. *Abstract:* Weighted Voronoi partitions are proposed in this paper as a generalization of the Voronoi partition. Properties of such partitions are obtained, and an algorithm developed for their construction. Certain applied problems whose solution would benefit from the use of Voronoi diagrams are indicated. (Author abstract) 13 Refs.

407 Jin Akiyama. Why Taro can do geometry. In *Proc. 9th Canad. Conf. Comput. Geom.*, page 112, 1997. [a-wtcdg-97]

408 J. Akiyama and N. Alon. Disjoint simplices and geometric hypergraphs. In G. S. Blum, R. L. Graham, and J. Malkevitch, editors, *Combinatorial Mathematics; Proc. of the Third International Conference (New York, 1985)*, volume 555, pages 1–3. Annals of the New York Academy of Sciences, 1989. [aa-dsgh-89]

409 J. Akiyama and J. Urrutia. A note on balanced colouring of lattice points. *Discrete Math.*, 83(1):123–126, 1990. [au-nbclp-90]

410 J. Akiyama and J. Urrutia. Simple alternating path problem. *Discrete Math.*, 84(1):101–103, 1990. [au-sapp-90] *Keywords:* points, convex polygons, connect-the-dots problem.

411 T. Akiyama, T. Nishizeki, and N. Saito. NP-completeness of the Hamiltonian cycle problem for bipartite graphs. *J. Inform. Process.*, 3:73–76, 1980. [ans-nchcp-80]

B. Akker. See also [2068].

412 S. Akl, F. Dehne, J.-R. Sack, and N. Santoro, editors. *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1995. [adss-p4wad-95]

413 S. Akl, H. Meijer, and D. Rappaport. Parallel geometry on a grid. Technical Report cisc 88–238, Dept. Computer Inf. Sci. Queen's Univ., Kingston, Ontario, Canada, 1988. [amr-pgg-88] *Keywords:* parallel computations.

S. Akl. See also [10934].

414 S. G. Akl. A constant-time parallel algorithm for computing convex hulls. *BIT*, 22:130–134, 1982. [a-ctpac-82] *Keywords:* parallel computations, convex hull.

415 S. G. Akl. A note on Euclidean matchings, triangulations, and spanning trees. *Journal of Combinatorics, Information and System Sciences*, 8(3):169–174, 1983. [a-nemts-83] *Keywords:* geometric graphs, triangulation, minimal spanning tree, matching.

416 S. G. Akl. *An analysis of various aspects of the traveling salesman problem*. Ph.D. thesis, School Comput. Sci., McGill Univ., Montreal, PQ, 1978. [a-avats-78] *Keywords:* doctoral thesis.

417 S. G. Akl. Comments on: G. Manacher, an application of pattern matching to a problem in geometrical complexity. *Inform. Process. Lett.*, 7(2):86, 1978. [a-cgmap-78] *Keywords:* polygon similarity, affine maps. *Succeeds:* m-apmpg-76.

418 S. G. Akl. Corrigendum on convex hull algorithms. *Inform. Process. Lett.*, 10(3):168, 1980. [a-ccha-80]

419 S. G. Akl. On maximal triangulations, optimal drawings and Hamilton cycles. Report 78-67, Dept. Comput. Inform. Sci., Queen's Univ., Kingston, ON, 1978. [a-mtodh-78]

420 S. G. Akl. On the expected number of optimal and near-optimal solutions to the Euclidean travelling salesman problem. *J. Comp. Math. Appl.*, 7(4):287–288, 1981. [a-enono-81]

421 S. G. Akl. Optimal algorithms for computing convex hulls and for sorting. *Computing*, 33:1–11, 1984. [a-oacch-84]

422 S. G. Akl. Optimal parallel algorithms for selection, sorting and computing convex hulls. In G. T. Toussaint, editor, *Computational Geometry*, pages 1–22. North-Holland, Amsterdam, Netherlands, 1985. [a-opass-85]

423 S. G. Akl. *Parallel Sorting Algorithms*. Academic Press, Orlando, Florida, 1985. [a-psa-85] *ISBN:* 0-12-047680-0.

424 S. G. Akl. *The Design and Analysis of Parallel Algorithms*. Prentice Hall, Englewood Cliffs, NJ, 1989. [a-dapa-89]

425 S. G. Akl. Two remarks on a convex hull algorithm. *Inform. Process. Lett.*, 8(2):108–109, 1979. [a-trcha-79] *Keywords:* convex hull, counterclockwise test, angle test, geometrical primitives.

426 S. G. Akl and K. A. Lyons. *Parallel Computational Geometry*. Prentice Hall, 1993. [al-pcg-93]

427 S. G. Akl and H. Meijer. On the average-case of "bucketing" algorithms. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 381–388. 1981. [am-acba-81] *Precedes:* am-acba-82.

428 S. G. Akl and H. Meijer. On the average-case of "bucketing" algorithms. *J. Algorithms*, 3(1):9–13, 1982. [am-acba-82] *Keywords:* average-case analysis, bucketing. *Succeeds:* am-acba-81.

429 S. G. Akl and J. Meijer. Parallel binary search. *IEEE Trans. Parallel Distrib. Syst.*, 1:247–250, 1990. [am-pbs-90]

430 S. G. Akl, K. Qiu, and I. Stojmenović. Computing the Voronoi diagram on the star and pancake interconnection networks. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 353–358, 1992. [aqs-cvdsp-92] *Cites:* ak-gtmsi-38, ahk-sgaan-87, ak-ftsg-87, jl-pgamc-90, lp-lppsi-77, ms-esasg-90, ps-cgi-85, aqs-dccgs-91t, l-cvdmc-85, qma-prspn-91, s-cgh-88, ZZZ.

431 S. G. Akl, K. Qui, and I. Stojmenović. Computational geometry on the star and pancake networks. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 252–255, 1991. [aqs-cgspn-91i]

432 S. G. Akl, K. Qui, and I. Stojmenovic. Data communication and computational geometry on the star and pancake interconnection networks. Technical Report 91-301, Dept. Comp and Info Sci, Queens's University, April 1991. [aqs-dccgs-91t] *Precedes:* aqs-cgspn-91i.

433 S. G. Akl and G. T. Toussaint. A fast convex hull algorithm. *Inform. Process. Lett.*, 7(5):219–222, 1978. [at-fcha-78]

434 S. G. Akl and G. T. Toussaint. Addendum to "An improved algorithm to check for polygon similarity". *Inform. Process. Lett.*, 8(3):157–158, 1979. [at-aiacp-79] *Succeeds:* at-iacps-78.

435 S. G. Akl and G. T. Toussaint. An improved algorithm to check for polygon similarity. *Inform. Process. Lett.*, 7:127–128, 1978. [at-iacps-78] *Precedes:* at-aiacp-79.

436 S. G. Akl and G. T. Toussaint. Efficient convex hull algorithms for pattern recognition applications. In *Proc. 4th IEEE Internat. Conf. Pattern Recogn.*, pages 483–487, 1978. [at-echap-78] *Keywords:* convex hull, simple polygon, average-case analysis, average size of convex hull, empirical analysis, Graham's scan.

S. G. Akl. See also [10933,10935,10936, 13025].

437 V. Akman. An algorithm for determining an opaque minimal forest of a convex polygon. *Inform. Process. Lett.*, 24(3):193–198, 1987. [a-adomf-87] *Keywords:* triangulation, Steiner trees, minimum spanning trees, visibility, convex polygon.

438 V. Akman. Geometry and graphics applied to robotics. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 619–638. Springer-Verlag, Berlin, West Germany, 1988. [a-ggar-88]

439 V. Akman. *Shortest Paths Avoiding Polyhedral Obstacles In 3-Dimensional Euclidean Space*. PhD thesis, Computer and Systems Engineering, Rensselaer Polytechnic Institute, Troy, NY, 1985. [a-spapo-85] *Keywords:* doctoral thesis.

440 V. Akman. Solution to "problem 82-5". *J. Algorithms*, 4:184–187, 1983. [a-sp825-83] *Keywords:* triangulation, subdivision.

441 V. Akman. *Unobstructed Shortest Paths in Polyhedral Environments*, volume 251 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1987. [a-usppe-87] *Keywords:* book, polyhedra, motion planning.

442 Varol Akman and Wm. Randolph Franklin. On the question 'is $\sum_1^n \sqrt{a_i} \leq l$?'. *Bull. EATCS*, 28:16–20, February 1986. [af-qis-86] *Keywords:* motion planning, complexity theory.

443 Varol Akman and Wm. Randolph Franklin. Ray representation for k-d trees. *Pattern Recogn. Lett.*, ??:315–320, November 1989. [af-rrkdt-89] *Keywords:* oct trees, measure, rays.

444 Varol Akman and Wm. Randolph Franklin. Representing objects as rays, or how to pile up an octree? *Computers and Graphics*, 13(3):373–379, 1989. [af-rorhp-89] *Keywords:* oct trees, measure, polyhedra, rays.

445 V. Akman, Wm. Randolph Franklin, Mohan Kankanhalli, and Chandrasekhar Narayanaswami. Geometric computing and the uniform grid data technique. *Comput. Aided Design*, 21(7):410–420, 1989. [afkn-gcugd-89] *Keywords:* intersection, CAD, grids.

Varol Akman. See also [5472, 5473, 5490–5499].

446 T. Akutsu. Algorithms for determining the geometrical congruity in two and three dimensions. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 279–288. Springer-Verlag, 1992. [a-adgct-92]

447 Tatsuya Akutsu. On determining the congruence of point sets in d dimensions. *Comput. Geom. Theory Appl.*, 9(4):247–256, 1998. [a-dcpsd-98] *Succeeds:* a-dcpsh-94.

448 Tatsuya Akutsu. On determining the congruity of point sets in higher dimensions. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 38–46. Springer-Verlag, 1994. [a-dcpsh-94] *Precedes:* a-dcpsd-98.

449 T. Akutsu. Substructures search and alignment algorithms for three-dimensional protein structures. In *Proc. SIGAL-41*, pages 1–8, 1994. [a-ssaat-94]

450 Tatsuya Akutsu, Yasukazu Aoki, Susumi Hasegawa, Hiroshi Imai, and Takeshi Tokuyama. The sum of smaller endpoint degree over edges of graphs and its. applications to geometric problems. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 145–148, 1991. [aahit-ssede-91] *Cites:* ce-oails-88, cn-asla-85, e-acg-87, egppss-acptc-88, i-nfalt-83, m-fppa2-89, os-nrdca, ZZZ.

451 T. Akutsu and M. M. Halldorsson. On the approximation of largest common subtrees and largest common point sets. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 405–413. Springer-Verlag, 1994. [ah-alcsl-94]

452 T. Akutsu, H. Tamaki, and T. Tokuyama. Distribution of distances and triangles in a point set and algorithms for computing the largest common point set. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 314–323, 1997. [att-ddtps-97] *Cites:* aass-sdp-93, a-ssaat-94, a-dcpsh-94, amww-cssgo-88, a-oagc-87, b-ghtda-81, cghkkk-gpmem-93, cegsw-ccbac-90, ee-scpg-94, e-sdnp-46, e-sdnpe-60, ep-sepg-71, gmo-pmagp-94, h-gaaps-93, hh-gicv-92, ir-cerrp-96, keb-pht-91, m-cag-, m-dddnp-52, mp-rdcg-93, m-hmcs-96, pa-cg-95, pt-gdfcp-96, s-nadcp-84, st-epdg-83, s-cnhep-97, vs-dctds-91, ZZZ.

453 A. J. Al-Khalili, D. Al-Khalili, and K. Ammar. An algorithm for polygon conversion to boxes for VLSI layouts. *Integration*, 6:291–308, 1988. [aaa-apcbv-88] *Keywords:* polygon, decomposition, orthogon.

D. Al-Khalili. See also [453].

454 F. Al-Thukair, A. Pelc, I. Rival, and J. Urrutia. Motion planning, two-directional point representations, and ordered sets. *SIAM J. Discrete Math.*, 4(2):151–163, 1991. [aprumptdp-91] *Keywords:* motion planning.

455 V. B. Nitya el al. Linear octree by volume intersection using perspective silhouettes. *Pattern Recogn. Lett.*, ??:781–788, 1992. [n-loviu-92]

456 S. R. Ala. Design methodology of boundary data structures. *Internat. J. Comput. Geom. Appl.*, 1(3):207–226, 1991. [a-dmbds-91] *Keywords:* boundary data structures, optimization, symmetric data structure, winged edge, storage and access time.

457 S. R. Ala. Performance anomalies in boundary data structures. *IEEE Comput. Graph. Appl.*, 12(2):49–58, 1992. [a-pabds-92]

V. S. Alagar. See also [10975].

R. Alami. See also [8518].

A. Albano. See also [85].

458 G. Albers. *Three-Dimensional Dynamic Voronoi Diagrams*. PhD thesis, University of Würzburg, July 1991. in German. [a-tddvd-91] *Keywords:* doctoral thesis.

459 G. Albers, Leonidas J. Guibas, Joseph S. B. Mitchell, and T. Roos. Voronoi diagrams of moving points. *Internat. J. Comput. Geom. Appl.*, 8:365–380, 1998. [agmr-vdmp-98] *Keywords:* Voronoi diagrams, Davenport-Schinzel sequences. *Succeeds:* gmr-vdmpp-92, ar-vdmph-92, gmr-vdmpp-91t.

460 G. Albers and T. Roos. Voronoi diagrams of moving points in higher dimensional spaces. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 399–409. Springer-Verlag, 1992. [ar-vdmph-92] *Keywords:* Voronoi diagrams, Davenport-Schinzel sequences. *Precedes:* agmr-vdmp-98.

G. Albers. See also [11369].

461 Susanne Albers, Klaus Kursawe, and Sven Schuierer. Exploring unknown environments with obstacles. In *Proc. 10th ACM-SIAM Sympos. Discrete Algorithms*, pages 842–843, 1999. [aks-eueo-99]

462 D. Alberts, C. Gutwenger, P. Mutzel, and S. Näher. AGD-Library: A library of algorithms for graph drawing. In *Proc. Workshop on Algorithm Engineering*, pages 112–123, September 1997. [agmn-allag-97] *URL:* http://www.dsi.unive.it/~wae97/proceedings/ONLY_PAPERS/pap12.ps.gz.

463 D. Alberts and M. R. Henzinger. Average case analysis of dynamic graph algorithms. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 312–321, 1995. [ah-acadg-95]

D. Alberts. See also [360].

464 M. Albertson, R. Haas, and J. O'Rourke. Some results on clamping a polygon. Technical Report 003, Dept. Comput. Sci., Smith College, 1990. [aho-srcp-90] *Keywords:* robotics, gripping, clamping. *Precedes:* aho-srcp-95.

465 M. Albertson, R. Haas, and J. O'Rourke. Some results on clamping a polygon. *Congr. Numer.*, 109:33–50, 1995. [aho-srcp-95] *Keywords:* robotics, gripping, clamping. *Succeeds:* aho-srcp-90.

466 M. Albertson and C. J. O'Keefe. Covering regions by squares. *SIAM J. Algebraic Discrete Methods*, 2(3):240–243, 1981. [ao-crs-81] *Keywords:* covering, orthogon.

467 M. O. Albertson and J. P. Hutchinson. *Discrete Mathematics with Algorithms.* John Wiley & Sons, New York, 1988. [ah-dma-88]

Lyuba S. Alboul. See also [361].

468 A. Albrecht. On hardware algorithms for geometric computation problems. In *Proc. IFIP 10th World Comput. Congr., Dublin 1986, Amsterdam*, pages 989–994, 1986. [a-hagcp-86] *Keywords:* parallel computations, Delaunay triangulation, point location, diameter relative neighborhood graph.

469 A. Albrecht. On the circuit complexity of planar objects. In *Proc. 7th IEEE Internat. Conf. Pattern Recogn.*, pages 468–470, 1984. [a-ccpo-84]

470 A. Albrecht. On the VLSI complexity of some geometrical computation problems. Report 86, Sektion Math., Humboldt Univ., Berlin, West Germany, 1984. [a-vcsgc-84]

R. Albrecht. See also [2565].

471 A. D. Aleksandrov and U. A. Zalgaller. *Intrinsic Geometry of Surfaces.* American Mathematical Society, Providence, RI, 1967. [az-igs-67]

472 Lyudmil Aleksandrov, Mark Lanthier, Anil Maheshwari, and Jörg-Rüdiger Sack. An ϵ-approximation algorithm for weighted shortest path queries on polyhedral surfaces. In *Abstracts 14th European Workshop Comput. Geom.*, pages 19–21. Universitat Polytènica de Catalunya, Barcelona, 1998. [alms-eaaws-98]

473 L. Aleksandrov, M. Lanthier, A. Maheshwari, and J.-R. Sack. An ϵ-approximation algorithm for weighted shortest paths on polyhedral surfaces. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 11–22. Springer-Verlag, 1998. [alms-eaaws-98b]

474 R. Aleliunas, R. M. Karp, R. J. Lipton, L. Lovász, and C. Rackoff. Random walks, universal traversal sequences, and the complexity of maze problems. In *Proc. 20th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 218–223, 1979. [akllr-rwuts-79]

475 Panagiotis Alevizos. *Arrangements de rayons: application à la reconstruction de formes planes.* Thèse de doctorat en sciences, Université Paris-Sud, Orsay, France, 1988. [a-adral-88] *Keywords:* doctoral thesis.

476 Panagiotis Alevizos, V. Bistiolas, D. Sofotassios, and A. Tsakalidis. An optimal algorithm for computing the closure of a set of planar rectangles and locked-transaction systems. Technical Report 90.11.33, Univ. of Patras, Greece, 1990. [abst-oaccs-90]

477 Panagiotis Alevizos, Jean-Daniel Boissonnat, and Franco P. Preparata. An optimal algorithm for the boundary of a cell in a union of rays. In *Geometry and Robotics*, volume 391 of *Lecture Notes Comput. Sci.*, pages 247–274. 1989. [abp-oabcu-89]

478 Panagiotis Alevizos, Jean-Daniel Boissonnat, and Franco P. Preparata. An optimal algorithm for the boundary of a cell in a union of rays. *Algorithmica*, 5:573–590, 1990. [abp-oabcu-90] *Succeeds:* abp-oabcu-89. *Precedes:* abp-oabcu-91.

479 Panagiotis Alevizos, Jean-Daniel Boissonnat, and Franco P. Preparata. An optimal algorithm for the boundary of a cell in a union of rays: Corrigendum. *Algorithmica*, 6:292–293, 1991. [abp-oabcu-91] *Succeeds:* abp-oabcu-90.

480 Panagiotis Alevizos, Jean-Daniel Boissonnat, and F. P. Preparata. On the boundary of a union of rays. In *Proc. 6th Sympos. Theoret. Aspects Comput. Sci.*, volume 349 of *Lecture Notes Comput. Sci.*, pages 72–83. Springer-Verlag, 1989. [abp-bur-89]

481 Panagiotis Alevizos, Jean-Daniel Boissonnat, and Mariette Yvinec. On the order induced by a set of rays, with application to the probing of non-convex polygons. Manuscript, INRIA Sophia-Antipolis, Valbonne, France, 1989. [aby-oisra-89] *Keywords:* robotics, probing, shape, worst-case analysis, rays, polygons, two-dimensional.

482 Panagiotis D. Alevizos. An algorithm for orthogonal range search in $d \geq 3$ dimensions. In *Abstracts 14th European Workshop Comput. Geom.*, pages 23–25. Universitat Polytènica de Catalunya, Barcelona, 1998. [a-aorsd-98] *Cites:* cg-fc2a-86, ht-fafnc-84, ps-cgi-85, ZZZ.

483 Panagiotis D. Alevizos, Jean-Daniel Boissonnat, and Mariette Yvinec. An optimal $O(n \log n)$ algorithm for contour reconstruction from rays. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 162–170, 1987. [aby-ooacr-87] *Precedes:* aby-nccr-90. *Cites:* aes-solac-85, b-gstds-84, b-dscns-84, c-clps-85, cg-vippg-85, cy-sp-83, cr-tgsps-85, k-ss-73, l-egimv-85, o-uocd-86, ps-cgi-85, r-cscsl-87, rit-cscsl-86,.

484 Panagiotis D. Alevizos, Jean-Daniel Boissonnat, and Mariette Yvinec. Non-convex contour reconstruction. *J. Symbolic Comput.*, 10:225–252, 1990. [aby-nccr-90] *Keywords:* reconstruction, shape, polygon, probing. *Succeeds:* aby-ooacr-87.

485 Panagiotis D. Alevizos, Jean-Daniel Boissonnat, and Mariette Yvinec. Probing non-convex polygons. In *Proc. 6th IEEE Internat. Conf. Robot. Autom.*, pages 202–208, 1989. [aby-pncp-89]

486 J. R. Alexander, J. Beck, and W. W. L. Chen. Geometric discrepancy theory and uniform distribution. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 10, pages 185–208. CRC Press LLC, Boca Raton, FL, 1997. [abc-gdtud-97]

487 R. Alexander. *Construction of Optimal-Path Maps for Homogeneous-Cost-Region Path-Planning Problems.* Ph.D. thesis, Computer Science, U.S. Naval Postgraduate School, Monterey, CA, 1989. [a-copmh-89] *Keywords:* doctoral thesis.

488 R. Alexander. Geometric methods in the theory of uniform distribution. *Combinatorica*, 10(2):115–136, 1990. [a-gmtud-90]

489 R. Alexander. Lipschitzian mappings and total mean curvature of polyhedral surfaces i. *Trans. Amer. Math. Soc.*, 288(2):661–678, 1985. [a-lmtmc-85]

490 R. Alexander. Principles of a new method in the study of irregularities of distribution. *Invent. Math.*, 103:279–296, 1991. [a-pnmsi-91]

491 R. Alexander and N. Rowe. Geometrical principles for path planning by optimal-path-map construction for linear and polygonal homogeneous-region terrain. Technical report, Computer Science, U.S. Naval Postgraduate School, Monterey, CA, 1989. [ar-gpppo-89]

492 R. Alexander and N. Rowe. Path planning by optimal-path-map construction for homogeneous-cost two-dimensional regions. In *Proc. IEEE Internat. Conf. Robot. Autom.*, 1990. [ar-ppopm-90]

493 G. L. Alexanderson and J. E. Wetzel. Arrangements of planes in space. *Discrete Math.*, 34:219–240, 1981. [aw-aps-81]

494 G. L. Alexanderson and J. E. Wetzel. Dissections of a plane oval. *Amer. Math. Monthly*, 84:442–449, 1977. [aw-dpo-77]

495 G. L. Alexanderson and J. E. Wetzel. Simple partitions of space. *Math. Mag.*, 51:220–225, 1978. [aw-sps-78]

496 N. A. Alexandridis and P. D. Tsanakas. An encoding scheme for the efficient representation of hierarchical image structures. *Inform. Process. Lett.*, 25:199–206, 1987. [at-eserh-87]

497 P. Alexandroff and H. Hopf. *Topologie I*, volume 45 of *Grundlehren der math.* Julius Springer, Berlin, Germany, 1935. [ah-t1-35]

498 A. D. Alexandrov. *Die innere Geometrie der konvexen Flächen.* Akademie-Verlag, Berlin, Germany, 1955. [a-digdk-55]

499 A. D. Alexandrov. *Konvexe Polyeder.* Akademie-Verlag, Berlin, West Germany, 1958. [a-kp-58]

500 M. Alfaro, J. Brock, J. Foisy, N. Hodges, and J. Zimba. Compound soap bubbles in the plane. Small Geometry Group Report, Williams College, 1990. [abfhz-csbp-90]

501 M. Alfaro, M. Conger, K. Hodges, A. Levy, R. Kochar, L. Kuklinski, Z. Mahmood, and K. von Haam. Segments can meet in fours in energy-minimizing networks. *J. Und. Math.*, ??:9–20, 1990. [achlkkmh-scmfe-90]

502 M. Alfaro, M. Conger, K. Hodges, A. Levy, R. Kochar, L. Kuklinski, Z. Mahmood, and K. von Haam. The structure of singularities in Φ-minimizing networks in R^2. *Pacific J. Math.*, ??, 1991. To appear. [achlkkmh-sspmn-91]

503 P. Alfeld. A case study of multivariate piecewise polynomials. In G. Farin, editor, *Geometric Modeling: Algorithms and New Trends*, pages 149–160. SIAM Publications, 1987. [a-csmpp-87]

504 P. Alfeld. A discrete C^1 interpolant for tetrahedral data. *Rocky Mountain J. Math.*, 14:5–16, 1984. [a-dcitd-84]

505 P. Alfeld and R. E. Barnhill. A transfinite C^2 interpolant over triangles. *Rocky Mountain J. Math.*, 14(1):17–39, 1984. [ab-tcit-84]

V. R. Algazi. See also [2398, 2399].

C. Stein. See also [3549].

506 M.-E. Algorri and F. Schmitt. Surface reconstruction from unstructured 3d data. *Comput. Graph. Forum*, 15(1):47–60, March 1996. [as-sru3d-96]

507 F. Alizadeh, R. M. Karp, L. A. Newberg, and D. K. Weisser. Physical mapping of chromosomes: A combinatorial problem in molecular biology. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 371–381, 1993. [aknw-pmccp-93]

D. Allen. See also [5342].

508 S. Allen and D. Dutta. Determination and evaluation of support structures in layered manufacturing. *Journal of Design and Manufacturing*, 5:153–162, 1995. [ad-dessl-95]

509 S. Allen and D. Dutta. Wall thickness control in layered manufacturing. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 240–247, 1997. [ad-wtclm-97] *Cites:* ad-dessl-95, kd-asplm-96, ZZZ.

510 Seth Allen and Debasish Dutta. Wall thickness control in layered manufacturing for surfaces with closed slices. *Comput. Geom. Theory Appl.*, 10:223–238, 1998. [ad-wtclm-98] *Succeeds:* ad-wtclm-97.

511 C. B. Allendoerfer. "Slope" in solid analytic geometry. *Amer. Math. Monthly*, 53:241–247, 1946. [a-ssag-46]

512 E. Allgower and S. Gnutzmann. An algorithm for piecewise linear approximation of an implicitly defined two-dimensional surfaces. *SIAM J. Numer. Anal.*, 24:452–469, 1987. [ag-aplai-87] *Keywords:* surface-approximation.

513 F. L. Allgower and P. H. Schmidt. Computing volumes of polyhedra. *Math. Comput.*, 46(173):171–174, 1986. [as-cvp-86] *Keywords:* volume.

514 Pierre Alliez and Mathieu Desbrun. Progressive compression for lossless transmission of triangles meshes. In *Siggraph 2001*, 2001. [ad-pcltt-01]

515 Pierre Alliez, Olivier Devillers, and Jack Snoeyink. Removing degeneracies by perturbing the problem or the world. In *Proc. 10th Canad. Conf. Comput. Geom.*, 1998. [ads-rdppw-98] *URL:* http://cgm.cs.mcgill.ca/cccg98/proceedings/cccg98-alliez-removing.ps.g%z. *Precedes:* ads-rdppw-00. *Cites:* ecs-ephgd-97, em-sstcd-90, kmm-ricav-93a, ms-getcc-88, y-gctsp-90, ZZZ. *Annote:* extended abstract.

516 Pierre Alliez, Olivier Devillers, and Jack Snoeyink. Removing degeneracies by perturbing the problem or the world. *Reliable Computing*, 6:61–79, 2000. Special Issue on Computational Geometry, to appear. [ads-rdppw-00] *URL:* http://www-sop.inria.fr/prisme/biblio/. *Succeeds:* ads-rdppw-98. *Abstract:* We describe two problem-specific approaches to remove geometric degeneracies that we call *perturbing the problem* and *perturbing the world*. Using as our primary examples 2-d and 3-d Delaunay triangulation with Euclidean and polygonal metrics, we show that these approaches lead to relatively simple and efficient perturbations of the points that do not depend on a fixed ordering or index. Thus, they produce canonical output, which is important for producing test suites and verifiers for randomized or dynamic geometric algorithms.

D. Allison. See also [2771].

517 D. C. S. Allison and M. T. Noga. Computing the convex hull of a set of points. *Computer Physics Commun.*, 43(3):381–386, 1987. [an-cchsp-87] *Keywords:* convex hull, points.

518 D. C. S. Allison and M. T. Noga. Some performance tests of convex hull algorithms. *BIT*, 24:2–13, 1984. [an-sptch-84]

519 D. C. S. Allison and M. T. Noga. The L_1 Traveling Salesman Problem. *Inform. Process. Lett.*, 18(4):195–199, 1984. [an-ltsp-84]

520 G. S. Almasi and A. Gottlieb. *Highly parallel computing*. Benjamin/Cummings, Redwood City, California, 1990. [ag-hpc-90]

521 H. M. Alnuweiri and V. K. Prasanna Kumar. An efficient VLSI architecture with applications to geometric problems. *Parallel Comput.*, 12(1):71–94, 1989. [apk-evaag-89] *Keywords:* parallel computations, convex hull, intersection, diameter, proximity.

522 H. M. Alnuweiri and V. K. Prasanna Kumar. Optimal geometric algorithms on fixed-size linear arrays and scan-line ... In *Proc. IEEE Internat. Conf. Comput. Vision Pattern. Recogn.*, pages 931–936, 1988. [apk-ogafs-88] *Keywords:* parallel computations, intersection, distance.

523 J. Aloimonos, I. Weiss, and A. Bandyopadhyay. Active vision. *Internat. J. Comput. Vision*, 2:333–356, 1988. [awb-av-88]

524 N. Alon. Eigenvalues, geometric expanders, sorting in rounds and Ramsey theory. *Combinatorica*, 6:207–219, 1986. [a-egesr-86]

525 N. Alon. Expanders, sorting in rounds and superconcentrators of limited depth. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 98–102, 1985. [a-esrsl-85]

526 N. Alon. Tools from higher algebra. In R. L. Graham, M. Grötschel, and L. Lovász, editors, *Handbook of Combinatorics*, pages 1749–1783. Elsevier, Amsterdam, 1995. [a-tha-95]

527 N. Alon and Y. Azar. Comparison-sorting and selecting in totally monotone matrices. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 403–408, 1992. [aa-csstm-92]

528 N. Alon and Y. Azar. Finding the approximate maximum. *SIAM J. Comput.*, 18(2):258–267, 1989. [aa-fam-89]

529 N. Alon and Y. Azar. On-line Steiner trees in the Euclidean plane. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 337–343, 1992. [aa-olste-92] *Keywords:* Steiner tree, points, on-line algorithms, competitive algorithms. *Precedes:* aa-olste-93. *Cites:* bm-tspkd-, bs-athet-80, cv-crcns-91, iw-dstp-91, gj-cigtn-79, m-gpinn-87, n-ps-82, rsl-ashts-77, st-aelup-85, w-spns-87, y-pctum-77, ZZZ.

530 N. Alon and Y. Azar. On-line Steiner trees in the Euclidean plane. *Discrete Comput. Geom.*, 10:113–121, 1993. [aa-olste-93] *Keywords:* Steiner tree, points, on-line algorithms, competitive algorithms. *Succeeds:* aa-olste-92. *Cites:* bm-tspkd-, bs-athet-80, cv-crcns-91, iw-dstp-91, gj-cigtn-79, m-gpinn-87, n-ps-82, rsl-ashts-77, st-aelup-85, w-spns-87, y-pctum-77, ZZZ.

531 N. Alon and Y. Azar. Parallel comparison algorithms for approximation problems. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 194–203, 1988. [aa-pcaap-88]

532 N. Alon, I. Bárány, Z. Füredi, and D. Kleitman. Point selections and weak ε-nets for convex hulls. *Combin., Probab. Comput.*, 1(3):189–200, 1992. [abfk-pswen-92]

533 N. Alon, I. Bárány, Z. Füredi, and D. J. Kleitman. Point selections and weak ε-nets for convex hulls. Manuscript, ??, 1991. [abfk-pswen-91]

534 N. Alon and P. Erdős. Disjoint edges in geometric graphs. *Discrete Comput. Geom.*, 4:287–290, 1989. [ae-degg-89]

535 N. Alon, Z. Füredi, and M. Katchalski. Separating pairs of points by standard boxes. *European J. Combin.*, 6(3):205–210, 1985. [afk-sppsb-85]

536 N. Alon, O. Goldreich, J. Håstad, and R. Peralta. Simple construction of almost k-wise independent random variables. *Random Structures and Algorithms*, 3:289–304, 1992. [aghp-scakw-92]

537 N. Alon and E. Győri. The number of small semispaces of a finite set of points in the plane. *J. Combin. Theory Ser. A*, 41:154–157, 1986. [ag-nssfs-86]

538 N. Alon, D. Haussler, and Emo Welzl. Partitioning and geometric embedding of range spaces of finite Vapnik-Chervonenkis dimension. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 331–340, 1987. [ahw-pgers-87] *Cites:* a-esrsl-85, a-egesr-86, f-lbcso-81, h-ct-67, hw-ensrq-87, l-cpe-79, s-dfs-72, vc-ucrfe-71, w-pr-82, yy-gaddg-85, ZZZ.

539 N. Alon and G. Kalai. A simple proof of the upper bound theorem. *European J. Combin.*, 6:211–214, 1985. [ak-spubt-85]

540 N. Alon and G. Kalai. Bounding the piercing number. *Discrete Comput. Geom.*, 13:245–256, 1995. [ak-bpn-95]

541 N. Alon, M. Katchalski, and W. R. Pulleyblank. Cutting disjoint disks by straight lines. *Discrete Comput. Geom.*, 4:239–243, 1989. [akp-cddsl-89]

542 N. Alon, M. Katchalski, and W. R. Pulleyblank. The maximum size of a convex polygon in a restricted set of points in the plane. *Discrete Comput. Geom.*, 4:245–251, 1989. [akp-mscpr-89]

543 N. Alon and D. Kleitman. Piercing convex sets and the Hadwiger–Debrunner (p, q)-problem. *Adv. Math.*, 96(1):103–112, 1992. [ak-pcs-92a] *Succeeds:* ak-pcs-92i.

544 N. Alon and D. J. Kleitman. Covering a square by small perimeter rectangles. *Discrete Comput. Geom.*, 1:1–7, 1986. [ak-csspr-86]

545 N. Alon and D. J. Kleitman. Piercing convex sets. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 157–160, 1992. [ak-pcs-92i] *Cites:* abfk-pswen-92, ak-spubt-85, b-gct-82, dgk-htir-63, d-cp-72, e-ubtfc-85, e-hrctt-93, f-ipcfc-74, g-iss-59, g-lcg-74, hd-uevzh-57, hdk-cgp-64, h-umkkm-23, kl-pgr-79, k-ipcs-84, s-tlip-86, t-grt-66, w-uekgf-65, w-dcnfc-75, w-uhgs-85, ZZZ.

546 N. Alon and N. Megiddo. Parallel linear programming in fixed dimension almost surely in constant time. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 574–582, 1990. [am-plpfd-90]

547 N. Alon and M. A. Perles. On the intersection of edges of a geometric graph by straight lines. *Discrete Math.*, 60:75–90, 1986. [ap-ieggs-86] *Keywords:* intersection, geometric graphs.

548 N. Alon, S. Rajagopalan, and Subhash Suri. Long non-crossing configurations in the plane. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 257–263, 1993. [ars-lnccp-93] *Cites:* aa-dsgh-89, gj-cigtn-79, hs-asdch-92, kln-ncstl-91, l-pstp-83, llrs-tsp-85, pss-ubnpk-89, p-etspi-77, r-cscsl-87,.

549 N. Alon and B. Schieber. Optimal preprocessing for answering on-line product queries. Technical Report TR 71/87, The Moise and Frida Eskenasy Institute of Computer Science, Tel Aviv University, 1987. [as-opaol-87]

550 N. Alon, P. Seymour, and R. Thomas. Planar separators. *SIAM J. Discrete Math.*, 2(7):184–193, 1994. [ast-ps-94]

551 N. Alon and J. Spencer. *The Probabilistic Method*. John Wiley & Sons, New York, NY, 1992. [as-pm-92]

N. Alon. See also [124, 125, 408].

552 Laurent Alonso, Arthur S. Goldstein, and Edward M. Reingold. 'lion and man': Upper and lower bounds. *ORSA J. Comput.*, 4(4):447–452, 1992. [agr-lmulb-92] *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

553 P. G. Alourdas, G. R. Hottel, and S. T. Tuohy. A design and interrogation system for modeling with rational splines. In *Proc. 9th International Symposium on Offshore Mechanics and Arctic Engineering*, pages 555–565, 1990. [aht-dismr-89]

P. G. Alourdas. See also [7135, 10657].

554 B. Alpern, L. Carter, and E. Feig. Uniform memory hierarchies. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 600–608, 1990. [acf-umh-90]

555 B. Alpern, R. Hoover, B. Rosen, P. Sweeney, and F. K. Zadeck. Incremental evaluation of computational circuits. In *Proc. ACM-SIAM Sympos. Discrete Algorithms*, pages 32–42, 1990. [ahrsz-iecc-90] *Keywords:* dynamic algorithm.

B. Alpern. See also [273, 12896].

S. R. Alpert. See also [6318].

556 Brian Alspach, editor. *Algorithmic Aspects of Combinatorics*, volume 2 of *Ann. Discrete Math.* North-Holland, Amsterdam, 1978. [a-aac-78]

557 M. H. Alsuwaiyel. Finding a shortest Hamiltonian path inside a simple polygon. *Inform. Process. Lett.*, 59:207–210, 1996. [a-fshpi-96]

558 M. H. Alsuwaiyel. Two algorithms for the sum of diameters problem and a related problem. *Internat. J. Comput. Geom. Appl.*, 7:493–508, 1997. [a-tasdp-97]

559 M. H. Alsuwaiyel and D. T. Lee. Finding an approximate minimum-link visibility path inside a simple polygon. *Inform. Process. Lett.*, 55(2):75–79, 1995. [al-famlv-95] *Keywords:* simple polygon, link distance, watchman routes, visibility, approximation, set cover. *Annote:* gives a correction to an approximation result claimed in al-mlvpi-93.

560 M. H. Alsuwaiyel and D. T. Lee. Minimal link visibility paths inside a simple polygon. *Comput. Geom. Theory Appl.*, 3(1):1–25, 1993. [al-mlvpi-93] *Keywords:* simple polygon, link distance, watchman route, NP-hardness, approximation, set cover. *Annote:* see al-famlv-95 for correction to the approximation algorithm result.

561 F. L. Alt. Digital pattern recognition by moments. *J. ACM*, 9:240–258, 1962. [a-dprm-62]

562 H. Alt. Comparing the combinational complexities of arithmetic functions. *J. ACM*, 35:447–460, 1988. [a-cccaf-88]

563 Helmut Alt. Geometric methods in pattern and shape matching. In *Abstracts 13th European Workshop Comput. Geom.*, page 42. Universität Würzburg, 1997. [a-gmpsm-97] *Cites:* ZZZ.

564 H. Alt, O. Aichholzer, and Günter Rote. Matching shapes with a reference point. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 85–92, 1994. [aar-msrp-94] *Succeeds:* aar-msrp-94c. *Precedes:* aar-msrp-97. *Cites:* abb-amps-91, ag-chdhd-, ast-apsgo-92, b-azede-90, cghkkk-gpmem-93, cks-ocpad-94t, g-cp-67, h-gaaps-93, hs-adaps-92, hk-cmhdp-90, hks-uevsi-93, hkr-ciuhd-93, s-spcp-66, s-kkk-72, ZZZ.

565 Helmut Alt, Oswin Aichholzer, and Günter Rote. Matching shapes with a reference point. In *Abstracts 10th European Workshop Comput. Geom.*, pages 81–84. Universidad de Cantabria, Santander, 1994. [aar-msrp-94c] *Precedes:* aar-msrp-94.

566 H. Alt, O. Aichholzer, and Günter Rote. Matching shapes with a reference point. *Internat. J. Comput. Geom. Appl.*, 7:349–363, 1997. [aar-msrp-97] *Keywords:* shape matching, Steiner point. *Succeeds:* aar-msrp-94. *Abstract:* For two given point sets, we present a very simple (almost trivial) algorithm to translate one set so that the Hausdorff distance between the two sets is not larger than a constant factor times the minimum Hausdorff distance which can be achieved in this way. The algorithm just matches the so-called Steiner points of the two sets. The focus of our paper is the general study of reference points (like the Steiner point) and their properties with respect to shape matching.

567 Helmut Alt and Bernd Behrends. Approximative Kongruenz von Polygonen. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 4. Universität Siegen, 1990. [ab-akp-90]

568 H. Alt, B. Behrends, and J. Blömer. Approximate matching of polygonal shapes. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 186–193, 1991. [abb-amps-91] *Keywords:* matching, polygons, approximation. *Precedes:* abb-amps-95. *Cites:* abgw-acp-90, akmsw-mpnrc-91, amww-cssgo-88, ass-sulbl-89, a-ltahd-83, a-dcg-83, epss-lebfi-87, f-savd-87, g-nmccd-91, hk-cmhdp-90, m-tgis-82, s-udbde-88, y-oavds-87, ZZZ.

569 H. Alt, B. Behrends, and J. Blömer. Approximate matching of polygonal shapes. *Ann. Math. Artif. Intell.*, 13:251–266, 1995. [abb-amps-95] *Keywords:* matching, shape recognition, vision. *Succeeds:* abb-amps-91.

570 H. Alt, J. Blömer, M. Godau, and H. Wagener. Approximation of convex polygons. Technical report, Fachbereich Mathematik, Freie Universität Berlin, Berlin. [abgw-acp-] *Precedes:* abgw-acp-90.

571 H. Alt, J. Blömer, M. Godau, and H. Wagener. Approximation of convex polygons. In *Proc. 17th Internat. Colloq. Automata Lang. Program.*, volume 443 of *Lecture Notes Comput. Sci.*, pages 703–716. Springer-Verlag, 1990. [abgw-acp-90] *Succeeds:* abgw-acp-.

572 H. Alt, N. Blum, and K. Mehlhorn. Computing a maximum cardinality matching of a bipartite graph in time $O(n^{1.5}\sqrt{m/\log n})$. *Inform. Process. Lett.*, 37:237–240, 1991. [abm-cmcmb-91]

573 Helmut Alt, Bernard Chazelle, and Raimund Seidel, editors. *Computational Geometry*, volume 109 of *Dagstuhl-Seminar-Report*. Internat. Begegnungs- und Forschungszentrum für Informatik, Schloss Dagstuhl, Germany, 1995. [acs-cg-95] *URL:* http://www.dagstuhl.de/DATA/Participants/9511.html.

574 Helmut Alt, Bernard Chazelle, and Emo Welzl, editors. *Computational Geometry*, volume 59 of *Dagstuhl-Seminar-Report*. Internat. Begegnungs- und Forschungszentrum für Informatik, Schloss Dagstuhl, Germany, 1993. [acw-cg-93] *URL:* http://www.dagstuhl.de/DATA/Seminars/93/.

575 Helmut Alt, Stefan Felsner, Ferran Hurtado, and Marc Noy. Point-sets with few *k*-sets. In *Abstracts 14th European Workshop Comput. Geom.*, pages 27–28. Universitat Polytènica de Catalunya, Barcelona, 1998. To appear in Proc. 14th ACM Sympos. Comput. Geom. [afhn-psfks-98]

576 H. Alt, R. Fleischer, M. Kaufmann, K. Mehlhorn, S. Näher, S. Schirra, and C. Uhrig. Approximate motion planning and the complexity of the boundary of the union of simple geometric figures. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 281–289, 1990. [afkmnsu-ampcb-90] *Cites:* egs-oplms-86, gss-gmppt-88, klps-ujrcf-86, ks-eapcf-85, ks-ampsc-88, lw-apcfp-79, ls-ipjc-85, ls-pptmc-87, s-dsstg-88, ZZZ.

577 H. Alt, R. Fleischer, M. Kaufmann, K. Mehlhorn, S. Näher, S. Schirra, and C. Uhrig. Approximate motion planning and the complexity of the boundary of the union of simple geometric figures. *Algorithmica*, 8:391–406, 1992. [afkmnsu-ampcb-92]

578 H. Alt, U. Fuchs, Günter Rote, and G. Weber. Matching convex shapes with respect to the symmetric difference. In *Algorithms — Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 320–333. Springer-Verlag, 1996. [afrw-mcsrs-96] *Precedes:* afrw-mcsrs-98.

579 H. Alt, U. Fuchs, G. Rote, and G. Weber. Matching convex shapes with respect to the symmetric difference. *Algorithmica*, 21:89–103, 1998. [afrw-mcsrs-98] *Succeeds:* afrw-mcsrs-96. *Cites:* bdkst-cmotc-96. *Abstract:* This paper deals with questions from convex geometry related to shape matching. In particular, we consider the problem of moving one convex figure over another, minimizing the area of their symmetric difference. We show that if we just let the two centers of gravity coincide, the resulting symmetric difference is within a factor of 11/3 of the optimum. This leads to efficient approximate matching algorithms for convex figures.

580 Helmut Alt, Ulrich Fuchs, Günter Rote, and Gerald Weber. Reference points for shape matching. In *Abstracts 12th European Workshop Comput. Geom.*, pages 73–74. Universität Münster, 1996. [afrw-rpsm-96]

581 H. Alt, V. Geffert, and K. Mehlhorn. Nondeterministic space complexity for the recognition of context-free languages. *Inform. Process. Lett.*, 42:25–27, 1992. [agm-nscrc-92]

582 H. Alt and M. Godau. Computing the Fréchet distance between two polygonal curves. *Internat. J. Comput. Geom. Appl.*, 5:75–91, 1995. [ag-cfdbt-95] *Keywords:* Frechet distance, shape analysis, resemblance of curves, computational morphology. *Succeeds:* ag-mrpc-92.

583 H. Alt and M. Godau. Computing the Hausdorff-distance in higher dimensions. In preparation. [ag-chdhd-]

584 H. Alt and M. Godau. Measuring the resemblance of polygonal curves. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 102–109, 1992. [ag-mrpc-92] *Precedes:* ag-cfdbt-95. *Cites:* abb-amps-91, abgw-acp-90, c-pms-88, clr-ia-90, e-cva-85, f-sqpdc-06, g-nmccd-91, g-fmpaa-91, gpy-mclmr-89, m-apcad-83, n-ccpwl-91, ZZZ.

585 H. Alt and M. Godau. Metrics and algorithms for measuring the resemblance of curves. In *Proc. 13th IMACS World Congress on Computation and Applied Mathematics*, pages 135–136, 1991. [ag-mamrc-91]

586 H. Alt, M. Godau, and S. Whitesides. Universal 3-dimensional visibility representations for graphs. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 8–19. Springer-Verlag, 1996. [agw-u3dvr-96] *Keywords:* graph drawing, visibility, 3D. *Precedes:* agw-u3dvr-98.

587 Helmut Alt, Michael Godau, and Sue Whitesides. Universal 3-dimensional visibility representations for graphs. *Comput. Geom. Theory Appl.*, 9:111–125, 1998. (special issue on Graph Drawing, edited by G. Di Battista and R. Tamassia). [agw-u3dvr-98] *Keywords:* graph drawing, visibility, 3D. *Succeeds:* agw-u3dvr-96.

588 Helmut Alt and Leonidas J. Guibas. Discrete geometric shapes: Matching, interpolation, and approximation. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 121–153. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [ag-dgsmi-00] *Annote:* Chapter 3 of su-hcg-00.

589 Helmut Alt and Ulrich Hoffmann. Exact L_∞ nearest neighbor search in high dimensions. In *Abstracts 15th European Workshop Comput. Geom.*, pages 91–92. INRIA Sophia-Antipolis, 1999. [ah-elnns-99] *Cites:* ZZZ.

590 Helmut Alt, David Hsu, and Jack Snoeyink. Computing the largest inscribed isothetic rectangle. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 67–72, 1995. [ahs-cliir-95]

591 Helmut Alt and Christian Knauer. Matching shape with respect to the symmetric difference. In *Abstracts 15th European Workshop Comput. Geom.*, pages 195–197. INRIA Sophia-Antipolis, 1999. [ak-msrsd]

592 Helmut Alt, Christian Knauer, and Carola Wenk. Bounding the Fréchet distance by the Hausdorff distance. In *Abstracts 17th European Workshop Comput. Geom.*, pages 166–169. Freie Universität Berlin, 2001. [akw-bfdhd-01]

593 H. Alt and K. Mehlhorn. Searching semisorted tables. *SIAM J. Comput.*, 14:840–848, 1985. [am-sst-85]

594 H. Alt, K. Mehlhorn, and J. I. Munro. On the complexity of partial match retrieval. *Mathematical Foundations of Computer Science*, ??:156–161, 1981. [amm-cpmr-81]

595 H. Alt, K. Mehlhorn, and J. I. Munro. Partial match retrieval in implicit data structures. *Inform. Process. Lett.*, 19:61–65, 1984. [amm-pmrid-84]

596 H. Alt, K. Mehlhorn, H. Wagener, and Emo Welzl. Congruence, similarity and symmetries of geometric objects. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 308–315, 1987. [amww-cssgo-87] *Precedes:* amww-cssgo-88. *Cites:* ahu-daca-74, a-cspf-84, a-sd-85, a-oagc-83, h-oafsp-86, m-dsa-84, m-tgis-82, m-ltalp-83, ps-cgi-85, ZZZ.

597 H. Alt, K. Mehlhorn, H. Wagener, and Emo Welzl. Congruence, similarity and symmetries of geometric objects. *Discrete Comput. Geom.*, 3:237–256, 1988. [amww-cssgo-88] *Succeeds:* amww-cssgo-87.

598 Helmut Alt and Otfried Schwarzkopf. The Voronoi diagram of curved objects. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 89–97, 1995. [as-vdco-95] *URL:* http://www.cs.ruu.nl/~otfried/ps/as-vdco-95.ps.gz. *Keywords:* randomized incremental algorithm. *Cites:* a-vdsfg-91, bdsty-arsol-92, c-bvdcp-86, cs-arscg-89, k-avdta-88, k-cavd-89, kmm-ricav-93a, kw-vdbgm-88, ls-pptmc-87, mp-fitcp-78, m-fppa1-88, oy-rmpmd-85, obs-stcav-92, ps-cgi-85, s-barga-93, s-dg-69, y-oavds-87, ya-mpce-89, ZZZ.

599 H. Alt and Emo Welzl. Visibility graphs and obstacle-avoiding shortest paths. *Zeitschrift für Operations Research*, 32:145–164, 1988. [aw-vgoas-88]

600 H. Alt, E. Welzl, and B. Wolfers. Piecewise linear approximation of bézier-curves. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 433–435, 1997. [aww-plabc-97] *Cites:* ag-cfdbt-95, b-pgs-78, f-cscag-93, fdfh-cgpp-90, ZZZ.

601 H. Alt and C. K. Yap. Algorithmic aspect of motion planning: a tutorial, part 1. *Algorithms Rev.*, 1(1):43–60, 1990. [ay-aampt1-90] *Keywords:* motion planning, robotics, computational geometry, Voronoi diagrams, computational algebra.

602 H. Alt and C. K. Yap. Algorithmic aspect of motion planning: a tutorial, part 2. *Algorithms Rev.*, 1(2):61–77, 1990. [ay-aampt2-90] *Keywords:* motion planning, robotics, computational geometry, Voronoi diagrams, computational algebra.

603 H. Alt and C. K. Yap. Algorithmic aspects of robotics: a tutorial. In *Proceedings SOFSEM '89*, pages 7–40, 1989. [ay-aart-89]

Helmut Alt. See also [6388, 9466, 9467, 13416, 13819].

604 E. Althaus and K. Mehlhorn. Polynomial time TSP-based curve reconstruction. In *Proc. 11th ACM-SIAM Sympos. Discrete Algorithms*, pages 686–695, January 2000. [am-pttbc-00]

605 E. Althaus, K. Mehlhorn, S. Näher, and S. Schirra. Experiments on curve reconstruction. In *Proc. 2nd Workshop Algorithm Eng. Exper.*, pages 103–114, January 2000. [amns-ecr-00]

606 W. Altherr. An algorithm for enumerating the vertices of a convex polyhedron. *Computing*, 15:181–193, 1975. [a-aevcp-75]

607 I. Althöfer. On optimal realizations of finite metric spaces by graphs. *Discrete Comput. Geom.*, 3:103–122, 1988. [a-orfms-88]

608 I. Althöfer, G. Das, D. Dobkin, and D. Joseph. Generating sparse spanners for weighted graphs. In *Proc. 2nd Scand. Workshop Algorithm Theory*, pages 26–37, 1990. [addj-gsswg-90]

609 I. Althöfer, G. Das, D. P. Dobkin, D. Joseph, and J. Soares. On sparse spanners of weighted graphs. *Discrete Comput. Geom.*, 9:81–100, 1993. [addjs-sswg-93]

610 M. D. Altschuler, Y. Censor, G. T. Hermann, A. Lent, R. M. Lewitt, S. N. Srihari, H. Tuy, and J. K. Udupa. Mathematical aspects of image reconstruction from projections. In L. N. Kanal and A. Rosenfeld, editors, *Progress in pattern recognition*, volume 1, pages 323–375. North-Holland, New-York, NY, 1981. [achllstu-mairp-81]

611 A. Altshuler and U. Brehm. The weakly neighborly polyhedral maps on the 2-manifold with Euler characteristic -1. *Discrete Comput. Geom.*, 1:355–369, 1986. [ab-wnpm2-86]

612 S. Aluru and F. E. Sevilgen. Dynamic compressed hyperoctrees with application to the N-body problem. In *Proc. 19th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1738 of *Lecture Notes Comput. Sci.*, pages 21–33. Springer-Verlag, 1999. [as-dchan-99]

613 J. Amanatides. Ray tracing with cones. *Comput. Graph.*, 18(3):129–135, 1984. Proc. SIGGRAPH '84. [a-rtc-84]

J. A. Amanatides. See also [10082].

614 S. Amari. *Differential Geometrical Methods in Statistics*, volume 28 of *Lecture Notes in Statistics*. Springer-Verlag, New York, NY, 1985. [a-dgms-85]

615 N. Amato. Determining the separation of simple polygons. *Internat. J. Comput. Geom. Appl.*, 4:457–474, 1994. [a-dssp-94] *Keywords:* separation, simple polygon, parallel algorithm, sequential algorithm. *Succeeds:* a-oafss-93.

616 N. Amato, O. B. Bayazit, L. K. Dale, C. Jones, and D. Vallejo. OBPRM: An obstacle-based PRM for 3D workspaces. In P. K. Agarwal, L. E. Kavraki, and M. Mason, editors, *Proc. Workshop Algorithmic Found. Robot.* A. K. Peters, Wellesley, MA, 1998. To appear. [abdjv-oobp3-98]

N. Amato. See also [12742].

617 Nancy M. Amato. An optimal algorithm for finding the separation of simple polygons. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 48–59. Springer-Verlag, 1993. [a-oafss-93] *Precedes:* a-dssp-94.

618 Nancy M. Amato, Michael T. Goodrich, and Edgar A. Ramos. A randomized algorithm for triangulating a simple polygon in linear time. *Discrete Comput. Geom.*, 26(2):245–265, 2001. [agr-ratsp-01]

619 N. M. Amato, M. T. Goodrich, and E. A. Ramos. Computing faces in segment and simplex arrangements. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 672–682, 1995. [agr-cfssa-95]

620 N. M. Amato, M. T. Goodrich, and E. A. Ramos. Computing the arrangement of curve segments: divide-and-conquer algorithms via sampling. In *Proc. 11th ACM-SIAM Sympos. Discrete Algorithms*, pages 705–706, 2000. [agr-cacsd-00]

621 Nancy M. Amato, Michael T. Goodrich, and Edgar A. Ramos. Linear-time triangulation of a simple polygon made easier via randomization. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 201–212, 2000. [agr-lttsp-00]

622 N. M. Amato, M. T. Goodrich, and E. A. Ramos. Parallel algorithms for higher-dimensional convex hulls. In *Proc. 35th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 683–694, 1994. [agr-pahdc-94]

623 N. M. Amato and F. P. Preparata. An NC^1 parallel 3D convex hull algorithm. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 289–297, 1993. [ap-np3dc-93] *Cites:* acgoy-pcg-88, ap-p3dch-92, c-pms-88, cz-opabd-90, c-pagp-80, dk-pcsh-89, dk-dsppu-90, kr-pasmm-90, pdw-npach-92, ph-chfsp-77, ps-cgi-85, ZZZ.

624 N. M. Amato and F. P. Preparata. The parallel 3D convex hull problem revisited. *Internat. J. Comput. Geom. Appl.*, 2(2):163–173, 1992. [ap-p3dch-92] *Keywords:* convex hull, parallel computation, PRAM, hierarchical representation.

625 Nancy M. Amato and Edgar A. Ramos. On computing Voronoi diagrams by divide-prune-and-conquer. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 166–175, 1996. [ar-cvddp-96] *Cites:* as-vdco-95, agr-pahdc-94, agr-cfssa-95, a-pdpaa-87, bcm-prsss-93, c-osrch-95, csy-oscpf-95, csy-pddpo-97, c-chdc-93, c-ochaa-93, cf-dvrsi-90, cs-arscg-89, dk-fdpi-83, e-acg-87, em-sstcd-90, es-itfwr-92, es-otatd-91, g-gpmee-93, goy-cvdsl-93, ks-upcha-86, k-cavd-89, m-aogdc-91, m-cha-91, m-ept-92, m-loq-93, m-lpltw-84, rs-oprat-92, s-chdch-86, s-sdlpc-91, sa-dsstg-95, s-fchff-85, y-gctsp-90, ZZZ.

626 R. V. Ambarcumjam. Convex subclusters of point clusters in the plane. *Dokl. Acad. Nauk Armjan. SSR*, 43:12–14, 1966. [a-cspcp-66]

A. Ambler. See also [12418].

627 N. Amenta. Bounded boxes, Hausdorff distance, and a new proof of an interesting Helly theorem. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 340–347, 1994. [a-bbhdn-94] *Cites:* a-htglp-93, a-htglp-93t, abb-amps-91, ak-srtat-89, a-ltahd-83, cghkkk-gpmem-93, c-lvalp-88, dmr-fmaap-93, dgk-htir-63, e-hrctt-93, gm-csfs-61, hks-uevsi-91, l-htpuc-68, m-gofvc-94, msw-sblp-92, m-tphpu-73, s-lpchm-90, sw-cblpr-92, w-sedbe-91, ZZZ.

628 N. Amenta. Computational geometry software. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 52, pages 951–960. CRC Press LLC, Boca Raton, FL, 1997. [a-cgs-97]

629 Nina Amenta. Directory of computational geometry software. http://www.geom.umn.edu/software/cglist/. [a-dcgs-] *URL:* http://www.geom.umn.edu/software/cglist/.

630 N. Amenta. Finding a line transversal of axial objects in three dimensions. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 66–71, 1992. [a-fltao-92]

631 Nina Amenta. Four-polytopes and a funeral. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V1–V2, 1996. [a-fpf-96] *Cites:* az-ssp-96, almp-gsgv-95, km-hgisa-72, ZZZ.

632 N. Amenta. *Helly Theorems and Generalized Linear Programming.* PhD thesis, Geometry Center, Minneapolis, MN, 1993. Technical Report GCG61. [a-htglp-93t] *Keywords:* doctoral thesis.

633 N. Amenta. Helly theorems and generalized linear programming. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 63–72, 1993. [a-htglp-93] *Cites:* a-fltao-92, ad-ahdsp-90, ah-cahti-91, agpw-tinhn-, cm-ltdao-93, c-lvalp-88, dgk-htir-63, d-cdnsm-92, d-mstia-86, d-ccpac-92, e-hrctt-93, ew-spdtl-89, gpw-gtt-93, gm-csfs-61, h-bchn-79, km-accvd-91, msw-sblp-92, m-ltalp-83, m-bsb-89, pr-rn-92, r-lie-89, s-lpchm-90, sw-cblpr-92, t-pgcct-89, ZZZ.

634 N. Amenta. Helly-type theorems and generalized linear programming. *Discrete Comput. Geom.*, 12:241–261, 1994. [a-httgl-94] *Succeeds:* a-htglp-93.

635 N. Amenta. *k*-Transversals of parallel convex sets. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 80–86, 1996. [a-ktpcs-96]

636 Nina Amenta and Marshall Bern. Surface reconsruction by Voronoi filtering. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 39–48, 1998. [ab-srvf-98] *Precedes:* ab-srvf-99.

637 Nina Amenta and Marshall Bern. Surface reconstruction by Voronoi filtering. *Discrete Comput. Geom.*, 22(4):481–504, 1999. [ab-srvf-99] *Succeeds:* ab-srvf-98.

638 N. Amenta, M. Bern, and D. Eppstein. Optimal point placement for mesh smoothing. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 528–537, January 1997. [abe-oppms-97]

639 N. Amenta, M. Bern, and D. Eppstein. The crust and the β-skeleton: Combinatorial curve reconst ruction. Research Report, Xerox PARC, 1997. http://www.geom.umn.edu/~nina/papers/crust.ps.gz. [abe-cbscc-97] *URL:* http://www.geom.umn.edu/~nina/papers/crust.ps.gz. *Precedes:* abe-cbscc-98.

640 Nina Amenta, Marshall Bern, and David Eppstein. The crust and the β-skeleton: Combinatorial curve reconstruction. *Graphical Models and Image Processing*, 60:125–135, 1998. [abe-cbscc-98] *URL:* http://www.geom.umn.edu/~nina/papers/crust.ps.gz. *Comments:* http://www.geom.umn.edu/~nina/papers/crust.ps.gz. *Succeeds:* abe-cbscc-97.

641 N. Amenta, M. Bern, D. Eppstein, and S.-H. Teng. Regression depth and center points. *Discrete Comput. Geom.*, 23:305–323, 2000. [abet-rdcp-00]

642 N. Amenta, M. Bern, and M. Kamvysselis. A new Voronoi-based surface reconstruction algorithm. In *Proc. SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, pages 415–412, July 1998. [abk-nvbsr-98]

643 N. Amenta and S. Choi. One-pass Delaunay filtering for homeomorphic 3D surface reconstruction. Manuscript, 1999. [ac-opdfh-99]

644 N. Amenta, S. Choi, T. K. Dey, and N. Leekha. A simple algorithm for homeomorphic surface reconstruction. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 213–222, 2000. [acdl-sahsr-00]

645 N. Amenta, S. Choi, and R. K. Kolluri. The power crust, unions of balls, and the medial axis transform. *Comput. Geom. Theory Appl.*, 19:127–153, 2001. [ack-pcubm-01]

646 Nina Amenta and Ravi Krishna Kolluri. Accurate and efficient unions of balls. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 119–128, 2000. [ak-aeub-00]

647 N. Amenta and R. K. Kolluri. The medial axis of a union of balls. *Comput. Geom. Theory Appl.*, 20:25–37, 2001. [ak-maub-01]

648 N. Amenta, S. Levy, T. Munzner, and M. Philips. Geomview: A system for geometric visualization. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C12–C13, 1995. [almp-gsgv-95] *Keywords:* software, visualization. *Cites:* ZZZ.

649 Nina Amenta and Günter Ziegler. Shadows and slices of polytopes. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 10–19, 1996. [az-ssp-96] *Cites:* aaas-lpmpc-97, af-pachv-92, b-smpa-87, c-osrch-95, ceg-ccc-89, gz-rsakm-94, gs-capof-55, g-wccsv-83, g-csa-94, km-hgisa-72, m-loq-93, m-ccplp-80, pf-ctffc-95, pssbm-cffef-96, s-chdch-86, s-cpdoc-87, z-lp-94, ZZZ.

N. Amenta. See also [126–129, 1810].

650 A. Amir and G. Benson. Two-dimensional periodicity and its applications. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 440–452, 1992. [ab-tdpia-92]

651 A. Amir and M. Farach. Efficient 2-dimensional approximate matching of non-rectangular figures. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 212–223, 1991. [af-e2dam-91]

A. Amir. See also [8055].

652 I. Amir. Algorithms for finding the center of circular fiducials. *Comput. Vision Graph. Image Process.*, 49:398–406, 1990. [a-afccf-90]

C. Ammann. See also [10146, 10147].

K. Ammar. See also [453].

R. V. Amorim. See also [11200].

P. Yam amoto. See also [7142].

B. An. See also [349].

653 Efthymios Anagnostou. Progress in minimum weight triangulation. Technical report 232/90, Department of Computer Science, University of Toronto, 1990. [a-pmwt-90]

654 E. Anagnostou and D. Corneil. Polynomial time instances of the minimum weight triangulation problem. *Comput. Geom. Theory Appl.*, 3:247–259, 1993. [ac-ptimw-93]

655 E. G. Anagnostou, Leonidas J. Guibas, and V. G. Polimenis. Topological sweeping in three dimensions. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 310–317. Springer-Verlag, 1990. [agp-tstd-90] *Keywords:* topological sweep, three-dimensional.

656 Brad Andalman, Kathy Ryall, Wheeler Ruml, Joe Marks, and Stuart Shieber. Design gallery browsers based on 2D and 3D graph drawing. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 322–329. Springer-Verlag, 1997. [arrms-dgbb2-97] *Keywords:* graph drawing.

657 M. R. Anderberg. *Cluster Analysis for Applications.* Academic Press, New York, 1973. [a-caa-73] *Comments:* Unchecked reference from PRNN.

D. C. Anderson. See also [11919].

S. Anderson-Freed. See also [7124].

658 K. R. Anderson. A reevaluation of an efficient algorithm for determining the convex hull of a finite planar set. *Inform. Process. Lett.*, 7(1):53–55, 1978. [a-readc-78]

659 L. Anderson and R. Wenger. Oriented matroids and hyperplane transversals. *Adv. Math.*, 119:117–125, 1996. [aw-omht-96]

N. Anderson. See also [3706].

P. O. Anderson. See also [9230].

660 R. Anderson, P. Beame, and E. Brisson. Parallel algorithms for arrangements. In *ACM Sympos. Paral. Algorithms and Architectures*, pages 298–306. 1990. [abb-paa-90] *Keywords:* parallel computations, arrangement.

661 Richard Anderson, Paul Beame, and Erik Brisson. Parallel algorithms for arrangements. *Algorithmica*, 15:104–125, 1996. [abb-paa-96]

662 R. Anderson, S. Kahan, and M. Schlag. An $O(n \log n)$ algorithm for 1-d tile compaction. In M. Nagl, editor, *Graph-Theoretic Concepts in Computer Science*, volume 411 of *Lecture Notes Comput. Sci.*, pages 287–301. Springer-Verlag, 1990. [aks-oa1dt-90]

663 R. Anderson and G. Miller. Deterministic parallel list ranking. In *Proc. 3rd Aegean Workshop Computing*, volume 319 of *Lecture Notes Comput. Sci.*, pages 81–90. Springer-Verlag, 1988. [am-dplr-88]

R. Anderson. See also [6036].

664 R. J. Anderson. Primitives for asynchronous list compression. In *Proc. 4th ACM Sympos. Parallel Algorithms Architect.*, pages 199–208, 1992. [a-palc-92]

665 R. J. Anderson, E. W. Mayr, and M. K. Warmuth. Parallel approximation algorithms for bin packing. *Inform. Comput.*, 82:262–277, 1989. [amw-paabp-89]

666 R. J. Anderson and G. L. Miller. An optimal algorithm for intersecting line segments in the plane. *Algorithmica*, 6:859–868, 1991. [am-dplr-91]

667 R. J. Anderson and H. Woll. Wait-free parallel algorithms for the union-find problem. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 370–380, 1991. [aw-wfpau-91]

T. Anderson. See also [8038, 8039].

668 Andersson, Hagerup, Nilsson, and Raman. Sorting in linear time? *J. Comput. Syst. Sci.*, 57:74–93, 1998. [ahnr-slt-98] *Keywords:*

669 Arne Andersson, Torben Hagerup, Johan Håastad, and Ola Petersson. Faster multidimensional searching. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, 1994. [ahhp-fms-94]

670 Arne Andersson, Christian Icking, Rolf Klein, and Thomas Ottmann. Binary search trees of almost optimal height. *Acta Inform.*, 28:165–178, 1990. [aiko-bstao-90]

671 Arne Andersson, Peter Bro Miltersen, Søren Riis, and Mikkel Thorup. Static dictionaries on AC^0 RAMs: Query time $\Theta(\sqrt{(}\log n/\log\log n))$ is necessary and sufficient. In *Proc. 37th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 441–450, 1996. [amrt-sdarq-96]

672 Arne Andersson and Kurt Swanson. On the difficulty of range searching. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 473–481. Springer-Verlag, 1995. [as-drs-95]

673 A. Andersson and K. Swanson. On the difficulty of range searching. *Comput. Geom. Theory Appl.*, 8:115–122, 1997. [as-drs-97]

674 L.-E. Andersson, S. M. Dorney, T. J. Peters, and N. F. Stewart. Polyhedral perturbations that preserve topological form. *Comput. Aided Geom. Design*, 12(8):785–799, December 1995. [adps-pptpt-95]

L. Andor. See also [6806].

675 M. V. A. Andrade and J. Stolfi. Exact algorithms for circles on the sphere. *Internat. J. Comput. Geom. Appl.*, 11:267–290, 2001. [as-eacs-01]

676 T. Andrae. Some results on visibility graphs. Preprint, 1989. [a-srvg-89] *Precedes:* a-srvg-92.

677 T. Andreae. Some results on visibility graphs. *Discrete Appl. Math.*, 40:5–17, 1992. [a-srvg-92] *Keywords:* graph drawing. *Succeeds:* a-srvg-89.

678 E. M. Andreev. On convex polyhedra in Lobacevskii space. *Math. USSR Sbornik*, 10(3):413–440, 1970. [a-cpls-70]

679 E. M. Andreev. On convex polyhedra of finite volume in Lobacevskii space. *Math. USSR Sbornik*, 12(2):259–270, 1970. [a-cpfvl-70]

680 R. D. Andreev. Algorithm for clipping arbitrary polygons. *Comput. Graph. Forum*, 8(3):183–191, 1989. [a-acap-89] *Keywords:* polygon, clipping.

681 A. M. Andrew. Another efficient algorithm for convex hulls in two dimensions. *Inform. Process. Lett.*, 9(5):216–219, 1979. [a-aeach-79] *Keywords:* designing algorithms, convex hull, two-dimensional.

682 D. S. Andrews. Further comparison of algorithms for geometric intersection problems. In *Proc. 6th Internat. Sympos. Spatial Data Handling*, pages 709–724, 1994. [a-fcagi-94]

683 D. Scott Andrews and Jack Snoeyink. Geometry in GIS is not combinatorial: Segment intersection for polygon overlay. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C24–C25, 1995. [as-gginc-95] *Keywords: Cites:* a-fcagi-94, bo-arcgi-79, c-stsar-94, f-eicld-89, fkn-vsgpt-80, o-tcg-93, ps-crrbs-94, p-csarg-90, s-dasds-90, ZZZ.

684 G. E. Andrews. A lower bound for the volume of strictly convex bodies with many boundary lattice points. *Trans. Amer. Math. Soc.*, 106:270–279, 1963. [a-lbvsc-63] *Keywords:* volume.

H. Andrews. See also [3474].

685 H. C. Andrews. *Introduction to Mathematical Techniques in Pattern Recognition*. Wiley-Interscience, New York, 1972. [a-imtpr-72]

686 M. Andrews and D. T. Lee. Parallel algorithms on circular-arc graphs. *Comput. Geom. Theory Appl.*, 5:117–141, 1995. [al-pacag-95]

D. Andrisani. See also [8372].

I. P. Androulakis. See also [9184].

687 Artur Andrzejak, Boris Aronov, Sariel Har-Peled, Raimund Seidel, and Emo Welzl. Results on k-sets and j-facets via continuous motion arguments. 1998. [aahsw-rksjf-98]

Y. P. Aneja. See also [7650].

688 C. H. Ang and H. Samet. A fast quadtree normalization algorithm. *Pattern Recogn. Lett.*, 15:57–63, January 1994. [as-fqna-94]

689 C. H. Ang and H. Samet. Node distribution in a PR quadtree. In A. Buchmann, O. Günther, T. R. Smith, and Y.-F. Wang, editors, *Design and Implementation of Large Spatial Databases*, volume 409 of *Lecture Notes Comput. Sci.*, pages 223–252. Springer-Verlag, 1990. [as-ndpq-90]

690 C. H. Ang, H. Samet, and C. A. Shaffer. A new region expansion for quadtrees. *IEEE Trans. Pattern Anal. Mach. Intell.*, 12(7):682–686, July 1990. (also Proceedings of the Third International Symposium on Spatial Data Handling, Sydney, Australia, August 1988, 19–37). [ass-nreq-90]

691 P. Angelier and M. Pocchiola. A sum of squares theorem for visibility complexes. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 302–311, 2001. [ap-sstvc-01]

692 Pierre Angelier and Michel Pocchiola. On computing tangent visibility graphs. In *Abstracts 16th European Workshop Comput. Geom.*, pages 108–111. Ben-Gurion University of the Negev, 2000. [ap-ctvg-00]

693 Pierre Angelier, Michel Pocchiola, and Stéphane Rivière. On the topological sweep method. In *Abstracts 15th European Workshop Comput. Geom.*, page 179. INRIA Sophia-Antipolis, 1999. [apr-tsm-99] *Cites:* ZZZ.

694 Ian O. Angell and Richard E. M. Moore. Quad-tree algorithm for displaying a 2-dimensional slice of an n-dimensional weighted Voronoi tessellation. In *EUROGRAPHICS '86: Proceedings of the European Computer Graphics Conference and Exhibition — The Computer Interface.*, pages 19–27, Amsterdam, Netherlands, 1986. North-Holland. [am-qtad2-86] *Keywords:* Voronoi tessellation, computational geometry. *Annote:* Multiplicative weights. Quadtree Method: find closest (weighted) point to square centre, then construct bisectors of this point with all others to see if any intersect square and subdivide if necessary. *Abstract:* A tessellation exists in N-dimensional Euclidean space which is best known either in purely 2-dimensional contexts or in the purely 3-dimensional — often workers familiar with the one paying no regard to the other — though the utility of this tessellation in 2-, 3- and even higher dimensions is vast. In 2-dimensions applications exist in fields as disparate as archaeology, astronomy, biology, economics, forestry, geography, metallurgy and virology, and in many other fields too. In 3-dimensions applications are equally varied: for example in anatomy, astronomy, botany, chemistry, crystallography, and stereology. It has major importance in the investigation of the structure of liquids, and in other aspects of physics. Applications in dimensions higher than three, although comparatively rare, do exist — and might be greater if such tessellations were easier to calculate. 10 refs.

695 T. A. Angelov and I. S. Manoach. A point-in-domain program. *Adv. Eng. Softw.*, 11(2):99–106, 1989. [am-pdp-89] *Keywords:* point location, implementation.

696 D. Angluin and L. G. Valiant. Fast probabilistic algorithms for Hamiltonian circuits and matchings. *J. Comput. Syst. Sci.*, 18:155–193, 1979. [av-fpahc-79]

697 Dana Angluin, Jeffery Westbrook, and Wenhong Zhu. Robot navigation with range queries. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 469–478, May 1996. [awz-rnrq-96]

698 S. Ansaldi, L. De Floriani, and B. Falcidieno. Edge-face graph representation of solid objects. In *Poceedings of Workshop on Computer Vision, Representation and Control*, pages 164–169, 1984. [adf-efgrs-84]

699 S. Ansaldi, L. De Floriani, and B. Falcidieno. Geometric modeling of solid objects by using a face adjacency graph representation. *Comput. Graph.*, 19(3):131–139, 1985. Proc. SIGGRAPH '85. [adf-gmsou-85]

700 M. Anthony and N. Biggs. *Computational Learning Theory*. Cambridge University Press, Cambridge, 1992. [ab-clt-92]

701 L. Antoine. Sur l'homeomorphisme de deux figures et de leurs voisinages. *J. Math., Ser. 8*, 4:221–235, 1921. [a-slddf-21]

702 François Anton and Christopher Gold. An iterative algorithm for the determination of Voronoi vertices in polygonal and non–polygonal domains. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 257–262, 1997. [ag-iad5v-97]

703 François Anton and Darka Mioc. Dynamic Laguerre diagrams made easy. In *Abstracts 16th European Workshop Comput. Geom.*, pages 10–13. Ben-Gurion University of the Negev, 2000. [am-dldme-00]

704 François Anton, Jack Snoeyink, and Christopher Gold. An iterative algorithm for the determination of Voronoi vertices in polygonal and non-polygonal domains on the plane and the sphere. In *Abstracts 14th European Workshop Comput. Geom.*, pages 33–35. Universitat Polytènica de Catalunya, Barcelona, 1998. [asg-iadvv]

François Anton. See also [9662].

V. Anupam. See also [1252].

Koushi Anzai. See also [9780].

705 J.-I. Aoe. An efficient digital search algorithm by using a double-array structure. *IEEE Trans. Softw. Eng.*, 15(9):1066–1077, 1989. [a-edsau-89]

706 Y. Aoki. Probing the arrangement of hyperplanes. In *Proc. 5th Franco-Japanese Days on Combinatorics and Optimization*, page ??, 1992. [a-pah-92]

707 Y. Aoki. *The combinatorial complexity of reconstructing arrangements*. PhD thesis, Department of Information Science, University of Tokyo, 1993. [a-ccra-93] *Keywords:* doctoral thesis.

708 Yasukazu Aoki, Hiroshi Imai, Keiko Imai, and David Rappaport. Probing a set of hyperplanes by lines and related problems. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 72–82. Springer-Verlag, 1993. [aiir-pshlr-93]

Y. Aoki. See also [450, 7374].

709 H. Aonuma, H. Imai, K. Imai, and T. Tokuyama. Maximin location of convex objects in a polygon and related dynamic Voronoi diagrams. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 225–234, 1990. [aiit-mlcop-90] *Cites:* ass-sulbl-89, aik-vspca-89, a-sdcgp-85, ab-pptr-88, c-pcp-83, ck-plscc-89, f-fapct-85, f-savd-87, i-vdmp-89, isi-mgftc-89, ls-pptmc-87, s-pds-74, t-dmvdt-88, ZZZ.

710 H. Aonuma, H. Imai, K. Imai, and T. Tokuyama. Maximin polygon containment problems and related dynamic Voronoi diagrams. *Surikaisekikenkyosho Kokyuroku*, 731:177–186, 1990. Proc. Sympos. Algorithms and Comput. Complexity. [aiit-mpcpr-90] *Keywords:* on-line algorithms, convex, location, Voronoi diagram.

711 H. Aonuma, H. Imai, and Y. Kambayashi. A visual system of placing characters appropriately in multimedia map databases. In *Visual Database Systems*, pages 525–546. North-Holland, 1989. Proc. IFIP TC2/WG2.6 Working Conf. Visual Database Syst. [aik-vspca-89]

712 F. Aoudja, M. Laborie, and A. Saint-Paul. CASE: Automatic generation of electrical diagrams. *Comput. Aided Design*, 18(7):356–360, 1986. [als-caged-86] *Keywords:* graph drawing.

713 T. M. Apostol. *Introduction to Analytic Number Theory*. Springer-Verlag, 1976. [a-iant-76]

714 A. Apostolico, M. J. Atallah, L. L. Larmore, and H. S. McFaddin. Efficient parallel algorithms for string editing and related problems. *SIAM J. Comput.*, 19(5):968–988, 1990. [aalm-epase-90]

715 A. Apostolico and S. E. Hambrusch. Finding maximal cliques of circular-arc graphs. *Inform. Process. Lett.*, 26(4):209–215, 1988. [ah-fmcca-88] *Keywords:* circular-arc graph, geometric graphs, clique.

716 G. Appa and C. Smith. On L_1 and Chebyshev estimation. *Math. Program.*, 5:73–87, 1973. [as-lce-73]

717 A. Appel. The notion of quantitative invisibility and the machine rendering of solids. In *Proc. ACM National Conference*, pages 367–393, 1967. [a-nqimr-67]

718 A. Appel and P. M. Will. Determining the three-dimensional convex hull of a polyhedron. *IBM J. Res. Develop.*, 20:590–611, 1976. [aw-dtdch-76]

719 K. Appel and W. Haken. Every planar map is four colourable, part I: discharging. *Illinois J. Math.*, 21:429–490, 1977. [ah-epmfc-77]

720 P. Appell. *Traité de Mécanique Rationelle, Tome I: Statique, Dynamique du Point*. Gauthier-Villars, 6th edition, 1941. [a-tdmrt-41]

721 D. Applegate and R. Kannan. Local expansion of vertex-transitive graphs and random generation in finite groups. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 164–174, 1991. [ak-levtg-91] *Keywords:* approximation, volume, convex.

722 Sigal Ar and Ayellet Tal. Query driven BSP trees. In *Abstracts 16th European Workshop Comput. Geom.*, pages 81–84. Ben-Gurion University of the Negev, 2000. [at-qdbt-00]

723 C. Aragon and R. Seidel. Randomized search trees. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 540–545, 1989. [as-rst-89]

C. R. Aragon. See also [11964].

724 J. Aráoz and W. H. Cunningham. Reductions to 1-matching polyhedra. *Networks*, 13:455–473, 1983. [ac-r1mp-83]

F. Arbab. See also [6644, 6646].

725 C. Arcelli and L. Cordella. Concavity point detection by iterative arrays. *Comput. Graph. Image Process.*, 3:34–47, 1974. [ac-cpdia-74]

726 C. Arcelli and S. Levialdi. Concavity extraction by parallel processing. *IEEE Trans. Syst. Man Cybern.*, SMC-1:394–396, 1971. [al-cepp-71]

727 C. Arcelli and G. Sanniti di Baja. Computing Voronoi diagrams in digital pictures. *Pattern Recogn. Lett.*, 4(5):383–389, 1986. [asdb-cvddp-86] *Keywords:* Voronoi diagram, digital geometry.

728 C. Arcelli and G. Sanniti di Baja. Polygonal covering and concavity tree of binary digital pictures. In M. H. Hamza and S. G. Tzafestas, editors, *Proc. Internat. Sympos. Measurement & Control*, pages 292–297, Athens, 1978. Panhellenic Society of Mechanical & Electrical Engineers. [as-pcctb-78]

729 Eugen Ardeleanu. Intersection algorithms: A comparative study. In *Abstracts 11th European Workshop Comput. Geom.*, pages 43–46. Universität Linz, 1995. [a-iacs-95]

730 W. G. Aref and H. Samet. A cost model for query optimization using r-trees. In *Proceedings of the Second ACM Workshop on Geographic Information Systems*, pages 60–67, December 1994. [as-cmqou-94]

731 W. G. Aref and H. Samet. A window retrieval algorithm for spatial databases using quadtrees. In *Proceedings of the Third ACM Workshop on Geographic Information Systems*, pages 69–76, December 1995. [as-wrasd-95]

732 W. G. Aref and H. Samet. An approach to information management in geographical applications. In *Proc. 4th Internat. Sympos. Spatial Data Handling*, pages 589–598, July 1990. [as-aimga-90]

733 W. G. Aref and H. Samet. An efficient window retrieval algorithm for spatial query processing. Computer Science Department TR-2866, UMD, College Park, MD, March 1992. [as-ewras-92]

734 W. G. Aref and H. Samet. Decomposing a window into maximal quadtree blocks. *Acta Inform.*, ??, 1993. (also University of Maryland Computer Science TR-2771). [as-dwmqb-93]

735 W. G. Aref and H. Samet. Duplicate elimination using proximity in spatial databases. Technical Report CS-3067, University of Maryland, College Park, MD, May 1993. [as-deups-93]

736 W. G. Aref and H. Samet. Efficient processing of window queries in the pyramid data structure. In *Proceedings of the 9th ACM SIGACT-SIGMOD-SIGART Symposium on Principles of Database Systems*, pages 265–272, April 1990. (also in Proceedings of the Fifth Brazilian Symposium on Databases, Rio de Janeiro, Brazil, April 1990, 15–26). [as-epwqp-90]

737 W. G. Aref and H. Samet. Estimating selectivity factors of spatial operations. In *Optimization in Databases - 5th Int'l Workshop on Foundations of Models and Languages for Data and Objects*, pages 31–40, September 1993. (also tech report: Informatik-Bericht 93/9 Technische Universitat Clausthal, Clausthal - Zellerfeld). [as-esfso-93]

738 W. G. Aref and H. Samet. Extending a DBMS with spatial operations. In O. Günther and H. J. Schek, editors, *Proc. 2nd Sympos. Advances in Spatial Databases*, pages 299–318, Berlin, Germany, 1991. Springer-Verlag. (also Lecture Notes in Computer Science 525). [as-edso-91]

739 W. G. Aref and H. Samet. Hashing by proximity to process duplicates in spatial databases. In *Proceedings of the Third International Conference on Information and Knowledge Management*, pages 347–354, Gaithersburg, Maryland, December 1994. ACM Press. [as-hppds-94]

740 W. G. Aref and H. Samet. Loading spatial features into the incomplete pyramid data structure. In G. Gambosi, M. Scholl, and H.-W. Six, editors, *?*, pages 138–160. Springer-Verlag, Berlin, Germany, 1992. [as-lsfip-92]

741 W. G. Aref and H. Samet. Optimization strategies for spatial query processing. In G. Lohman, editor, *Proceedings of the Seventeenth International Conference on Very Large Data Bases*, pages 81–90, September 1991. [as-ossqp-91]

742 W. G. Aref and H. Samet. Perspective viewing of objects represented by octrees. *Comput. Graph. Forum*, 14(1):59–66, March 1995. also University of Maryland Computer Science TR-2757. [as-pvoro-95]

743 W. G. Aref and Hanan Samet. Query size estimation of spatial join. Technical Report MITL-TR 79-93, Matsushita Information Technology Laboratory, 2 Research Way, Princeton, NJ 08540-6628, December 1993. [as-qsesj-93]

744 W. G. Aref and H. Samet. The spatial filter revisited. In T. C. Waugh and R. G. Healey, editors, *Proc. 6th Internat. Sympos. Spatial Data Handling*, pages 190–208. International Geographical Union Comission on Geographic Information Systems, Association for Geographical Information, September 1994. [as-sfr-94]

745 W. G. Aref and H. Samet. Uniquely reporting spatial objects: yet another operation for comparing spatial data structures. In *Proceedings of the fifth international symposium on spatial data handling*, pages 178–189, August 1992. [as-ursoy-92]

W. G. Aref. See also [11586].

746 L. Arge. External-storage data structures for plane-sweep algorithms. Technical Report RS-94-16, BRICS, Aarhus Univ., Denmark, 1994. [a-esdsp-94]

747 L. Arge. The Buffer Tree: A new technique for optimal I/O-algorithms. In *Proc. 4th Workshop Algorithms Data Struct.*, number 955 in Lecture Notes Comput. Sci., pages 334–345, 1995. [a-btnto-95] *Keywords:* external memory algorithms, data structures.

748 Lars Arge, Octavian Procopiuc, Sridhar Ramaswamy, Torsten Suel, and Jeffrey Scott Vitter. Theory and practice of I/O-efficient algorithms for multidimensional batched searching problems. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 685–694, 1998. [aprsv-tpiea-98]

749 Lars Arge and Jan Vahrenhold. I/O-efficient dynamic planar point location. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 191–200, 2000. [av-ioedp-00]

750 Lars Arge, Darren Erik Vengroff, and Jeffrey Scott Vitter. External-memory algorithms for processing line segments in geographic information systems. In *Algorithmica*, to appear. special issue on cartography and geographic information systems. A shortened version appears in Proceedings of the 3rd Annual European Symposium on Algorithms (ESA '95), September 1995, published in Lecture Notes in Computer Science, Springer-Verlag, Berlin, 295–310. [avv-emapl-96]

751 L. Arge and J. S. Vitter. Optimal interval management in external memory. In *Proc. 37th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 560–569, October 1996. [av-oimem-96]

Lars Arge. See also [130–133].

A. S. Argon. See also [9876].

P. J. Argos. See also [4841].

E. Ariel-Sheffi. See also [12071].

752 S. Arikati, A. Maheshwari, and C. Zaroliagis. Saving bits made easy. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 140–146, 1994. [amz-sbme-94] *Cites:* e-mpmis-65, fhkr-owpas-92, if-umtor-81, ir-mtard-84, knr-irg-88, ly-grp-82, nsv-rpamu-92, o-agta-87, n-edstf-61, s-epgg-90, l-ga-90, j-ipa-92, ZZZ.

753 Srinivasa Rao Arikati, Danny Z. Chen, L. Paul Chew, Gautam Das, Michiel Smid, and Christos D. Zaroliagis. Planar spanners and approximate shortest path queries among obstacles in the plane. In Josep Díaz and Maria Serna, editors, *Algorithms—ESA '96, Fourth Annual European Symposium*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 514–528. Springer-Verlag, 1996. [accdsz-psasp-96] *Keywords:* two-point shortest path queries, fixed orientations, geodesics.

S. Arimoto. See also [8928, 10165].

754 E. Arkin and J. Mitchell. Applications of combinatorics and computational geometry to pattern recognition. Technical Report, Cornell Univ., Ithaca, NY, 1990. [am-accgp-90]

755 Esther M. Arkin. Beautification is hard. Technical Report 818, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, 1988. [a-bih-88] *Keywords:* clustering.

756 Esther M. Arkin, P. Belleville, Joseph S. B. Mitchell, D. M. Mount, K. Romanik, S. Salzberg, and D. Souvaine. Testing simple polygons. Technical Report TR-93-14, DIMACS, April 1993. [abmmrss-tsp-93t] *Precedes:* abmmrss-tsp-93, abmmrss-tsp-97.

757 Esther M. Arkin, P. Belleville, Joseph S. B. Mitchell, D. M. Mount, K. Romanik, S. Salzberg, and D. Souvaine. Testing simple polygons. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 387–392, 1993. [abmmrss-tsp-93] *Keywords:* probing, point probes, testing, simple polygons. *Succeeds:* abmmrss-tsp-93t. *Precedes:* abmmrss-tsp-97. *Cites:* abmmrss-tsp-93t, bs-ppmih-93, cy-sp-87, k-rop-91, lr-eaiou-89t, m-acvpp-90, r-att-92, rs-tgo-90i, rs-tos-92, s-gp-88, ZZZ.

758 Esther M. Arkin, P. Belleville, Joseph S. B. Mitchell, D. M. Mount, K. Romanik, S. Salzberg, and D. Souvaine. Testing simple polygons. *Comput. Geom. Theory Appl.*, 8:97–114, 1997. [abmmrss-tsp-97] *Keywords:* probing, point probes, testing, simple polygons. *Succeeds:* abmmrss-tsp-93t, abmmrss-tsp-93.

759 E. M. Arkin, M. A. Bender, S. P. Fekete, J. S. B. Mitchell, and M. Skutella. The freeze-tag problem: How to wake up a swarm of robots. In *Proc. 13th ACM-SIAM Sympos. Discrete Algorithms*, 2002. To appear. [abfms-ftphwusr-01]

760 E. M. Arkin, L. P. Chew, D. P. Huttenlocher, K. Kedem, and J. S. B. Mitchell. An efficiently computable metric for comparing polygonal shapes. Technical Report TR 89-1007, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, May 1989. [achkm-ecmcp-89]

761 Esther M. Arkin, L. P. Chew, D. P. Huttenlocher, K. Kedem, and Joseph S. B. Mitchell. An efficiently computable metric for comparing polygonal shapes. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 129–137, 1990. [achkm-ecmcp-90] *Keywords:* matching, shape, polygons.

762 Esther M. Arkin, L. P. Chew, D. P. Huttenlocher, K. Kedem, and Joseph S. B. Mitchell. An efficiently computable metric for comparing polygonal shapes. *IEEE Trans. Pattern Anal. Mach. Intell.*, 13(3):209–216, 1991. [achkm-ecmcp-91] *Keywords:* polygon, distance, shape, similarity.

763 Esther M. Arkin, Y.-J. Chiang, Martin Held, Joseph S. B. Mitchell, V. Sacristan, Steven S. Skiena, and T.-C. Yang. On minimum-area hulls. In *Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 334–348. Springer-Verlag, 1996. [achmssy-omah-96] *Precedes:* achmssy-omah-98.

764 Esther M. Arkin, Y.-J. Chiang, Martin Held, Joseph S. B. Mitchell, V. Sacristan, Steven S. Skiena, and T.-C. Yang. On minimum-area hulls. *Algorithmica*, 21:119–136, 1998. [achmssy-omah-98] *Succeeds:* achmssy-omah-96.

765 Esther M. Arkin, Y.-J. Chiang, Joseph S. B. Mitchell, Steven S. Skiena, and T. Yang. On the maximum scatter TSP. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 211–220, 1997. [acmsy-mst-97] *Keywords:* TSP, MAX TSP, bottleneck TSP, approximation algorithms.

766 Esther M. Arkin, R. Connelly, and Joseph S. B. Mitchell. On monotone paths among obstacles, with applications to planning assemblies. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 334–343, 1989. [acm-mpoap-89] *Keywords:* path planning, monotonicity, assembly, visibility, separability. *Cites:* cr-nlbtr-87, gm-osacv-87t, gh-ospqs-87, gy-tsr-80, ps-tspm-81, t-mss-85, ZZZ.

767 Esther M. Arkin, Sándor P. Fekete, and Joseph S. B. Mitchell. Approximation algorithms for lawn mowing and milling. Technical report, Mathematisches Institut, Universität zu Köln, 1997. [afm-aalmm-97] *URL:* ftp://ftp.zpr.uni-koeln.de/pub/paper/zpr97-255.ps.gz. *Keywords:* NC machining, covering, TSP, TSP with neighborhoods, approximation algorithms, NP-completeness, traveling salesman problem, shortest paths, watchman routes, lawn mowing, milling, NC machines; 68Q25, 68U05, 90C27, 90C28, 90C35. *Succeeds:* afm-lp-93,afm-aalm-95. *Abstract:* We study the problem of finding shortest tours/paths for "lawn mowing" and "milling" problems: Given a region in the plane, and given the shape of a "cutter" (typically, a circle or a square), find a shortest tour/path for the cutter such that every point within the region is covered by the cutter at some position along the tour/path. In the milling version of the problem, the cutter is constrained to stay within the region. The milling problem arises naturally in the area of automatic tool path generation for NC pocket machining. The lawn mowing problem arises in optical inspection, spray painting, and optimal search planning.

Both problems are NP-hard in general. We give efficient constant-factor approximation algorithms for both problems. In particular, we give a $(3+\epsilon)$-approximation algorithm for the lawn mowing problem and a 2.5-approximation algorithm for the milling problem. Furthermore, we give a simple 6/5-approximation algorithm for the TSP problem in simple grid graphs, which leads to an 11/5-approximation algorithm for milling simple rectilinear polygons.

768 E. M. Arkin, S. P. Fekete, and J. S. B. Mitchell. Approximation algorithms for lawn mowing and milling. *Comput. Geom. Theory Appl.*, 17:25–50, 2000. [afm-aalmm-00]

769 Esther M. Arkin, Sándor P. Fekete, and Joseph S. B. Mitchell. Approximation algorithms for lawnmowing and milling. Report, University at Stony Brook, 1995. [afm-aalm-95] *Keywords:* NC machining, covering, TSP, TSP with neighborhoods. *Succeeds:* afm-lp-93. *Precedes:* afm-aalmm-97.

770 Esther M. Arkin, Sándor P. Fekete, and Joseph S. B. Mitchell. The lawnmower problem. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 461–466, 1993. [afm-lp-93] *Precedes:* afm-aalm-95,afm-aalmm-97. *Cites:* ah-aagcs-91, c-tsplt-91a, e-hpnrg-86, f-gtsp-92, f-ldead-72, h-cgpm-91, ips-hpgg-82, jp-cctsp-85, n-wrlv-92, ZZZ.

771 Esther M. Arkin, Sándor P. Fekete, Joseph S. B. Mitchell, and Steven S. Skiena. On the manufacturability of paperclips and sheet metal structures. In *Abstracts 17th European Workshop Comput. Geom.*, pages 187–190. Freie Universität Berlin, 2001. [afms-mpsms-01]

772 Esther M. Arkin, Michael T. Goodrich, Joseph S. B. Mitchell, David Mount, Christine D. Piatko, and Steven S. Skiena. Point probe decision trees for geometric concept classes. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 95–106. Springer-Verlag, 1993. [agmmps-ppdtg-93]

773 Esther M. Arkin, D. Halperin, K. Kedem, Joseph S. B. Mitchell, and N. Naor. Arrangements of segments that share endpoints: Single face results. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 324–333, 1991. [ahkmn-astse-91] *Keywords:* arrangements, segments, Davenport-Schinzel sequences, zone theorems. *Comments:* The proof of the Exposure Lemma, which results in bound of $O(h\alpha(h))$ on the single cell complexity, is in error. A corrected proof is given in [774], where the upper bound of $O(h \log h)$ is proved. There remains a gap between this and the lower bound of $\Omega(h\alpha(h))$. *Precedes:* ahkmn-astse-94. *Cites:* abp-oabcu-90, cegss-cfals-91, egs-ccmfa-90, gss-gmppt-89, l-cpe-79, m-csfal-90, mrw-mlpop-90, pss-stsps-88, ws-prnds-88, ZZZ.

774 Esther M. Arkin, D. Halperin, K. Kedem, Joseph S. B. Mitchell, and N. Naor. Arrangements of segments that share endpoints: Single face results. Technical report, SUNY Stony Brook, 1994. [ahkmn-astse-94] *Keywords:* arrangements, segments, Davenport-Schinzel sequences, zone theorems. *Succeeds:* ahkmn-astse-91.

775 Esther M. Arkin, D. Halperin, K. Kedem, Joseph S. B. Mitchell, and N. Naor. Arrangements of segments that share endpoints: Single face results. *Discrete Comput. Geom.*, 13:257–270, 1995. [ahkmn-astse-95] *Succeeds:* ahkmn-astse-94.

776 Esther M. Arkin and R. Hassin. Approximation algorithms for the geometric covering salesman problem. Technical Report 968, School of Operations Research and Industrial Engineering, Cornell University, July 1991. [ah-aagcs-91] *Precedes:* ah-aagcs-94.

777 Esther M. Arkin and R. Hassin. Approximation algorithms for the geometric covering salesman problem. *Discrete Appl. Math.*, 55:197–218, 1994. [ah-aagcs-94] *Succeeds:* ah-aagcs-91.

778 Esther M. Arkin, R. Hassin, and L. Klein. Restricted delivery problems on a network. Manuscript, 1994. [ahk-rdpn-94]

779 Esther M. Arkin, Martin Held, and Joseph S. B. Mitchell. Manufacturing: An application domain for computational geometry. In *First Regional Symposium on Manufacturing Science and Technology*, pages 29–36, October 1995. [ahm-madcg-95]

780 Esther M. Arkin, Martin Held, Joseph S. B. Mitchell, and Steven S. Skiena. Hamiltonian triangulations for fast rendering. In J. van Leeuwen, editor, *Algorithms – ESA'94*, volume 855 of *Lecture Notes Comput. Sci.*, pages 36–47, September 1994. [ahms-htfr-94] *Keywords:* triangulation, tri-strips, mesh generation, rendering, sequential triangulation, ribbons.

781 Esther M. Arkin, Martin Held, Joseph S. B. Mitchell, and Steven S. Skiena. Hamiltonian triangulations for fast rendering. *Visual Comput.*, 12(9):429–444, 1996. [ahms-htfr-96] *Keywords:* triangulation, tri-strips, mesh generation, rendering, sequential triangulation, ribbons. *Succeeds:* ahms-htfr-94.

782 Esther M. Arkin, Martin Held, Joseph S. B. Mitchell, and Steven S. Skiena. Recognizing polygonal parts from width measurements. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 199–204, 1995. [ahms-rppwm-95] *Precedes:* ahms-rppwm-98.

783 Esther M. Arkin, Martin Held, Joseph S. B. Mitchell, and Steven S. Skiena. Recognizing polygonal parts from width measurements. *Comput. Geom. Theory Appl.*, 9(4):237–246, 1998. [ahms-rppwm-98] *Succeeds:* ahms-rppwm-95.

784 Esther M. Arkin, Martin Held, and C. L. Smith. Optimization problems related to zigzag pocket machining. Manuscript, Department of Applied Mathematics, SUNY Stony Brook, NY, 1995. [ahs-oprzp-95]

785 Esther M. Arkin, Martin Held, and Christopher L. Smith. Optimization problems related to zigzag pocket machining. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 419–428, 1996. [ahs-oprzp-96] *Keywords:* CAD, NC-machining, milling, lawnmower problem, retractions, approximation, NP-hardness.

786 Esther M. Arkin, Martin Held, and Christopher L. Smith. Optimization problems related to zigzag pocket machining. In *Abstracts 12th European Workshop Comput. Geom.*, pages 109–111. Universität Münster, 1996. [ahs-oprzp-96c] *Cites:* ZZZ.

787 E. M. Arkin, M. Held, and C. L. Smith. Optimization problems related to zigzag pocket machining. *Algorithmica*, 26(2):197–236, 2000. [ahs-oprzp-00]

788 E. M. Arkin, F. Hurtado, J. S. B. Mitchell, C. Seara, and S. S. Skiena. Some separability problems in the plane. In *Abstracts 16th European Workshop Comput. Geom.*, pages 51–54. Ben-Gurion University of the Negev, 2000. [ahmss-00]

789 Esther M. Arkin, K. Kedem, Joseph S. B. Mitchell, J. Sprinzak, and M. Werman. Matching points into noise regions: combinatorial bounds and algorithms. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 42–51, 1991. [akmsw-mpnrc-91] *Keywords:* matching, similarity. *Precedes:* akmsw-mppdn-92.

790 Esther M. Arkin, K. Kedem, Joseph S. B. Mitchell, J. Sprinzak, and M. Werman. Matching points into pairwise-disjoint noise regions: combinatorial bounds and algorithms. *ORSA J. Comput.*, 4(4):375–386, 1992. [akmsw-mppdn-92] *Keywords:* matching, similarity. *Succeeds:* akmsw-mpnrc-91. *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

791 Esther M. Arkin, S. Khuller, and Joseph S. B. Mitchell. Geometric knapsack problems. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 165–176. Springer-Verlag, 1991. [akm-gkp-91] *Precedes:* akm-gkp-93.

792 Esther M. Arkin, S. Khuller, and Joseph S. B. Mitchell. Geometric knapsack problems. *Algorithmica*, 10:399–427, 1993. [akm-gkp-93] *Succeeds:* akm-gkp-91.

793 Esther M. Arkin, S. Khuller, and Joseph S. B. Mitchell. Optimal enclosure problems. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 36, 1989. [akm-oep-89] *Keywords:* partitioning, enclosure, knapsack, optimization. *Precedes:* akm-gkp-93.

794 Esther M. Arkin, H. Meijer, Joseph S. B. Mitchell, D. Rappaport, and S. S. Skiena. Decision trees for geometric models. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 369–378, 1993. [ammrs-dtgm-93] *Precedes:* ammrs-dtgm-98. *Cites:* am-accgp-90, bs-ppmh-91, b-dscns-86, bgg-raor-88, bggm-p2trd-90, ce-oails-92, cd-mbrrv-86, fpp-hdpgg-90, e-acg-87, fs-hfb-89, fpt-opcpa-81, fntv-sltjs-90, g-obip-72, gl-trluo-84, g-agtpg-80, g-clcmb-86, gl-lopsi-87, hmrt-sjslt-86, hr-cobdt-76, j-aacp-74, js-mbpsc-92, l-pftu-82, lr-eaiou-94, m-dtd-82, p-cpav-91, s-irgp-92, ZZZ.

795 Esther M. Arkin, H. Meijer, Joseph S. B. Mitchell, D. Rappaport, and S. S. Skiena. Decision trees for geometric models. *Internat. J. Comput. Geom. Appl.*, 8:343–364, 1998. [ammrs-dtgm-98] *Succeeds:* ammrs-dtgm-93.

796 Esther M. Arkin and Joseph S. B. Mitchell. An optimal visibility algorithm for a simple polygon with star-shaped holes. Technical Report 746, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, 1987. [am-ovasp-87] *Keywords:* visibility, hidden line/surface elimination, plane-sweep.

797 Esther M. Arkin, Joseph S. B. Mitchell, and Giri Narasimhan. Resource-constrained geometric network optimization. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 307–316, 1998. [amn-rcgno-98] *Keywords:* orienteering, generalized TSP, bank robber problem, approximation algorithms, guillotine subdivisions.

798 Esther M. Arkin, Joseph S. B. Mitchell, and C. Piatko. Minimum-link watchman tours. Report, University at Stony Brook, 1994. [amp-mlwt-94]

799 Esther M. Arkin, Joseph S. B. Mitchell, and C. D. Piatko. Bicriteria shortest path problems in the plane. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 153–156, 1991. [amp-bsppp-91] *Succeeds:* amp-gbpp-90. *Cites:* aw-vgoas-88, amp-gbpp-90, cdrx-ckp-88, gj-cigtn-79, gm-osacv-87, h-bpp-80, l-conm-76, m-aaorp-90, mp-wrpfs-91, mrw-mlpop-90, s-ltaml-86, ZZZ.

800 E. M. Arkin, J. S. B. Mitchell, and C. D. Piatko. Geometric bicriteria path problems. Manuscript in Preparation, 1990. [amp-gbpp-90] *Precedes:* amp-bsppp-91.

801 Esther M. Arkin, Joseph S. B. Mitchell, and Subhash Suri. Logarithmic-time link path queries in a simple polygon. *Internat. J. Comput. Geom. Appl.*, 5(4):369–395, 1995. [ams-ltlpq-95] *Keywords:* link distance, shortest paths, geodesic paths. *Succeeds:* ams-olpqs-92.

802 Esther M. Arkin, Joseph S. B. Mitchell, and Subhash Suri. Optimal link path queries in a simple polygon. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 269–279, 1992. [ams-olpqs-92] *Precedes:* ams-ltlpq-95.

803 Esther M. Arkin, Joseph S. B. Mitchell, and K. Zikan. Algorithms for point matching problems. Manuscript, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, 1989. [amz-apmp-89] *Keywords:* matching, computer vision.

Esther M. Arkin. See also [9740,11673, 11674].

804 R. Arkin and R. R. Murphy. Autonomous navigation in a manufacturing environment. *IEEE Trans. Robot. Autom.*, 6(4):445–454, 1990. [am-anme-90]

805 D. Armitage, J. I. Thakara, and W. D. Eades. Photoaddressed liquid crystal spatial light modulators. *Appl. Optics*, 28(22):4763–4771, 1989. [ate-plcsl-89]

806 D. Armon and John Reif. A dynamic separator algorithm. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 107–118. Springer-Verlag, 1993. [ar-dsa-93]

807 C. G. Armstrong, D. J. Robinson, R. M. McKeag, T. S. Li, S. J. Bridgett, R. J. Donaghy, and C. A. McGleenan. Medials for meshing and more. In *Proc. 4th International Meshing Roundtable*, pages 277–289, Albuquerque, NM, 1995. Sandia National Laboratories. [armldm-mmm-95]

C. G. Armstrong. See also [4345,12093, 12719,12720].

808 G. T. Armstrong. *A Study of Automatic Generation of Non-Invasive Machine Paths from Geometric Models.* PhD thesis, Univ. Leeds, Leeds, UK, October 1982. [a-sagni-82] *Keywords:* doctoral thesis.

809 G. T. Armstrong, G. C. Carey, and A. de Pennington. Numerical code generation from a geometric modeling system. In M. S. Pickett and J. W. Boyse, editors, *Solid Modeling by Computers: From Theory to Applications*. Plenum Press, Ne York, NY, 1984. [acp-ncggm-84]

810 M. A. Armstrong. *Basic Topology*. McGraw-Hill, London, UK, 1979. [a-bt-79]

811 S. Arnborg, D. G. Corneil, and A. Proskurowski. Complexity of finding embeddings in a k-tree. *SIAM J. Algebraic Discrete Methods*, 8:277–284, 1987. [acp-cfekt-87]

812 S. Arnborg and H. Feng. Algebraic decomposition of regular curves. *J. Symbolic Comput.*, 15(1):131–140, 1988. [af-adrc-88] *Keywords:* polygons, algebraic geometry, curvilinear.

813 S. Arnborg and A. Proskurowski. Characterization and recognition of partial 3-trees. *SIAM J. Algebraic Discrete Methods*, 7:305–314, 1986. [ap-crp3t-86]

814 D. B. Arnold and W. J. Milne. The use of Voronoi tessellations in processing soil survey results. *IEEE Comput. Graph. Appl.*, 4:22–28, 1984. [am-uvtps-84] *Keywords:* application, Voronoi diagrams, subdivision.

815 K. Arnold and J. Gosling. *The Java Programming Language*. Addison-Wesley, Reading, MA, 1996. [ag-jpl-96]

816 V. I. Arnold. Statistics of integral convex polytopes. *Functional Anal. Appl.*, 14:1–3, 1980. [a-sicp-80]

817 D. Arnon. A bibliography of quantifier elimination for real algebraic fields. *J. Symbolic Comput.*, 5:267–274, 1988. [a-bqera-88] *Keywords:* algebraic geometry, bibliography.

818 D. Arnon. Geometric reasoning with logic and algebra. *Artif. Intell.*, 37(1):37–60, 1988. [a-grla-88] *Keywords:* algebraic geometry, geometric reasoning.

819 D. S. Arnon and B. Buchberger, editors. *Algorithms in Real Algebraic Geometry*, volume 5/1, 2. ??, 1988. Special issue of the Journal of Symbolic Computation. [ab-arag-88]

820 D. S. Arnon, G. E. Collins, and S. McCallum. An adjacency algorithm for cylindrical algebraic decomposition in three-dimensional space. *J. Symbolic Comput.*, 5(1–2):163–187, 1988. [acm-aacad-88] *Keywords:* algebraic geometry, motion planning.

821 D. S. Arnon, G. E. Collins, and S. McCallum. Cylindrical algebraic decomposition I: The basic algorithm. *SIAM J. Comput.*, 13(4):865–877, 1984. [acm-cad1b-84] *Keywords:* algebraic geometry, motion planning.

822 D. S. Arnon, G. E. Collins, and S. McCallum. Cylindrical algebraic decomposition II: The adjacency algorithm for the plane. *SIAM J. Comput.*, 13(4):878–889, 1984. [acm-cad2a-84] *Keywords:* algebraic geometry, motion planning.

823 B. Aronov. A lower bound on Voronoi diagram complexity. unpublished manuscript, 1998. [a-lbvdc-98]

824 B. Aronov. *Combinatorial and algorithmic analysis of space decomposition problems.* Ph.D. thesis, Dept. Comput. Sci., New York Univ., New York, NY, February 1989. [a-caasd-89] *Keywords:* doctoral thesis.

825 B. Aronov. On the geodesic Voronoi diagram of point sites in a simple polygon. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 39–49, 1987. [a-gvdps-87] *Keywords:* geodesic distance, Voronoi diagram, simple polygon, shortest path. *Precedes:* a-gvdps-89. *Cites:* a-pdpaa-83, aa-vdpsp-, ae-oacwv-84, sb-spbtc-85, c-tpca-82, cd-vdbcd-85, f-savd-86, ghlst-ltavs-86t, gjpt-tsp-78, gs-dfbt-78, iim-vdlgi-85, k-eccs-79, l-prp-78, l-tdvdl-80, lpsssstwy-clcsp-87, lp-esppr-84, ls-ippvd-87, lw-vdllm-80, osy-rnamp-83, ps-cgcsp-86, ps-cgi-85, sh-cpp-75, s-cldsp-86, s-cgdsp-86, t-oacrc-86, tv-otats-86, y-oavds-84, ZZZ.

826 Boris Aronov. On the geodesic Voronoi diagram of point sites in a simple polygon. *Algorithmica*, 4:109–140, 1989. [a-gvdps-89] *Keywords:* geodesic distance, Voronoi diagram, simple polygon, shortest path. *Succeeds:* a-gvdps-87. *Abstract:* Given a simple polygon with n sides in the plane and a set of k point "sites" in its interior or on the boundary, compute the Voronoi diagram of the set of sites using the internal "geodesic" distance inside the polygon as the metric. We describe an $O((n+k)\log(n+k)\log n)$-time algorithm for solving this problem and sketch a faster $O((n+k)\log(n+k))$ algorithm for the case when the set of sites includes all reflex vertices of the polygon in question.

827 B. Aronov, P. Agarwal, and M. Sharir. On levels in arrangements of lines, segments, planes, and triangles. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 30–38, 1997. [aas-lalsp-97] *Precedes:* aacs-lalsp-98. *Cites:* ag-nssfs-86, acegsw-ptphp-91, bfl-nhp-90, bs-enks-94, ceghss-shcp-94, c-blmat-93, cs-arscg-89, de-ctchp-94, e-acg-87, evw-cdpsh-94, elss-dgpps-73, gp-asotd-93, g-saco-80, g-bpstp-79, hs-dccap-91, hs-cdcca-94, hs-cpmfl-92, l-nhl-71, pa-cg-95, pss-ubnpk-92, s-ksacs-91, tt-hcpps-95, w-mksfs-86, ws-prnds-88, vz-ctpci-92, ZZZ.

828 B. Aronov, M. de Berg, A. F. van der Stappen, O. Švestka, and J. Vleugels. Motion planning for multiple robots. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 374–382, 1998. [abssv-mpmr-98]

829 B. Aronov, M. de Berg, A. F. van der Stappen, P. Švestka, and J. Vleugels. Motion planning for multiple robots. *Discrete Comput. Geom.*, 22(4):505–525, 1999. [advsv-mpmr-99]

830 B. Aronov, M. Bern, and D. Eppstein. Arrangements of convex polytopes. unpublished manuscript, 1995. [abe-acp-95]

831 B. Aronov, M. Bern, and D. Eppstein. On the number of minimal 1-Steiner trees. *Discrete Comput. Geom.*, 12:29–34, 1994. [abe-nm1st-94]

832 B. Aronov, M. Bern, and D. Epstein. Arrangement of polytopes and the 1-Steiner problem. Preprint, ??, 1991. [abe-ap1sp-91]

833 B. Aronov, Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, Micha Sharir, and R. Wenger. Points and triangles in the plane and halving planes in space. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 112–115, 1990. [acegsw-ptphp-90] *Keywords:* combinatorial geometry, halving sets, k-sets. *Precedes:* acegsw-ptphp-91. *Cites:* ag-nssfs-86, a-pdpaa-87, b-gct-82, bfl-nhp-89, bf-ntccn-84, ceghss-sdash-90, cs-arscg-89, e-acg-87, ew-nlsfs-85, elss-dgpps-73, gp-nkssn-84, l-nhl-71, pss-ubnpk-89, ZZZ.

834 Boris Aronov, Bernard Chazelle, Herbert Edelsbrunner, Leonidas J. Guibas, Micha Sharir, and Rephael Wenger. Points and triangles in the plane and halving planes in space. *Discrete Comput. Geom.*, 6:435–442, 1991. [acegsw-ptphp-91] *Keywords:* combinatorial geometry, halving sets, k-sets. *Succeeds:* acegsw-ptphp-90. *Abstract:* We prove that for any set S of n points in the plane and $n^{3-\alpha}$ triangles spanned by the points in S there exists a point (not necessarily in S) contained in at least $\frac{n^{3-3\alpha}}{c\log^5 n}$ of the triangles. This implies that any set of n points in three-dimensional space defines at most $\sqrt[3]{\frac{c}{2}}n^{8/3}\log^{5/3} n$ halving planes.

835 Boris Aronov, Alan R. Davis, Tamal K. Dey, Sudebkumar P. Pal, and D. Chithra Prasad. Visibility with multiple reflections. In *Proc. 5th Scand. Workshop Algorithm Theory*, volume 1097 of *Lecture Notes Comput. Sci.*, pages 284–295. Springer-Verlag, 1996. [addpp-vmr-96] *Precedes:* addpp-vmr-98.

836 B. Aronov, A. R. Davis, T. K. Dey, S. P. Pal, and D. C. Prasad. Visibility with multiple reflections. *Discrete Comput. Geom.*, 20:61–78, 1998. [addpp-vmr-98] *Succeeds:* addpp-vmr-96.

837 B. Aronov, A. R. Davis, T. K. Dey, S. P. Pal, and D. C. Prasad. Visibility with one reflection. *Discrete Comput. Geom.*, 19:553–574, 1998. [addpp-vor-98] *Succeeds:* addpp-vr-95.

838 Boris Aronov, Alan R. Davis, Tamal K. Dey, Sudebkumar P. Pal, and D. Chithra Prasad. Visibility with reflection. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 316–325, 1995. [addpp-vr-95] *Keywords:* mirrors. *Precedes:* addpp-vor-98. *Cites:* addpp-vmr-96, ak-frtrc-87, bo-arcgi-79, dpp-agpvr-95, ea-lacvp-81, fkn-vsgpt-80, ghlst-ltavs-87, g-bp-86, hv-splsp-49, k-ealdp-89, kw-onupp-91, l-vsp-83, ll-ccagp-86, lpsssstwy-clcsp-88, o-agta-87, rty-ccrt-94, s-rrag-92, s-mlppr-87, s-sldps-90, ZZZ.

839 B. Aronov, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. Improved bounds on the complexity of many faces in arrangements of segments. Report 459, Dept. Comput. Sci., New York Univ., New York, NY, July 1989. [aegs-ibcmf-89] *Keywords:* combinatorial geometry, combinatorial complexity, arrangements, complexity of faces, random sampling. *Precedes:* aegs-nemfl-90.

840 B. Aronov, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. The number of edges of many faces in a line segment arrangement. *Combinatorica*, 12(3):261–274, 1992. [aegs-nemfl-92] *Keywords:* combinatorial geometry, combinatorial complexity, arrangements, complexity of faces, random sampling. *Succeeds:* aegs-nemfl-90.

841 B. Aronov, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. The number of edges of many faces in line segment arrangements. Report 90-46, DIMACS, Rutgers Univ., New Brunswick, NJ, June 1990. [aegs-nemfl-90] *Keywords:* combinatorial geometry, combinatorial complexity, arrangements, complexity of faces, random sampling. *Succeeds:* aegs-ibcmf-89. *Precedes:* aegs-nemfl-92.

842 Boris Aronov, Alon Efrat, Dan Halperin, and Micha Sharir. On the number of regular vertices of the union of Jordan regions. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 322–334. Springer-Verlag, 1998. [aehs-nrvuj-98]

843 Boris Aronov, Alon Efrat, and Micha Sharir. A subquadratic bound on the number of regular vertices of the union of Jordan regions. Manuscript, Tel Aviv University, 1997. [aes-sbnrv-97]

844 B. Aronov, P. Erdős, W. Goddard, D. J. Kleitman, M. Klugerman, J. Pach, and L. J. Schulman. Crossing families. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 351–356, 1991. [aegkkps-cf-91] *Keywords:* partition. *Cites:* ae-degg-89, cp-tttcc-90, e-acg-87, es-cpg-35, m-ept-91, r-ng-83, ZZZ.

845 B. Aronov, P. Erdős, W. Goddard, D. J. Kleitman, M. Klugerman, J. Pach, and L. J. Schulman. Crossing families. *Combinatorica*, 14:127–134, 1994. [aegkkps-cf-94] *Keywords:* partition.

846 B. Aronov and S. Fortune. Average-case ray shooting and minimum weight triangulations. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 203–211, 1997. [af-acrsm-97] *Cites:* a-rs-97, aas-stl3d-95, am-rsss-94, as-anspt-93, be-aagp-97, c-aapts-91, e-acg-87, e-amwst-94, f-btapi-96, hs-parss-93, mms-qsrs-94, m-smga-92, o-cgc-94, s-ipgp-79, ZZZ.

847 B. Aronov, S. Fortune, and G. Wilfong. Minimum speed motion. ??, 1987. [afw-msm-87]

848 B. Aronov, S. J. Fortune, and G. Wilfong. Furthest-site geodesic Voronoi diagram. *Discrete Comput. Geom.*, 9:217–255, 1993. [afw-fsgvd-93] *Keywords:* geodesic distance, simple polygon, Voronoi diagram. *Succeeds:* afw-fsgvd-88. *Abstract:* We present an $O((n+k)\log(n+k))$ time, $O(n+k)$ space algorithm for computing the furthest-site Voronoi diagram of k point sites with respect to the geodesic metric within a simple n-sided polygon.

849 B. Aronov, S. J. Fortune, and G. Wilfong. The furthest-site geodesic Voronoi diagram. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 229–240, 1988. [afw-fsgvd-88] *Keywords:* geodesic distance, simple polygon, Voronoi diagram. *Precedes:* afw-fsgvd-93. *Cites:* a-gvdps-87, at-cgcsp-87, ghlst-ltavs-86, gjpt-tsp-78, lp-esppr-84, psr-cgcsp-89, ps-cgi-85, s-agfnp-87, t-oacrc-86, ZZZ.

850 B. Aronov, J. E. Goodman, and R. Pollack. There is no Hadwiger number for line traversals in higher dimensions. Unpublished Manuscript. [agpw-tinhn-]

851 Boris Aronov, Jacob E. Goodman, Richard Pollack, and Rephael Wenger. A Helly-type theorem for hyperplane transversals to well-separated convex sets. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 57–63, 2000. [agpw-httht-00]

852 B. Aronov and J. Matoušek. On stabbing triangles by lines in 3-space. *Comment. Math. Univ. Carolinae*, 36:109–113, 1995. [am-stl3s-95]

853 B. Aronov, J. Matoušek, and Micha Sharir. On the sum of squares of cell complexities in hyperplane arrangements. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 307–313, 1991. [ams-sscch-91] *Keywords:* combinatorial geometry, combinatorial complexity, arrangements, polytopes, hyperplanes. *Comments:* To appear in *Journal Combin. Theory Ser. A*. *Cites:* aa-cfi-89, as-tsbac-90, as-zasha-91, as-cscas-, cf-plh-91, cegsw-ccbac-90, cs-arscg-89, e-acg-87, egs-cmcap-90, ess-npzta-, p-caasv-91, p-nrrsi-91, s-ksacs-91, ZZZ.

854 B. Aronov, J. Matoušek, and Micha Sharir. On the sum of squares of cell complexities in hyperplane arrangements. *J. Combin. Theory Ser. A*, 65:311–321, 1994. [ams-sscch-94]

855 B. Aronov, D. Q. Naiman, J. Pach, and Micha Sharir. An invariant property of balls in arrangements of hyperplanes. *Discrete Comput. Geom.*, 10:421–425, 1993. [anps-ipbah-93]

856 B. Aronov and C. Ó'Dúnlaing. Analysis of the motion-planning problem for a simple two-link planar arm. Report 314, Dept. Comput. Sci., New York Univ., New York, NY, August 1987. [ao-ampps-87] *Keywords:* motion planning, configuration space.

857 B. Aronov and J. O'Rourke. Nonoverlap of the star unfolding. Technical Report 002, Smith College, Northampton, MA, March 1991. [ao-nsu-91t]

858 B. Aronov and J. O'Rourke. Nonoverlap of the star unfolding. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 105–114, 1991. [ao-nsu-91] *Keywords:* polytopes, shortest paths, Voronoi diagrams, edge sequences. *Cites:* ao-nsu-91t, aaos-supa-90, aaos-supa-93, a-digdk-55, a-kp-58, b-cs-58, ch-spp-90, k-ccl-67, p-egcs-73, ss-spps-86, ZZZ.

859 B. Aronov and J. O'Rourke. Nonoverlap of the star unfolding. *Discrete Comput. Geom.*, 8:219–250, 1992. [ao-nsu-92] *Keywords:* polytopes, shortest paths, Voronoi diagrams, edge sequences.

860 B. Aronov, M. Pellegrini, and Micha Sharir. On the zone of a surface in a hyperplane arrangement. *Discrete Comput. Geom.*, 9(2):177–186, 1993. [aps-zsha-93] *Comments:* zone of k-dim bounded degree algebraic variety in arrangement of n hyperplanes in d-space has roughly $n^{\lfloor (k+d)/2 \rfloor}$ complexity (plus some extra logs). *Succeeds:* as-zsha-91, p-zcdps-91.

861 B. Aronov, R. Seidel, and D. Souvaine. On compatible triangulations of simple polygons. *Comput. Geom. Theory Appl.*, 3(1):27–35, 1993. [ass-ctsp-93] *Keywords:* polygon, triagulation.

862 B. Aronov and Micha Sharir. Castles in the air revisited. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 146–156, 1992. [as-car-92] *Keywords:* combinatorial geometry, combinatorial complexity, simplex arrangements, popularity, excess. *Precedes:* as-car-94. *Cites:* aa-cfi-89, ams-sscch-91, as-tsbac-90, as-zsha-91, cs-arscg-89, e-acg-87, egppss-acptc-92, egs-ccmfa-90, egs-cmcap-90, ess-ztha-93, gss-gmppt-89, h-cscca-91, hks-uevsi-91, ps-ueplf-89, ss-pmp2g-83, ss-tddsp-90, ZZZ.

863 B. Aronov and Micha Sharir. Castles in the air revisited. *Discrete Comput. Geom.*, 12:119–150, 1994. [as-car-94] *Keywords:* combinatorial geometry, combinatorial complexity, simplex arrangements, popularity, excess. *Succeeds:* as-car-92.

864 Boris Aronov and Micha Sharir. Cutting circles into pseudo-segments and improved bounds for incidences. In *Abstracts 17th European Workshop Comput. Geom.*, pages 66–69. Freie Universität Berlin, 2001. [as-ccpsi-01]

865 B. Aronov and Micha Sharir. On the complexity of a single cell in an arrangement of simplices in d-space. In preparation. [as-cscas-]

866 B. Aronov and Micha Sharir. On the complexity of one cell in an arrangement of triangles. Manuscript, 1991. [as-cocat-91]

867 B. Aronov and Micha Sharir. On the zone of a surface in a hyperplane arrangement. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 13–19. Springer-Verlag, 1991. [as-zsha-91] *Keywords:* arrangements, hyperplanes. *Precedes:* aps-zsha-93.

868 B. Aronov and Micha Sharir. On the zone of an algebraic surface in a hyperplane arrangement. Manuscript, 1991. [as-zasha-91]

869 Boris Aronov and Micha Sharir. On translational motion planning in 3-space. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 21–30, 1994. [as-tmp3s-94] *Precedes:* as-tmpcp-97. *Cites:* as-cecpp-94, as-tsbac-90, as-car-92, as-ucptd-93, bms-plpco-93, c-oaitd-92, cegss-cfals-93, cs-arscg-89, e-acg-87, egs-ueplf-89, gh-atfc-81, gks-ricdv-92, gs-ccrs-87, hy-cctbp-93, hs-actbn-93, klps-ujrcf-86, ms-eracu-91, m-mt-63, ps-ueplf-89, s-eappt-87, v-htiat-73, ZZZ.

870 Boris Aronov and Micha Sharir. On translational motion planning of a convex polyhedron in 3-space. *SIAM J. Comput.*, 26:1785–1803, 1997. [as-tmpcp-97] *Succeeds:* as-tmp3s-94.

871 B. Aronov and M. Sharir. The common exterior of convex polygons in the plane. Manuscript, ??, 1994. [as-cecpp-94]

872 Boris Aronov and Micha Sharir. The common exterior of convex polygons in the plane. *Comput. Geom. Theory Appl.*, 8:139–149, 1997. [as-cecpp-97]

873 Boris Aronov and Micha Sharir. The union of convex polyhedra in three dimensions. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 518–527, 1993. [as-ucptd-93] *Precedes:* ast-ucptd-97.

874 B. Aronov and M. Sharir. Triangles in space, or building and analyzing castles in the air. Manuscript, ??, 1987. [as-tsbac-87]

875 B. Aronov and Micha Sharir. Triangles in space or building (and analyzing) castles in the air. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 381–391, 1988. [as-tsbac-88] *Keywords:* three-dimensional, triangle arrangements. *Precedes:* as-tsbac-90. *Cites:* cgl-pgd-85, c-narsc-87, e-acg-87, egppss-acptc-88, egs-ueplf-87, egs-cmfal-88, egs-cmcap-88, eos-calha-86, ew-mnemf-86, hs-ndssg-86, hw-ensrq-87, ps-ueplf-87, pss-stsps-88, ss-cmpti-88, st-pplup-86, ws-prnds-88, ZZZ.

876 B. Aronov and Micha Sharir. Triangles in space or building (and analyzing) castles in the air. *Combinatorica*, 10(2):137–173, 1990. [as-tsbac-90] *Keywords:* three-dimensional, triangle arrangements. *Succeeds:* as-tsbac-88.

877 Boris Aronov, Micha Sharir, and Boaz Tagansky. The union of convex polyhedra in three dimensions. *SIAM J. Comput.*, 26:1670–1688, 1997. [ast-ucptd-97] *Succeeds:* as-ucptd-93.

Boris Aronov. See also [122–126, 134–154, 687, 1104–1106, 6666].

878 G. Aronsson. Extensions of functions satisfying Lipschitz conditions. *Arkiv för Matematik*, 28:551–561, 1967. [a-efslc-67]

879 Gunnar Aronsson. On p-harmonic functions, convex duality and an asymptotic formula for injection mold filling. Technical Report LiTH-MAT-R-94-27, Linköping University, June 1994. [a-phfcd-94] *Keywords:* injection molding, continuous Dijkstra, shortest paths, wavefront propagation.

880 Gunnar Aronsson. On some properties of a distance function and a connection to injection molding. Technical Report LiTH-MAT-R-95-03, Linköping University, January 1995. [a-spdfc-95] *Keywords:* injection molding, continuous Dijkstra, geodesic metric, shortest paths, wavefront propagation.

881 S. Arora. Nearly linear time approximation schemes for Euclidean TSP and other geometric problems. In *Proc. 38th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 554–563, 1997. [a-nltas-97]

882 Sanjeev Arora. Polynomial time approximation schemes for Euclidean traveling salesman and other geometric problems. *J. ACM*, 45(5):753–782, 1998. [a-ptase-98]

883 Sanjeev Arora. Polynomial time approximation schemes for Euclidean TSP and other geometric problems. In *Proc. 37th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 2–11, 1996. [a-ptase-96]

884 Sanjeev Arora, L. Babai, J. Stern, and Z. Sweedyk. The hardness of approximate optima in lattices, codes, and systems of linear equations. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 724–733, 1993. [abss-haolc-93]

885 Sanjeev Arora, Michelangelo Grigni, David Karger, Philip Klein, and Andrzej Woloszyn. A polynomial-time approximation scheme for weighted planar graph TSP. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 33–41, 1998. [agkkw-ptasw-98] *Comments:* running time $n^{O(1/\epsilon^2)}$.

886 Sanjeev Arora and Carsten Lund. Hardness of approximations. In D. S. Hochbaum, editor, *Approximation Algorithms for NP-Hard Problems*, pages 399–446. PWS Publishing Company, Boston, MA, 1997. [al-ha-97]

887 S. Arora, C. Lund, R. Motwani, M. Sudan, and M. Szegedy. On the intractability of approximation problems. Manuscript, ??, 1992. [almss-iap-92]

888 Sanjeev Arora, Prabhakar Raghavan, and Satish Rao. Approximation schemes for Euclidean k-median and related problems. In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, pages 106–113, 1998. [arr-asekm-98]

889 S. Arora, P. Raghavan, and S. Rao. Polynomial time approximation schemes for the Euclidean k-medians problem. In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, page to appear, 1998. [arr-ptase-98]

890 D. Arquès and P. Koch. Modélisation de solides par les pavages. In *Proc. of Pixim '89*, pages 47–61, September 1989. [ak-mdspl-89]

891 R. Arrathoon, editor. *Optical Computing: Digital and Symbolic*. Marcel Dekker, Inc., 1989. [a-ocds-89] *Keywords:* angular resolution.

892 D. K. Arrowsmith and C. M. Smith. *Dynamical Systems. Differential Equations, Maps, and Chaotic Behavior.* Chapman and Hall, London, 1992. [as-dsdem-92]

893 E. Artzy, G. Frieder, and G. T. Herman. The theory, design, implementation, and evaluation of 3-d surface detection algorithms. *Comput. Graph. Image Process.*, 15:1–24, 1981. [afh-tdie3-81]

894 K. S. Arun, T. S. Huang, and S. D. Blostein. Least squares fitting of two 3-d point sets. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-9(5), September 1987. [ahb-lsft3-87]

895 V. Arvind, J. Kobler, and M. Mundhenk. Hausdorff reduction to sparse sets and to sets of high information content. In *Proc. 18th Internat. Sympos. Math. Found. Comput. Sci.*, page ??, 1993. [akm-hrsss-93]

896 James Arvo, editor. *Graphics Gems II*. Academic Press, Boston, MA, 1991. [a-gg2-91]

897 J. Arvo. Random rotation matrics. In J. Arvo, editor, *Graphics Gems II*, pages 355–356. Academic Press, Boston, MA, 1991. [a-rrm-91]

898 J. Arvo. The irradiance Jacobian for partially occluded polyhedral sources. *Comput. Graph.*, ??:343–350, 1994. Proc. SIGGRAPH '94. [a-ijpop-94]

899 J. Arvo and D. Kirk. Fast ray tracing by ray classification. In M. C. Stone, editor, *Proc. SIGGRAPH '87*, pages 55–63, 1987. [ak-frtrc-87]

900 A. Arya, A. Kumar, V. Swaminathan, and A. Misra. Automatic generation of digital system schematic diagrams. In *Proc. 22nd Design Autom. Conf.*, pages 388–395, 1985. [aksm-agdss-85] *Keywords:* graph drawing.

901 Sunil Arya, Siu-Wing Cheng, and David Mount. Approximation algorithms for multiple-tool milling. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, page to appear, 1998. [acm-aamtm-98]

902 S. Arya, S.-W. Cheng, and D. M. Mount. Approximation algorithm for multiple-tool milling. *Internat. J. Comput. Geom. Appl.*, 11:339–372, 2001. [acm-aamtm-01]

903 S. Arya, G. Das, D. M. Mount, J. S. Salowe, and M. Smid. Euclidean spanners: short, thin, and lanky. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 489–498, 1995. [admss-esstl-95]

904 S. Arya, D. Mount, and O. Narayan. Accounting for boundary effects in nearest neighbor searching. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 336–344, 1995. [amn-abenn-95] *Keywords: Cites:* am-annqf-93, am-afvq-93, amnsw-oaann-94, bo-ammse-78, b-mbstu-75, c-aacpq-94, c-aafnn-79, fbf-afbml-77, gg-vqsc-91, gt-smmp-60, r-oeapb-74, s-rnns-91, w-bires-71, ZZZ.

905 S. Arya and D. M. Mount. Algorithms for fast vector quantization. In *Data Compression Conference*, pages 381–390. IEEE Press, 1993. [am-afvq-93]

906 S. Arya and D. M. Mount. Approximate nearest neighbor queries in fixed dimensions. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 271–280, 1993. [am-annqf-93]

907 Sunil Arya and David M. Mount. Approximate range searching. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 172–181, 1995. [am-ars-95] *Keywords:* quadtrees, box decomposition trees. *Cites:* amnsw-oaann-94, b-kdtsp-90, bcp-hhihr-93, ck-dmdps-92, ck-adcpn-95, c-lbcpr-89, cw-qorss-89, c-faann-83, fm-rpdsa-85, m-rsehc-93, o-plfs-92, ps-cgi-85, s-dasds-90, v-oaann-89, ZZZ.

908 S. Arya and D. M. Mount. Approximate range searching. *Comput. Geom. Theory Appl.*, 17:135–152, 2000. [am-ars-00]

909 S. Arya, D. M. Mount, and O. Narayan. Accounting for boundary effects in nearest neighbor searching. Report MPI-I-94-159, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [amn-abenn-94]

910 S. Arya, D. M. Mount, and O. Narayan. Accounting for boundary effects in nearest-neighbor searching. *Discrete Comput. Geom.*, 16:155–176, 1996. [amn-abenn-96]

911 S. Arya, D. M. Mount, N. S. Netanyahu, R. Silverman, and A. Wu. An optimal algorithm for approximate nearest neighbor searching. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 573–582, 1994. [amnsw-oaann-94]

912 S. Arya, D. M. Mount, N. S. Netanyahu, R. Silverman, and A. Wu. An optimal algorithm for approximate nearest neighbor searching in fixed dimensions. *J. ACM*, 45:891–923, 1998. [amnsw-oaann-98]

913 S. Arya, D. M. Mount, and M. Smid. Dynamic algorithms for geometric spanners of small diameter: randomized solutions. Report MPI-I-94-156, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [ams-dagss-94]

914 S. Arya, D. M. Mount, and M. Smid. Dynamic algorithms for geometric spanners of small diameter: Randomized solutions. *Comput. Geom. Theory Appl.*, 13:91–107, 1999. [ams-dagss-99]

915 S. Arya, D. M. Mount, and M. Smid. Randomized and deterministic algorithms for geometric spanners of small diameter. In *Proc. 35th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 703–712, 1994. [ams-rdags-94]

916 S. Arya and M. Smid. Efficient construction of a bounded degree spanner with low weight. Report MPI-I-94-115, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [as-ecbds-94t]

917 S. Arya and M. Smid. Efficient construction of a bounded degree spanner with low weight. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 48–59. Springer-Verlag, 1994. [as-ecbds-94i] *Precedes:* as-ecbds-97.

918 S. Arya and M. Smid. Efficient construction of a bounded-degree spanner with low weight. *Algorithmica*, 17:33–54, 1997. [as-ecbds-97] *Succeeds:* as-ecbds-94i.

919 H. Asada and A. B. By. Kinematic analysis of workpart fixturing for flexible assembly with automatically reconfigurable fixtures. *Internat. J. Robot. Autom.*, RA-1(2), June 1985. [ab-kawff-85]

920 H. Asada and J.-J. E. Slotine. *Robot Analysis and Control.* John Wiley & Sons, New York, NY, 1986. [as-rac-86]

K. Asano. See also [5684].

921 T. Asano. A faster algorithm for finding a maximum weight clique of a circular-arc graph. Technical Report 90624–OR, ??, Bonn, 1990. [a-fafmw-90] *Keywords:* circular-arc graph.

922 T. Asano. An optimal algorithm for finding a minimal clique covering of a circular-arc graph. Technical Report 89619–OR, ??, Bonn, 1989. [a-oafmc-89] *Keywords:* circular-arc graph.

923 T. Asano. Computational geometry. *J. Soc. Instrum. Control Eng.*, 26(11):985–994, 1987. [a-cg-87] *Keywords:* tutorial.

924 T. Asano. Efficient algorithms for finding the visibility polygon for a polygonal region with holes. Manuscript, University of California at Berkeley. [a-eafvp] *Precedes:* a-eafvp-85.

925 T. Asano. Reporting and counting intersections of lines within a polygon. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 652–659. Springer-Verlag, 1994. [a-rcilw-94]

926 T. Asano, D. Z. Chen, N. Katoh, and T. Tokuyama. Efficient algorithms for optimization-based image segmentation. *Internat. J. Comput. Geom. Appl.*, 11:145–166, 2001. [ackt-eaobi-01]

927 T. Asano and N. Katoh. Number theory helps line detection in digital images. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 313–322. Springer-Verlag, 1993. [ak-nthld-93]

928 T. Asano and N. Katoh. Variants for the Hough transform for line direction. *Comput. Geom. Theory Appl.*, 6:231–252, 1996. [ak-vhtld-96]

929 T. Asano, N. Katoh, and T. Tokuyama. A unified scheme for detecting fundamental curves in binary edge images. *SIGAL Technical Report of Inform Process. Soc. Japan*, AL38-7:49–56, 1994. [akt-usdfc-94]

930 T. Asano, N. Katoh, and T. Tokuyama. A unified scheme for detecting fundamental curves in binary edge images. *Comput. Geom. Theory Appl.*, 18:73–93, 2001. [akt-usdfc-01]

931 T. Asano, T. Roos, P. Widmayer, and Emo Welzl. Space filling curves and their use in the design of geometric data structures. In *Proc. 2nd Latin Amer. Sympos. Theoret. Informatics*, volume 911 of *Lecture Notes Comput. Sci.*, pages 36–48. Springer-Verlag, 1995. [arww-sfctu-95]

932 T. Asano and T. Tokuyama. Circuit partitioning algorithm based on geometry model. In M. Sarrafzadeh and D. T. Lee, editors, *Algorithmic Aspects of VLSI Layout*, volume 2 of *Lecture Notes Series on Computing*, pages 199–212. World Scientific, 1993. [at-cpabg-93]

933 T. Asano and T. Tokuyama. Partial construction of an arrangement of lines and its applications to optimal partitioning of bicromatic point set. *Trans. (E) of IEICE of Japan*, E77–A(4), April 1994. [at-pcala-94]

934 T. Asano and T. Tokuyama. Topological walk revisited. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 1–6, 1994. [at-twr-94] *Cites:* akt-usdfc-94, at-pcala-94, at-appgm-93, at-cpabg-93, eg-tsa-89, m-ltalp-83, e-acg-87, agt-wat-94, erk-oalla-93, m-ltalp-83, bms-dgc-94, ykii-avoll-88, ZZZ.

T. Asano. See also [4627, 7711, 7712].

935 Ta. Asano. Dynamic programming on intervals. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 199–207. Springer-Verlag, 1991. [a-dpi-91] *Precedes:* a-dpi-93.

936 Ta. Asano. Dynamic programming on intervals. *Internat. J. Comput. Geom. Appl.*, 3:323–330, 1993. [a-dpi-93] *Keywords:* Circular-arc graph, clique, dynamic programming, interval graph, segment tree, sequential partition. *Succeeds:* a-dpi-91.

937 Ta. Asano and Te. Asano. Minimum partition of polygonal regions into trapezoids. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 233–241, 1983. [aa-mpprt-83] *Precedes:* aai-pprt-86.

938 Ta. Asano and Te. Asano. Voronoi diagram for points in a simple polygon. In D. S. Johnson, editor, *Discrete Algorithms and Complexity*, Perspectives in Computing, pages 51–64. Academic Press, 1987. [aa-vdpsp-87] *Abstract:* [For the entire collection see Zbl. 636.00011.] The authors present an algorithm for constructing the Voronoi diagram (Voronoi triangulation) for a set of n points in a simple polygon of m vertices. The complexity of the algorithm is O(mn + m log log m + n log n) time and O(m + n) space. This algorithm is based on the recent results of triangulating a simple polygon [see R. E. Tarjan and C. J. Van Wyk, Proc. 18th Annu. ACM Sympos. Theory of Computing, Berkeley, California, 380 - 388 (1986); cf. SIAM J. Comput. 17, 143 - 178 (1988; Zbl. 637.68044)] and of finding shortest paths from a point to all the vertices of a simple polygon [see L. Guibas, J. Hershberger, D. Leven, Micha Sharir and R. E. Tarjan, Proc. 2nd ACM Sympos. Computational Geometry, Yorktown Heights, New York, 1 - 13 (1986)]. Some problems which can be efficiently solved with this algorithm are also specified.

939 Ta. Asano, Te. Asano, Leonidas J. Guibas, J. Hershberger, and H. Imai. Visibility of disjoint polygons. *Algorithmica*, 1:49–63, 1986. [aaghi-vdp-86] *Keywords:* design of algorithms, data structuring, visibility, path planning, geometric transformations, arrangements. *Succeeds:* aaghi-vpses-85.

940 Ta. Asano, Te. Asano, Leonidas J. Guibas, J. Hershberger, and H. Imai. Visibility-polygon search and Euclidean shortest paths. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 155–164, 1985. [aaghi-vpses-85] *Precedes:* aaghi-vdp-86. *Annote:* $O(n^2)$ time and space algorithm builds visibility graph of polygonal set. Hence $O(n^2)$ shortest path algorithm.

941 Ta. Asano, Te. Asano, and H. Imai. Partitioning a polygonal region into trapezoids. *J. ACM*, 33:290–312, 1986. [aai-pprt-86] *Keywords:* decomposition, approximation, dynamic programming, polygon triangulation. *Succeeds:* aa-mpprt-83.

942 Ta. Asano, Te. Asano, and H. Imai. Shortest path between two simple polygons. *Inform. Process. Lett.*, 24:285–288, 1987. [aai-spbts-87] *Keywords:* design of algorithms, path planning, geometric transformations, visibility, arrangements.

943 Ta. Asano, Te. Asano, and R. Y. Pinter. Polygon triangulation: Efficiency and minimality. *J. Algorithms*, 7:221–231, 1986. [aap-ptem-86] *Keywords:* lower bounds, design of algorithms, triangulation. *Annote:* Proves lower bound of $\Theta(n \log n)$ for triangulation of polygons with holes. Dynamic programming algorithm for minimum number triangulation where there is a fixed number of holes.

944 Ta. Asano, M. Edahiro, H. Imai, M. Iri, and K. Murota. Practical use of bucketing techniques in computational geometry. In G. T. Toussaint, editor, *Computational Geometry*, pages 153–195. North-Holland, Amsterdam, Netherlands, 1985. [aeiim-pubtc-85] *Keywords:* survey paper, implementing algorithms, optimization, bucketing, matchings, Voronoi diagrams, range search, point location, shortest paths, quad trees.

945 Ta. Asano and T. Hirata. Edge-contraction problems. *J. Comput. Syst. Sci.*, 26:197–208, 1983. [ah-ecp-83] *Keywords:* NP-completeness, graph theory.

946 Ta. Asano, M. Sato, and T. Ohtsuki. Computational geometry algorithms. In T. Ohtsuki, editor, *Layout Design and Verification*, pages 295–347. North-Holland, Amsterdam, Netherlands, 1986. [aso-cga-86] *Keywords:* VLSI design, priority search trees, intersection, rectangles.

Ta. Asano. See also [962, 4626, 4628, 4629, 7346–7351].

947 Te. Asano. A new compaction algorithm for building block LSI using block packing technique. Technical Report CAS85-158, IECE of Japan, 1986. [a-ncabb-86]

948 Te. Asano. Accuracy of digital images of lines and disks. Technical Report COMP86-6, IECE of Japan, 1986. [a-adild-86] *Keywords:* design of algorithms, discrete geometry, convex hull, worst-case analysis.

949 Te. Asano. An algorithm for computing every angle of movable separability of two polygons. *Trans. IECE Japan*, J69-A:1162–1165, 1986. [a-aceam-86] *Keywords:* design of algorithms, visibility, convex hull, path planning. *Comments:* in Japanese.

950 Te. Asano. An efficient algorithm for computing the k-reachability region from a point. *Trans. IECE Japan*, E68:560–562, 1985. [a-eackr-85] *Keywords:* design of algorithms, VLSI design, visibility, plane-sweep.

951 Te. Asano. An efficient algorithm for computing the reachability polygon from a point: rectilinear case. In *Proc. ISCAS*, pages 1293–1296, 1985. [a-eacrp-85]

952 Te. Asano. An efficient algorithm for finding the region reachable within k bends. *Trans. IECE Japan*, E68:831–835, 1985. [a-eafrr-85] *Keywords:* design of algorithms, VLSI design, worst-case analysis, visibility.

953 Te. Asano. An efficient algorithm for finding the visibility polygon for a polygonal region with holes. *Trans. IECE Japan*, E68(9):560–562, 1985. [a-eafvp-85] *Keywords:* design of algorithms, computer graphics, reporting, visibility, hidden line/surface elimination, plane-sweep. *Succeeds:* a-eafvp.

954 Te. Asano. Dividing a simple polygon into two territories. *Trans. IECE Japan*, E69:521–523, 1986. [a-dsptt-86] *Keywords:* design of algorithms, visibility, decomposition, operations research.

955 Tetsuo Asano. Generalized Manhattan path algorithm with applications. *Comput. Aided Design*, 7(7):797–804, July 1988. [a-gmpaa-88]

956 Te. Asano. Generating and counting valid patterns in routes between two points. *Graphs Combin.*, 2:9–13, 1986. [a-gcvpr-86] *Keywords:* counting, VLSI design, path planning.

957 Te. Asano. On minimum width packing of rectilinear blocks. *Trans. IECE Japan*, E68:647–649, 1985. [a-mwprb-85] *Keywords:* design of algorithms, plane-sweep, graph theory, VLSI design, packing.

958 Te. Asano. Parallel global route. *Japanese Journal*, 23:443–450, 1982. [a-pgr-82]

959 Te. Asano. Rectilinear shortest paths in a rectilinear simple polygon. *Trans. IECE Japan*, E69(6):750–758, 1986. [a-rsprs-86] *Keywords:* design of algorithms, minimum spanning trees, decomposition, point location.

960 Te. Asano. Routes between two points. *Japanese Journal*, 23:576–578, 1982. [a-rbtp-82]

961 Te. Asano. Two layer routing problem with large vias. Technical Report CAS86-198, IECE of Japan, 1987. [a-tlrpl-87] *Keywords:* design of algorithms, VLSI design, path planning, decomposition, plane-sweep, priority search trees, reporting, point location.

962 Te. Asano, Ta. Asano, and Y. Ohsuga. Partitioning a polygonal region into a minimum number of triangles. *Trans. IECE Japan*, E67(4):232–233, 1984. [aao-pprmn-84] *Keywords:* approximation, dynamic programming, triangulation.

963 Te. Asano, B. K. Bhattacharya, J. M. Keil, and F. Yao. Clustering algorithms based on minimum and maximum spanning trees. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 252–257, 1988. [abky-cabmm-88] *Keywords:* cluster analysis, minimum spanning trees, diameter, partition. *Cites:* ahu-daca-74, a-dp-86, b-ccp-77, emprww-sls-82, g-asrp-75, h-ca-75, j-nccog-82, mt-pnadt-82, mpsy-cemst-88, ps-cgi-85, ZZZ.

964 Tetsuo Asano, Danny Z. Chen, Naoki Katoh, and Takeshi Tokuyama. Polynomial-time solutions to image segmentation. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 104–113, 1996. [ackt-ptsis-96] *Keywords:* separation, monotone chains, dynamic programming, probing, computer vision.

965 Tetsuo Asano, Subis K. Ghosh, and Thomas C. Shermer. Visibility in the plane. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 829–876. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [ags-vp-00] *Annote:* Chapter 19 of su-hcg-00.

966 Te. Asano, Leonidas J. Guibas, and T. Tokuyama. Walking on an arrangement topologically. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 297–306, 1991. [agt-wat-91] *Keywords:* arrangements, lines. *Cites:* at-appgm-90, ce-oails-88, e-acg-87, eg-tsa-89, h-gt-72, m-ltalp-83, ow-nmcvg-88, ykii-avoll-88, ZZZ.

967 Te. Asano, Leonidas J. Guibas, and T. Tokuyama. Walking on an arrangement topologically. *Internat. J. Comput. Geom. Appl.*, 4:123–151, 1994. [agt-wat-94] *Keywords:* arrangements, lines. *Succeeds:* agt-wat-91.

968 Te. Asano, J. Hershberger, J. Pach, E. Sontag, D. Souvaine, and S. Suri. Separating bi-chromatic points by parallel lines. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 46–49, 1990. [ahpsss-sbcpp-90] *Cites:* ahu-daca-74, b-cmp-88, bh-wsngv-89, b-lgc-74, s-sdbh-89, ZZZ.

969 Te. Asano, M. E. Houle, H. Imai, and K. Imai. A unified linear-space approach to geometric minimax problems. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 20–23, 1990. [ahii-ulsag-90] *Cites:* co-gpah-82, hk-cmhdp-90, ZZZ.

970 Te. Asano, H. Imai, and K. Imai. Clustering/hashing points in the plane with maxmin criteria. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 15, 1989. [aii-chppm-89]

971 Tetsuo Asano, Naoki Katoh, Elena Lodi, and Thomas Roos. Optimal approximation of monotone curves on a grid. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 37–42, 1995. [aklr-oamcg-95]

972 Te. Asano, N. Katoh, H. Tamaki, and T. Tokuyama. Covering points in the plane by k-tours: towards a polynomial time approximation scheme for general k. In *Proc. 29th Annu. ACM Sympos. Theory Comput.*, pages 275–283, 1997. [aktt-cppkt-97]

973 Tetsuo Asano, David Kirkpatrick, and Chee K. Yap. d_1-optimal motion for a rod. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 252–263, 1996. [aky-domr-96] *Cites:* b-kpso-28, cr-nlbtr-87, csy-aesp3-94, irwy-spls-92, o-fslps-87, ps-oplmo-87, rty-ccrt-94, ss-pmp1c-83, s-npsap-89t, osy-gvdl-86, osy-gvdl-87, u-pmm-64, y-amp-87, ZZZ.

974 Tetsuo Asano, Desh Ranjan, Thomas Roos, Emo Welzl, and Peter Widmayer. Space-filling curves and their use in the design of geometric data structures. *Theoret. Comput. Sci.*, 181(1):3–15, July 1997. [arrww-sfcdg-97]

975 Te. Asano and T. Tokuyama. Algorithms for projecting points to give the most uniform distribution with application to hashing. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 300–309. Springer-Verlag, 1990. [at-appgm-90]

976 Te. Asano and T. Tokuyama. Algorithms for projecting points to give the most uniform distribution with application to hashing. *Algorithmica*, ??:572–590, 1993. [at-appgm-93]

977 Te. Asano and T. Tokuyama. Circuit partitioning algorithms: graph model versus geometry model. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 94–103. Springer-Verlag, 1991. [at-cpagm-91]

978 Te. Asano and G. Toussaint. Computing the geodesic center of a simple polygon. In D. S. Johnson, editor, *Discrete Algorithms and Complexity*, Perspectives in Computing, pages 65–79. Academic Press, 1987. [at-cgcsp-87]

979 Te. Asano and G. T. Toussaint. Computing the geodesic center of a simple polygon. Technical Report COMP86-24, IECE of Japan, 1986. [at-cgcsp-86]

980 Te. Asano and H. Umeo. Systolic algorithms for computing the visibility polygon and triangulation of a polygonal region. Technical Report COMP86-7, IECE of Japan, 1986. [au-sacvp-86] *Keywords:* parallel computation, design of algorithms, visibility, triangulation. *Precedes:* au-sacvp-88.

981 Te. Asano and H. Umeo. Systolic algorithms for computing the visibility polygon and triangulation of a polygonal region. In A. Albrecht, H. Jung, and K. Mehlhorn, editors, *Parallel Algorithms and Architectures*, pages 77–85. Akademie-Verlag Berlin, May 1987. [au-sacvp-87]

982 Te. Asano and H. Umeo. Systolic algorithms for computing the visibility polygon and triangulation of a polygonal region. *Parallel Comput.*, 6(2):209–216, 1988. [au-sacvp-88] *Succeeds:* au-sacvp-86. *Abstract:* Many geometrical problems have been shown to require at least O(n log n) computer time in the worst case. A problem of this kind is the following: Given a polygonal domain with (polygonal) holes and a point q in its interior, find the vertices of the boundary that are visible from q. Since the problem is almost solved when the rays from q to the vertices are sorted according to their direction, it follows that one has the n log n-asymptotics. Now the computer time can be reduced to const. n, if O(n) processors are organized as a one-dimensional systolic array. Each processor cell needs only to communicate with its two neighbours. The communication links with the outside are located at the ends of the array. The essential step is the following. In each processor only an amount of information which is independent of n is needed. Also each vertex "who is sent through the systolic array" may carry an amount of information which does not depend on n. It is described how this is possible. Another problem which fits into this framework is often encountered in CAD. Which part of a polygonal body is visible? A subdivision of a polygonal domain into a minimal set of triangles is also treated.

Tetsuo Asano. See also [937–943, 3708, 6837].

983 B. Asberg, G. Blanco, P. Bose, J. Garcia-Lopez, M. Overmars, G. Toussaint, G. Wilfong, and B. Zhu. Feasibility of design in stereolithography. In *Proc. 13th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 761 of *Lecture Notes Comput. Sci.*, pages 228–237. Springer-Verlag, 1993. [abbgotwz-fds-93]

984 B. Asberg, G. Blanco, P. Bose, J. Garcia-Lopez, M. Overmars, G. Toussaint, G. Wilfong, and B. Zhu. Feasibility of design in stereolithography. *Algorithmica*, 19(1–2):61–83, September 1997. [abbgotwz-fds-97]

T. W. Van Asch. See also [12874].

985 F. Aschim and B. M. Mostue. IFIP WG 8.1 case solved using SYSDOC and SYSTEMATOR. In T. W. Olle, H. G. Sol, and A. A. Verrijn-Stuart, editors, *Information Systems Design Methodologies: A Comparative Review*, pages 15–40. North-Holland, New York, NY, 1982. [am-iw81c-82] *Keywords:* graph drawing.

986 Peter Ash, Ethan Bolker, Henry Crapo, and Walter Whiteley. Convex polyhedra, Dirichlet tessellations, and spider webs. In Marjorie Senechal and George Fleck, editors, *Shaping Space: A Polyhedral Approach*, chapter 17, pages 231–250. Birkhäuser, Boston, MA, 1988. [abcw-cpdts-88] *Annote:* Plane pictures of 3d convex polyhedra, plane sections of 3d Vds and flat spider webs under tension are all the same.

987 Peter F. Ash and Ethan D. Bolker. Generalized Dirichlet tessellations. *Geom. Dedicata*, 20:209–243, 1986. [ab-gdt-86] *Annote:* Gives conditions for a planar tessellations to be a generalized Voronoi diagram. Generalized distance from a site is $\phi(|X-P|)+w(P)$ where ϕ is increasing.

988 Peter F. Ash and Ethan D. Bolker. Recognizing Dirichlet tesselations. *Geom. Dedicata*, 19:175–206, 1985. [ab-rdt-85] *Keywords:* Voronoi diagrams. *Annote:* Gives conditions for a planar tessellation to be a Voronoi diagram.

989 Ian Ashdown. B-REP96.TXT. Technical report, Ledalite Architectural Products, Vancouver, BC, January 1996. [a-brep-96] *URL:* http://www.ledalite.com/library/cgis.html. *Keywords:* bibliography, computer graphics, winged edge, edge-based boundary representations. *Comments:* A comprehensive bibliography of edge-based boundary representation (e.g., winged edge) papers, theses, articles, and books. 39 references.

990 Ian Ashdown. CQUANT96.TXT. Technical report, Ledalite Architectural Products, Vancouver, BC, January 1996. [a-cquan-96] *URL:* http://www.ledalite.com/library/cgis.html. *Keywords:* bibliography, computer graphics, color quantization, dynamic palettes. *Comments:* A comprehensive bibliography of color quantization algorithms. 91 references.

991 Ian Ashdown. RADBIB96.TXT. Technical report, Ledalite Architectural Products, Vancouver, BC, January 1996. [a-radbi-96] *URL:* http://www.ledalite.com/library/rrt.html. *Keywords:* bibliography, computer graphics, radiosity, global illumination, form factors. *Comments:* A comprehensive bibliography of radiosity and related global illumination papers, theses, articles, and books. 904 references.

J. Ashley. See also [5336].

992 J. Ashton and D. Hoang. An algorithm for finding optimal paths between points while avoiding polyhedral obstacles. In *Towards 3 Generation Robotics. Proc. 3rd Internat. Conf. Adv. Robotics*, pages 307–312. Springer, France, 1987. [ah-afopb-87] *Keywords:* motion planning, polyhedra, three-dimensional.

993 D. Asimov. The Grand Tour: A tool for viewing multidimensional data. *SIAM J. Sci. Statist. Comput.*, 6:128–143, 1985. [a-gttvmd-85]

994 L. Asimov and B. Roth. The rigidity of graphs. *Trans. Amer. Math. Soc.*, 245:279–289, 1978. [ar-rg-78] *Keywords:* rigidity.

995 L. Asimov and B. Roth. The rigidity of graphs, 2. *J. Math. Anal. Appl.*, 68:171–190, 1979. [ar-rg2-79] *Keywords:* rigidity.

996 J. Aspnes and M. Herlihy. Wait-free data structures in the asynchronous PRAM model. In *Proc. 2nd ACM Sympos. Parallel Algorithms Architect.*, pages 340–349, 1990. [ah-wfdsa-90]

997 B. Aspvall and Y. Shiloac. A polynomial time algorithm for solving systems of linear inequalities with two variables per inequality. In *Proc. 20th Annu. IEEE Sympos. Found. Comput. Sci.*, 1979. [as-ptass-79]

998 T. Assano and T. Assano. Voronoi diagram for points in a simple polygon. Manuscript, ??, ?? [aa-vdpsp-]

T. Assano. See also [998].

999 P. Assouad. Densité et dimension. *Ann. Inst. Fourier, Grenoble*, 3:232–282, 1983. [a-ded-83]

1000 M. Atallah and D. Chen. On parallel rectilinear obstacle-avoiding paths. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 210–215, 1993. [ac-proap-93i] *Precedes:* ac-proap-93a. *Cites:* ap-nsmma-88, aalm-epase-90, ac-prspr-91, acg-cdctd-89, ak-eparm-91, b-pegae-74, c-pms-88, rlw-rsppr-89, em-osrqa-91, nllw-xchsx-83, ZZZ.

1001 M. Atallah and D. Chen. On parallel rectilinear obstacle-avoiding paths. *Comput. Geom. Theory Appl.*, 3:307–313, 1993. [ac-proap-93a] *Succeeds:* ac-proap-93i. *Annote:* They improve the results of [1020], to give a CREW algorithm using $O(n^2/\log n)$ processors (versus earlier bound of $O(n^2)$), $O(\log^2 n)$ time, and $O(n^2)$ space (versus earlier bound of $O(n^2 \log^2 n)$). See also ElGindy and Mitra [4870], who are said to have an $O(\log^3 n)$ time, $O(n^2/\log^2 n)$ processor, method that uses very different techniques.

M. Atallah. See also [9166].

1002 M. J. Atallah. A faster parallel algorithm for a matrix searching problem. In *??*, volume 447 of *Lecture Notes Comput. Sci.*, pages 192–200. 1990. [a-fpams-90] *Keywords:* matrix searching, parallel computation.

1003 M. J. Atallah. A linear time algorithm for the Hausdorff distance between convex polygons. *Inform. Process. Lett.*, 17:207–209, 1983. [a-ltahd-83]

1004 M. J. Atallah. A matching problem in the plane. *J. Comput. Syst. Sci.*, 31:63–70, 1985. [a-mpp-85]

1005 M. J. Atallah. Checking similarity of planar figures. *Internat. J. Comput. Inform. Sci.*, 13:279–290, 1984. [a-cspf-84]

1006 M. J. Atallah. Computing the convex hull of line intersections. *J. Algorithms*, 7:285–288, 1986. [a-cchli-86]

1007 M. J. Atallah. Dynamic computational geometry. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 92–99, 1983. [a-dcg-83] *Precedes:* a-sdcgp-85.

1008 M. J. Atallah. On symmetry detection. *IEEE Trans. Comput.*, C-34:663–666, 1985. [a-sd-85]

1009 M. J. Atallah. Parallel techniques for computational geometry. *Proc. IEEE*, 80(9):1435–1448, September 1992. [a-ptcg-92] *Keywords:* survey paper.

1010 M. J. Atallah. Some dynamic computational geometry problems. *Comput. Math. Appl.*, 11(12):1171–1181, 1985. [a-sdcgp-85] *Succeeds:* a-dcg-83.

1011 M. J. Atallah and C. Bajaj. Efficient algorithms for common transversals. *Inform. Process. Lett.*, 25:87–91, 1987. [ab-eact-87]

1012 M. J. Atallah, P. Callahan, and M. T. Goodrich. *P*-complete geometric problems. In *Proc. 2nd ACM Sympos. Parallel Algorithms Architect.*, pages 317–326, 1990. [acg-pcgp-90] *Precedes:* acg-pcgp-93.

1013 M. J. Atallah, P. Callahan, and M. T. Goodrich. *P*-complete geometric problems. *Internat. J. Comput. Geom. Appl.*, 3:443–462, 1993. [acg-pcgp-93] *Keywords:* computational geometry, complexity, P-completeness, parallel algorithms. *Succeeds:* acg-pcgp-90.

1014 M. J. Atallah and D. Z. Chen. An optimal parallel algorithm for the minimum circle-cover problem. *Inform. Process. Lett.*, 34(4):159–165, 1989. [ac-opamc-89]

1015 M. J. Atallah and D. Z. Chen. Computing the all-pairs longest chains in the plane. *Internat. J. Comput. Geom. Appl.*, 5:257–271, 1995. [ac-caplc-95] *Keywords:* computational geometry, CREW PRAM, increasing chains, longest paths, Monge matrices, parallel algorithms, sequential algorithms.

1016 Mikhail J. Atallah and Danny Z. Chen. Deterministic parallel computational geometry. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 155–200. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [ac-dpcg-00] *Annote:* Chapter 4 of su-hcg-00.

1017 M. J. Atallah and D. Z. Chen. On connecting red and blue rectilinear polygonal obstacles with nonintersecting monotone rectilinear paths. *Internat. J. Comput. Geom. Appl.*, 11:373–400, 2001. [ac-crbrp-01]

1018 M. J. Atallah and D. Z. Chen. Optimal parallel algorithm for visibility of a simple polygon from a p oint. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 114–123, 1989. [ac-opavs-89] *Precedes:* acw-opavs-91. *Cites:* acg-cdctd-87, ahu-daca-74, c-pms-88, cd-icott-87, ds-ehlec-85, ea-lacvp-81, g-fchsp-87, hs-et-55, krs-ppp-85a, l-vsp-83, lf-ppc-80, ps-cgi-85, w-opach-85, w-cvgnl-85, ZZZ.

1019 M. J. Atallah and D. Z. Chen. Parallel computational geometry. In A. Y. Zomaya, editor, *Parallel Computations: Paradigms and Applications*. World Scientific Publishing, 1994. [ac-pcg-94]

1020 M. J. Atallah and D. Z. Chen. Parallel rectilinear shortest paths with rectangular obstacles. *Comput. Geom. Theory Appl.*, 1(2):79–113, 1991. [ac-prspr-91] *Comments:* They preprocess a set of n disjoint axis-aligned rectangles (obstacles), within a rectilinearly convex polygon P, for 2-point shortest path queries (rectilinear shortest paths). The query time is $O(\log n)$, on one processor. The sequential preprocessing time is $O(n^2)$ (no space bounds seem to be stated explicitly). Their parallel (CREW) algorithms take time $O(\log^2 n)$, on either $O(n^2/\log^2 n)$, $O(n^2/\log n)$, or $O(n^2)$ processors, depending on whether 2, 1, or 0 of the points $\{s,t\}$ lie on the boundary of P.

1021 Mikhail J. Atallah, Danny Z. Chen, and Kevin S. Klenk. Parallel algorithms for longest increasing chains in the plane and related problems. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 59–64, 1997. [ack-palic-97]

1022 M. J. Atallah, D. Z. Chen, and H. Wagener. Optimal parallel algorithm for visibility of a simple polygon from a point. *J. ACM*, 38:516–553, 1991. [acw-opavs-91] *Succeeds:* ac-opavs-89.

1023 M. J. Atallah, R. Cole, and M. T. Goodrich. Cascading divide-and-conquer: A technique for designing parallel algorithms. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 151–160, 1987. [acg-cdctd-87] *Keywords:* cascading divide-and-conquer algorithm, parallel algorithms, concurrent-read-exclusive-write, parallel random-access machine. *Precedes:* acg-cdctd-89. *Annote:* Triangulation of a polygon using $O(\log n)$ time and $O(n)$ processors. *Abstract:* Techniques are presented for parallel divide-and-conquer, resulting in improved parallel algorithms for a number of problems, including intersection detection, trapezoidal decomposition (hence, polygon triangulation), and planar point location (hence, Voronoi diagram construction). Efficient parallel algorithms are also given for fractional cascading, three-dimensional maxima, two-set dominance counting, and visibility from a point. All of the algorithms run in O(log n) time with either a linear or sublinear number of processors in the concurrent-read- exclusive-write parallel random-access machine model. 20 refs.

1024 M. J. Atallah, R. Cole, and M. T. Goodrich. Cascading divide-and-conquer: A technique for designing parallel algorithms. *SIAM J. Comput.*, 18(3):499–532, 1989. [acg-cdctd-89] *Keywords:* parallel computation, decomposition, range search, point location, visibility, domination, points, lines, divide-and-conquer, two-dimensional. *Succeeds:* acg-cdctd-87, ag-epsp-86i, ag-epsp-86t.

1025 M. J. Atallah, R. Cole, and M. T. Goodrich. Divide-and-conquer: A technique for designing parallel algorithms. Technical Report 665, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1987. [acg-dctdp-87]

1026 M. J. Atallah, F. Dehne, R. Miller, A. Rau-Chaplin, and J.-J. Tsay. Multisearch techniques for implementing data structures on a mesh-connected computer. In *Proc. ACM Sympos. Parallel Algorithms Architect.*, pages 204–214, 1991. [admrt-mtids-91]

1027 M. J. Atallah, F. Dehne, R. Miller, A. Rau-Chaplin, and J.-J. Tsay. Multisearch techniques for implementing data structures on a mesh-connected computer. *J. Parallel Distrib. Comput.*, ??, 1993/94. [admrt-mtids-94] *Comments:* to appear.

1028 M. J. Atallah and A. Fabri. On the multisearching problem for hypercubes. Research Report 1990, INRIA, BP93, 06902 Sophia-Antipolis, France, June 1993. [af-mph-93] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1990. *Keywords:* parallel algorithms, hypercube, multisearching, point location.

1029 M. J. Atallah and A. Fabri. On the multisearching problem for hypercubes. *Comput. Geom. Theory Appl.*, 5:293–302, 1996. [af-mph-96]

1030 M. J. Atallah and G. N. Frederickson. A note on finding a maximum empty rectangle. *Discrete Appl. Math.*, 13(1):87–91, 1986. [af-nfmer-86] *Keywords:* orthogon, empty rectangle, extremal figures.

1031 M. J. Atallah, G. N. Frederickson, and S. R. Kosaraju. Sorting with efficient use of special-purpose sorters. *ILP*, ??:13–15, 1988. [afk-seusp-88]

1032 M. J. Atallah and M. T. Goodrich. Deterministic parallel computational geometry. In J. H. Reif, editor, *Synthesis of Parallel Algorithms*, pages 497–536. Morgan Kaufmann Publishers, 1993. [ag-dpcg-93]

1033 M. J. Atallah and M. T. Goodrich. Efficient parallel solutions to geometric problems. In *Proc. Internat. Conf. Parallel Process.*, pages 411–417, 1985. [ag-epsgp-85]

1034 M. J. Atallah and M. T. Goodrich. Efficient parallel solutions to some geometric problems. *J. Parallel Distrib. Comput.*, 3:492–507, 1986. [ag-epssg-86] *Keywords:* parallel computation, convex hull, proximity, divide-and-conquer, points, two-dimensional.

1035 M. J. Atallah and M. T. Goodrich. Efficient plane sweeping in parallel. Technical Report CSD-TR-563, Prude University, Computer Science, 1986. [ag-epsp-86t]

1036 M. J. Atallah and M. T. Goodrich. Efficient plane sweeping in parallel. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 216–225, 1986. [ag-epsp-86i] *Keywords:* parallel computation, decomposition, range search, point location, triangulation, visibility, domination, points, lines, two-dimensional. *Precedes:* acg-cdctd-89. *Cites:* acgoy-pcg-85, ag-epsgp-85, ag-epsp-86t, aks-scps-83, bh-rmspm-85, ci-tpdc-83, c-iies-84, cg-fc1ds-86, c-pagp-80, eo-esrp-82, ea-lacvp-81, g-opaan-85, k-osps-83, krs-ppp-85, klp-fmsv-75, lp-cgs-84, lw-dsdrq-82, ol-mcp-81, sh-gip-76, v-pcp-75, ZZZ.

1037 M. J. Atallah and M. T. Goodrich. Parallel algorithms for some functions of two convex polygons. In *Proc. 24th Allerton Conf. Commun. Control Comput.*, pages 758–767, 1986. [ag-pasft-86] *Keywords:* parallel computation, convex hull, distance, polygons, convex, two-dimensional. *Precedes:* ag-pasft-88.

1038 M. J. Atallah and M. T. Goodrich. Parallel algorithms for some functions of two convex polygons. *Algorithmica*, 3:535–548, 1988. [ag-pasft-88] *Keywords:* parallel computation, convex hull, distance, polygons, convex, two-dimensional. *Succeeds:* ag-pasft-86.

1039 M. J. Atallah, M. T. Goodrich, and K. Ramaiyer. Biased finger trees and three-dimensional layers of maxima. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 150–159, 1994. [agr-bfttd-94] *Cites:* apnsmma-88, ahu-dsa-83, bjm-dplgs-92i, bst-bst-85, bm-anrow-80, c-clps-85, ct-dtmpp-91, ct-dacg-92, cpt-uadpl-93, cj-nrdpl-90, ct-detta-91, c-sssl-86, clr-ia-90, e-acg-87, egs-oplms-86, eittwy-mmsfd-92, gt-dtdpl-91, gt-drssp-93, gmpr-nrll-77, gs-dfbt-78, hm-ndsrs-82, k-osps-83, k-ss-73, k-lssl-81, k-oricm-94, klp-fmsv-75, lp-lppsi-77, lp-cgs-84, m-ss-84, m-mdscg-84, mn-dfc-90, nr-bstbb-73, o-ddds-83, p-nappl-81, ps-cgi-85, pt-fdplm-89, pt-dpplo-90, st-pplup-86, st-dsdt-83, t-dsna-83, t-acc-85, ZZZ.

1040 M. J. Atallah and S. Hambrusch. An assignment algorithm with applications to integrated circuit layout. *Discrete Appl. Math.*, 13(1):9–22, 1986. [ah-aaaic-86] *Keywords:* geometric graphs.

1041 M. J. Atallah and S. E. Hambrusch. On bipartite matching of minimum density. *J. Algorithms*, 8:480–502, 1987. [ah-bmmd-87] *Keywords:* geometric graphs.

1042 M. J. Atallah and S. R. Kosaraju. A generalized dictionary machine for VLSI. *IEEE Trans. Comput.*, C-34:151–155, 1985. [ak-gdmv-85]

1043 M. J. Atallah and S. R. Kosaraju. An efficient algorithm for maxdominance, with applications. Report CSD-TR-641, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1987. [ak-eama-87] *Precedes:* ak-eama-89.

1044 M. J. Atallah and S. R. Kosaraju. An efficient algorithm for maxdominance, with applications. *Algorithmica*, 4:221–236, 1989. [ak-eama-89] *Keywords:* dominance maxdominance. *Succeeds:* ak-eama-87.

1045 M. J. Atallah and S. R. Kosaraju. An efficient parallel algorithm for the row minima of a totally monotone matrix. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 394–403, 1991. accepted for publication in J. of Algorithms. [ak-eparm-91] *Annote:* $O(\log n)$ time, $O(n)$ processors, EREW-PRAM model.

1046 M. J. Atallah and S. R. Kosaraju. Efficient solutions to some maxdominance problems. In *Proc. 1st Ann. Conf. Inform. Sci. Systems*, pages 600–610, 1987. [ak-essmp-87]

1047 M. J. Atallah and S. R. Kosaraju. Efficient solutions to some transportation problems with application to minimizing robot arm travel. *SIAM J. Comput.*, 17(5):849–869, 1988. [ak-esstp-88] *Keywords:* motion planning. *Succeeds:* ak-mrat-??

1048 M. J. Atallah and S. R. Kosaraju. Minimizing robot arm travel. Technical Report ??, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, ?? [ak-mrat-??] *Precedes:* ak-esstp-88.

1049 M. J. Atallah and J. Manning. Fast detection and display of symmetry in embeded planar graphs, 1988. [am-fddse-88] *Keywords:* graph drawing.

1050 M. J. Atallah, C. C. Ribeiro, and S. Lifschitz. A linear time algorithm for the computation of some distance functions between convex polygons. *Rech. Oper.*, 25(4):413–424, 1991. [arl-ltacs-91] *Keywords:* convex polygon, proximity, Hausdorf distance.

1051 M. J. Atallah, C. C. Ribeiro, and S. Lifschitz. Computing some distance functions between polygons. *Pattern Recogn.*, 24(8):775–782, 1991. [arl-csdfb-91] *Keywords:* parallel computation, polygon, proximity, Hausdorf distance.

1052 M. J. Atallah and J.-J. Tsay. On the parallel-decomposability of geometric problems. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 104–113, 1989. [at-pdgp-89] *Cites:* av-iocsr-88, afk-seusp-88, bg-sos-87, b-mdc-80, c-cgsc-84, fj-csrxm-82, g-eptcg-87, g-odccm-84, jl-pgamc-90, ka-osbmc-88, lcw-occss-81, lp-cgs-84, mc-ivs-80, ms-mcacg-86, m-snuls-87, ps-cgi-85, scl-saeap-87, ZZZ.

M. J. Atallah. See also [714,6166–6168, 8285,9167,9168].

1053 Y. Atassi. Visibility graph of a set of line sements: A dynamic sequential algorithm and its parallel version. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 246–251, 1996. [a-vgsls-96]

1054 A. Athavale and D. M. Mount. Order type and isomyphism based on enclosing circles. Report ??, Dept. Comput. Sci., Univ. Maryland College Park, College Park, MD, 1985. [am-otibe-85]

Mahesh M. Athavale. See also [9689].

1055 P. Atherton, K. Weiler, and D. P. Greenberg. Polygon shadow generation. *Comput. Graph.*, 12(3):275–281, 1978. Proc. SIGGRAPH '78. [awg-psg-78]

P. Atherton. See also [13445].

1056 K. B. Athreya and P. E. Ney. *Branching processes*. Springer-Verlag, 1972. [an-bp-72]

D. Atkinson. See also [9613].

1057 H. H. Atkinson, I. Gargantini, and T. R. S. Walsch. Counting regions, holes and their nesting level in time proportional to the border. *Comput. Vision Graph. Image Process.*, 29:196–215, 1985. [agw-crhtn-85]

1058 H. H. Atkinson, I. Gargantini, and T. R. S. Walsh. Filling by quadrants or octants. *Comput. Graph. Image Process.*, 33:138–155, 1986. [agw-fqo-86]

H. H. Atkinson. See also [5796].

1059 M. D. Atkinson. An optimal algorithm for geometric congruence. Technical Report SCS-TR-31, Carleton Univ., Ottawa, ON, 1983. [a-oagc-83]

1060 M. D. Atkinson. An optimal algorithm for geometrical congruence. *J. Algorithms*, 8:159–172, 1987. [a-oagc-87]

1061 M. D. Atkinson and J.-R. Sack. Generating binary trees at random. *Inform. Process. Lett.*, 41:21–23, 1992. [as-gbtr-92]

1062 M. D. Atkinson and J.-R. Sack. Uniform generation of binary trees in parallel. *J. Parallel Distrib. Comput.*, 23:101–103, 1994. [as-ugbtp-94] *Keywords:* combinatorial objects; CREW-PRAM; generator; parallel algorithms; random-access storage; trees; unbiased random; uniform generation of binary trees.

1063 M. D. Atkinson and J.-R. Sack. Uniform generation of forests of restricted height. *Inform. Process. Lett.*, 50:323–327, 1994. [as-ugfrh-94]

1064 M. D. Atkinson, J.-R. Sack, N. Santoro, and Th. Strothotte. Minmaxheaps, orderstatisticstrees and their application to the coursmarks problem. Technical report, School of Computer Science, Carleton University, 1985. [asss-moacp-85]

1065 D. Attali. r-regular shape reconstruction from unorganized points. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 248–253, 1997. [a-rrsru-97] *Cites:* hddms-srup-92, o-pma3d-81, b-gstds-84, f-sdpvd-83, obw-cdnh-87, crg-uasgl-92, eks-sspp-83, em-tdas-94, r-mrpdt-90, s-iamm-82, ba-cscvd-92, b-cccda-94, a-segdv-95, ZZZ.

1066 D. Attali. r-regular shape reconstruction from unorganized points. *Comput. Geom. Theory Appl.*, 10:239–247, 1998. [a-rrsru-98] *Succeeds:* a-rrsru-97.

1067 D. Attali. *Squelettes et graphes de Voronoï 2-d et 3-d*. PhD thesis, Univ. Joseph Fourier, Grenoble, October 1995. [a-segdv-95] *Keywords:* doctoral thesis.

1068 Dominique Attali and Jean-Daniel Boissonnat. Complexity of the Delaunay triangulation of points on polyhedral surfaces. In *Proc. 7th ACM Symposium on Solid Modeling and Applications*, 2002. [ab-lbcdt-02]

1069 D. Attali and J.-O. Lachaud. Delaunay conforming iso-surface, skeleton extraction and noise removal. *Comput. Geom. Theory Appl.*, 19:175–189, 2001. [al-dciss-01]

1070 J. W. Atwood, M. M. Burnett, R. A. Walpole, E. M. Wilcox, and S. Yang. Steering programs via time travel. In *Proc. IEEE Symp. on Visual Languages*, 1996. [abwwy-sptt-96]

S. Aubry. See also [6733].

1071 Peter Auer. On-line learning of rectangles in noisy environments. In *Proc. 6th ACM Conf. Comput. Learning Theory*, page ??, July 1993. [a-ollrn-93]

1072 T. Auer and Martin Held. Heuristics for the generation of random polygons. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 38–43, 1996. [ah-hgrp-96] *URL:* http://www.cosy.sbg.ac.at/~held/papers/cccg96.ps.gz.

1073 S. Auerbach and H. Schaeben. Surface representations reproducing given digitized contour lines. *Mathematical Geology*, 22(6):723–742, 1990. [as-srrgd-90] *Annote:* Computes CDT of contour lines, with extra constraint that no triangle can have three vertices on same contour. (Extra constraint is done manually!).

1074 J. M. Augenbaum and C. S. Peskin. On the construction of the Voronoi mesh on a sphere. *J. Comput. Phys.*, 59:177–192, 1985. [ap-cvms-85] *Annote:* Joe iterative algorithm. Use for problems where mesh changes with time (but presumably not much).

1075 V. Auletta, D. Parente, and P. Persiano. A new approach to optimal planning of robot motion on a tree with obstacles. In *Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 529–545. Springer-Verlag, 1996. [app-anaop-96]

1076 Günter Aumann and Klaus Spitzmüller. *Computerorientierte Geometrie*. BI-Wissenschaftsverlag, Mannheim, 1993. [as-cg-93]

1077 Y. Aumann, Z. M. Kedem, K. V. Palem, and M. O. Rabin. Highly efficient asynchronous execution of large-grained parallel programs. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, 1993. [akpr-heael-93]

L. Aupperle. See also [6643].

1078 L. J. Aupperle. An algorithm for covering polygons with squares. Draft, Dept. Comput. Sci., Princeton Univ., October 1988. [a-acps-88]

1079 L. J. Aupperle, H. E. Conn, J. M. Keil, and J. O'Rourke. Covering orthogonal polygons with squares. In *Proc. 26th Allerton Conf. Commun. Control Comput.*, pages 97–106, October 1988. [acko-cops-88] *Keywords:* covering, decomposition, polygons, NP-completeness, image processing, graph theory, squares, medial axis.

1080 L. J. Aupperle and J. M. Keil. Polynomial algorithms for restricted Euclidean p-centre problems. *Discrete Appl. Math.*, 23:25–31, 1989. [ak-parep-89] *Keywords:* lines, cluster analysis, dynamic programming, circles, optimization, operations research, facility location.

1081 F. Aurenhammer. A criterion for the affine equality of cell complexes in R^d and convex polyhedra in R^{d+1}. *Discrete Comput. Geom.*, 2:49–64, 1987. [a-caecc-87] *Keywords:* discrete geometry, cell complexes, power diagrams, reciprocal figure, d-dimensional.

1082 F. Aurenhammer. A new duality result concerning Voronoi diagrams. In *Proc. 13th Internat. Colloq. Automata Lang. Program.*, volume 226 of *Lecture Notes Comput. Sci.*, pages 21–30. Springer-Verlag, 1986. [a-ndrcv-86] *Keywords:* design of algorithms, discrete geometry, duality, Voronoi diagrams, convex hull, worst-case analysis. *Precedes:* a-ndrcv-90.

1083 F. Aurenhammer. A new duality result concerning Voronoi diagrams. *Discrete Comput. Geom.*, 5(3):243–254, 1990. [a-ndrcv-90] *Keywords:* design of algorithms, discrete geometry, duality, Voronoi diagr ams, convex hull, worst-case analysis. *Succeeds:* a-ndrcv-86.

1084 F. Aurenhammer. A relationship between Gale transforms and Voronoi diagrams. *Discrete Appl. Math.*, 28:83–91, 1990. [a-rbgtv-90]

1085 Franz Aurenhammer. Das Peeper's Voronoi-Diagramm. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [a-pvd-89]

1086 F. Aurenhammer. *Gewichtete Voronoi Diagramme: Geometrische Deutung und Konstruktions-Algorithmen*. Ph.D. thesis, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1984. Report B53. [a-gvdgd-84] *Keywords:* doctoral thesis, discrete geometry, design of algorithms, geometric transformations, Voronoi diagrams, weighted, d-dimensional.

1087 F. Aurenhammer. Improved algorithms for discs and balls using power diagrams. *J. Algorithms*, 9:151–161, 1988. [a-iadbu-88] *Keywords:* design of algorithms, computer graphics, robotics, intersection, volume, Voronoi diagrams, disks, balls.

1088 F. Aurenhammer. Jordan sorting via convex hulls of certain non-simple polygons. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 21–29, 1987. [a-jschc-87] *Keywords:* design of algorithms, sorting, convex hull, non-simple polygons, trees, worst-case analysis. *Cites:* f-hgiit-76, r-ppdti-84, hmrt-sjslt-86, e-agc-, ZZZ.

1089 F. Aurenhammer. Linear combinations from power domains. *Geom. Dedicata*, 28:45–52, 1988. [a-lcpd-88] *Keywords:* power diagrams, convex combinations, d-dimensional.

1090 F. Aurenhammer. On-line sorting of twisted sequences in linear time. *BIT*, 28:194–204, 1988. [a-olsts-88] *Keywords:* design of algorithms, sorting, convex hull, arrangements, incrementation, worst-case analysis, lower bounds.

1091 F. Aurenhammer. Power diagrams: Properties, algorithms and applications. Technical Report F120, Techn. Univ. Graz, Graz, Austria, 1983. [a-pdpaa-83]

1092 F. Aurenhammer. Power diagrams: properties, algorithms and applications. *SIAM J. Comput.*, 16:78–96, 1987. [a-pdpaa-87] *Keywords:* discrete geometry, design of algorithms, geometric transformations, duality, Voronoi diagrams, convex hull, arrangements, d-dimensional, distance, weighted.

1093 F. Aurenhammer. Recognising polytopical cell complexes and constructing projection polyhedra. *J. Symbolic Comput.*, 3:249–255, 1987. [a-rpccc-87] *Keywords:* design of algorithms, cell complexes, Voronoi diagrams, reciprocal figure, image processing, pattern recognition.

1094 F. Aurenhammer. The one-dimensional weighted Voronoi diagram. Report F 110, IIG, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1983. [a-odwvd-83] *Precedes:* a-odwvd-86.

1095 F. Aurenhammer. The one-dimensional weighted Voronoi diagram. *Inform. Process. Lett.*, 22:119–123, 1986. [a-odwvd-86] *Keywords:* design of algorithms, divide-and-conquer, plane-sweep, upper envelope, Voronoi diagrams, weighted. *Succeeds:* a-odwvd-83.

1096 F. Aurenhammer. Using Gale transforms in computational geometry. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages

202–216. Springer-Verlag, 1988. [a-ugtcg-88] *Keywords:* geometric transform, convex hulls, scene analysis, d-dimensional. *Precedes:* a-ugtcg-91. *Annote:* 4th Intern. Workshop Comput. Geom.

1097 F. Aurenhammer. Using Gale transforms in computational geometry. *Math. Program.*, B 52:179–190, 1991. [a-ugtcg-91] *Keywords:* geometric transform, convex hulls, scene analysis, d-dimensional. *Succeeds:* a-ugtcg-88.

1098 F. Aurenhammer. Voronoi diagrams: a survey. Technical report, Tech. Univ. Graz, Graz, Austria, 1988. [a-vds-88]

1099 F. Aurenhammer. Voronoi diagrams: a survey of a fundamental geometric data structure. Report B-90-09, Fachber. Math., Free Univ. Berlin, Berlin, West Germany, 1990. [a-vdsfg-90] *Keywords:* survey paper, Voronoi diagrams, Delaunay triangulations, arrangements, hyperplanes, plane sweep, divide-and-conquer, parallel computation, minimum spanning trees, cluster analysis, motion planning. *Succeeds:* a-vds-88. *Precedes:* a-vdsfg-91.

1100 F. Aurenhammer. Voronoi diagrams: A survey of a fundamental geometric data structure. *ACM Comput. Surv.*, 23(3):345–405, September 1991. [a-vdsfg-91] *Keywords:* survey paper, Voronoi diagrams, Delaunay triangulations, arrangements, hyperplanes, plane sweep, divide-and-conquer, parallel computation, minimum spanning trees, cluster analysis, motion planning. *Succeeds:* a-vdsfg-90.

1101 F. Aurenhammer and H. Edelsbrunner. An optimal algorithm for constructing the weighted Voronoi diagram in the plane. *Pattern Recogn.*, 17:251–257, 1984. [ae-oacwv-84] *Keywords:* combinatorial geometry, design of algorithms, construction, incrementation, geometric transformations, worst-case analysis, Voronoi diagrams, two-dimensional, three-dimensional, weighted. *Annote:* $O(n^2)$ algorithm (worst case optimal). Uses inversion to transform problem to constructing polyhedra in 3D. "Add a point" algorithm.

1102 F. Aurenhammer, M. Formann, R. M. Idury, A. A. Schäffer, and F. Wagner. Faster isometric embedding in products of complete graphs. *Discrete Appl. Math.*, 17:321–340, 1994. [afisw-fiepc-94]

1103 F. Aurenhammer, J. Hagauer, and W. Imrich. Factoring cartesian-product graphs at logarithmic cost per edge. In *Proc. MPC Conf. Integer Programming and Combinatorial Optimization*, pages 29–44, 1990. [ahi-fcpgl-90]

1104 Franz Aurenhammer, Friedrich Hoffmann, and Boris Aronov. Least-squares partitioning. In *Abstracts 8th European Workshop Comput. Geom.*, pages 55–57. Utrecht University, 1992. [aha-lsp-92]

1105 Franz Aurenhammer, Friedrich Hoffmann, and Boris Aronov. Minkowski-type theorems and least-squares clustering. *Algorithmica*, 20:61–76, 1998. [aha-mttlsc-98] *Succeeds:* aha-mttls-92.

1106 F. Aurenhammer, F. Hoffmann, and B. Aronov. Minkowski-type theorems and least-squares partitioning. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 350–357, 1992. [aha-mttls-92] *Keywords:* optimization, least squares, power diagram, matching. *Precedes:* aha-mttlsc-98. *Cites:* am-dhsrr-91, a-vdsfg-91, a-caecc-87, b-colmm-82, e-fdmem-92, ft-fhtui-87, g-cp-67, l-conm-76, l-egimv-85, ol-mcp-81, t-dsna-83, tn-gamca-91, v-ghm-89, ZZZ.

1107 F. Aurenhammer and H. Imai. Geometric relations among Voronoi diagrams. Technical Report 228, Inst. Informationsverarb., Techn. Univ. Graz, Graz, Autria, 1986. [ai-grvd-86]

1108 F. Aurenhammer and H. Imai. Geometric relations among Voronoi diagrams. In *Proc. 4th Sympos. Theoret. Aspects Comput. Sci.*, volume 247 of *Lecture Notes Comput. Sci.*, pages 53–65. Springer-Verlag, 1987. [ai-grvd-87] *Keywords:* design of algorithms, discrete geometry, Voronoi diagrams, distance, weighted. *Precedes:* ai-grvd-88.

1109 F. Aurenhammer and H. Imai. Geometric relations among Voronoi diagrams. *Geom. Dedicata*, 27:65–75, 1988. [ai-grvd-88] *Keywords:* design of algorithms, discrete geometry, Voronoi diagrams, distance, weighted. *Succeeds:* ai-grvd-87.

1110 Franz Aurenhammer and Rolf Klein. Voronoi diagrams. Technical Report 198, Department of Computer Science, FernUniversität Hagen, Germany, 1996. [ak-vd-96] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr198.pdf. *Precedes:* ak-vd-00.

1111 Franz Aurenhammer and Rolf Klein. Voronoi diagrams. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 201–290. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [ak-vd-00] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr198.pdf. *Succeeds:* ak-vd-96. *Cites:* ahknu-vdcfc-95, abms-claho-94, aesw-emstb-91, agss-ltacv-89, ahl-sqrpc-90, aiks-fkpmd-91, a-dppuv-82, aaag-ntsp-95, aa-skfgpf-95, aacktrx-tin-96, a-nemts-83, as-vdco-95, ay-aampt1-90, ay-aampt2-90, ar-cvddp-96, a-gvdps-89, a-lbvdc-98, abky-cabmm-88, abcw-cpdts-88, ab-rdt-85, a-sdcgp-85, a-pdpaa-87, a-rpccc-87, a-iadbu-88, a-lcpd-88, a-ndrcv-90, a-vdsfg-91, ae-oacwv-84, aha-mttls-92, ai-grvd-88, as-solri-92, abi-cvus-88, br-rasas-90, bo-arcgi-79, bs-dcms-76, bwy-oetac-80, be-mgot-92i, beg-pgmg-94, b-bnvd, bt-gatuf-85, bmt-dppbp-96, bcdt-osc3d-91i, bdsty-arsol-92, bg-tdrcs-93, bsty-vdhdc-95, bt-rcdt-93, bh-cpcoe-88, b-rgsdd-89, b-vdch-79, b-gtfga-80, bms-hcvdl-94, b-gog-55, c-vmpmp-85, cd-svd-88, crw-gc-91, csy-oscpf-95, cdns-nsrgs-95, c-ochaa-93, ce-iacko-87, cgt-ecabs-95, cx-alesw-96, c-bvdcp-86, c-cdt-89, c-tapga-89, c-gqmgc-93, cd-vdbcd-85, ckstw-vdl3s-95, csw-fmasp-95, c-wcanh-76, cms-mfdca-94, c-narsc-87, c-agmst-89, cms-frric-93, cs-arscg-89, cmrs-tspvd-93, cw-pspp-86, dj-wtacg-89, ds-oiti-89, bms-plpco-93, dfnp-stdt-91, d-eaclm-77, dk-savd-87, dk-bspwa-97, dn-cgacp-85, d-slsv-34, d-pp-44, d-rysoa-92, dv-cprac-77, dds-saeid-92, de-apphd-96, d-nhndt-87, d-tdt-90, d-fhcdt-92, d-udrdp-50, dl-cvdrp-91, ddg-fsp-83, dfs-dgaag-90, dl-pmtds-89, dl-msp-76, d-ec-83, d-fdcac-87, d-hdvdl-91, e-acg-87, e-atccd-90, e-ubids-95, egs-ueplf-89, egs-oplms-86, eks-sspp-83, em-tdas-94, eos-calha-86, es-vda-86, ess-ztha-93, es-itfwr-96, es-otatd-91, et-qtaml-93, et-ubcdt-93, etw-otama-92, ei-drmwc-79, f-sodt-90, f-iwatd-86, f-nsa2d-92, f-vddt-92, f-savd-87, gs-nsagv-69, gj-cigtn-79, g-3dmud-95, g-agt-85, grr-vdlsm-95, grss-sracp-95, goy-cvdsl-93, gs-cdtp-78, gks-ricdv-92, gmr-vdmpp-92, gs-pmgsc-85, h-ca-75, h-rvdlp-92, h-gbitp-91, hkp-itnc-91, hn-sc-89, hns-psscp-88, h-pcprn-91, hks-uevsi-93, h-oarms-79, iklm-cdf3s-93, iki-awvdr-94, iss-nriac-92, j-3dtlt-89, j-ctddt-91, j-gspgm-91, jrz-ccdt-91, km-accvd-91, km-icdmc-92, kk-cdtmb-88, kg-cgwac-92, k-csmwt-94, ks-tpscv-93, k-eccs-79, k-ndot-80, k-osps-83, kr-fcm-85, k-cddvd-80, k-cavd-89, kl-ltrab-93, kl-fsc-95, kl-mpsp-95, kmm-ricav-93a, kw-vdbgm-88, k-sssgt-56, kl-fsacl-95, l-dtmmi-94, l-esta-94, l-scsi-77, l-vdlmh-94, l-ricsa-95, l-tdvdl-80, l-matps-82, l-knnvd-82, ld-gvdp-81, ll-gdtpg-86, lw-vdllm-80, lk-qgtam-96, l-ltcrn-94, msw-sblp-92, ms-pggrg-80, m-dtchn-84, mr-vdcdg-90, mks-cplvd-96, m-tdird-76, m-mnfcp-70, m-lpltw-84, mmo-cavd-91, m-zkav-93, m-uuam-28, m-rcvdp-93, m-spop-93, mmp-dgp-87, ms-getcc-88, mp-fitcp-78, m-osclv-90, m-lavd-91, osy-gvdl-86, osy-gvdl-87, oy-rmpmd-85, oim-iimvd-84, obs-stcav-92, p-etspi-77, pl-ecgvd-95, p-kpudz-82, p-mrpdt-92, ps-cgi-85, p-scnsg-57, r-odtr-91, rr-oprav-94, r-aiv-94, r-mrpdt-90, r-tbvdm-93, rsl-ashts-77, st-pwvt-88, s-cvdhd-82, s-mplbc-85, s-chdch-86, s-nfhdv-87, s-cdtvd-88, s-sdlpc-91, s-barga-93, s-cg-78, sh-cpp-75, s-icpps-85, s-atubl-94, s-let-78, s-vidt-80, s-sagdt-91, s-facdt-87, s-mmdpsl-91a, sd-csdta-95, s-smane-92, si-cvdom-92, soi-toari-90, s-rngam-83, si-atpvd-86, t-otdt-93, too-natdv-83, t-gcvdm-86, t-rngfp-80, v-mstkd-88, v-sgagc-91, v-dmrsl-09, v-nadpc-08, w-eucdt-93, ws-oacdt-87, w-cnddt-81, w-sedbe-91a, www-sdpfo-87, y-cmstk-82, y-amp-87, y-oavds-87, zm-sdnah-91, ZZZ. *Annote:* Chapter 5 of su-hcg-00.

1112 F. Aurenhammer and O. Schwarzkopf. A simple on-line randomized incremental algorithm for computing higher order Voronoi diagrams. Technical Report, Freie Universität Berlin, Berlin, Germany, 1991. [as-solri-91t] *Precedes:* as-solri-91.

1113 F. Aurenhammer and O. Schwarzkopf. A simple on-line randomized incremental algorithm for computing higher order Voronoi diagrams. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 142–151, 1991. [as-solri-91] *Keywords:* Voronoi diagrams, geometric transforms, dynamization. *Succeeds:* as-solri-91t. *Precedes:* as-solri-92. *Cites:* aesw-emstb-90, agss-ltacv-89, a-ndrcv-90, a-pdpaa-87, as-solri-91t, bdsty-arsol-90, bdt-riach-, cegss-cfals-91, c-narsc-87, cs-arscg-89, dsst-mdsp-89, e-acg-87, gks-ricdv-90, l-knnvd-82, mmo-cavd-91, m-lavd-91, s-riads-91, s-lpchm-90, s-sfira-90, w-csedb-91, ZZZ.

1114 F. Aurenhammer and O. Schwarzkopf. A simple on-line randomized incremental algorithm for computing higher order Voronoi diagrams. *Internat. J. Comput. Geom. Appl.*, 2:363–381, 1992. [as-solri-92] *Keywords:* Voronoi diagrams, geometric transforms, dynamization. *Succeeds:* as-solri-91.

1115 F. Aurenhammer and G. Stöckl. On the peeper's Voronoi diagram. *SIGACT News*, 22(4):50–59, 1991. [as-pvd-91] *Keywords:* Voronoi diagrams, visibility, lower envelope.

1116 F. Aurenhammer and G. Stöckl. Searching for segments with largest relative overlap. *Inform. Process. Lett.*, 41:103–108, 1992. [as-sslro-92] *Keywords:* line segments, search structure, one-dimensional, two-dimensional.

1117 Franz Aurenhammer, Gerd Stöckl, and Emo Welzl. The post office problem for fuzzy point sets. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 1–11. Springer-Verlag, 1991. [asw-popfp-91] *Annote:* 7th Intern. Workshop Comput. Geom.

Franz Aurenhammer. See also [360, 362–377, 6563].

1118 Giorgio Ausiello, Esteban Feuerstein, Stefano Leonardi, Leen Stougie, and Maurizio Talamo. Competitive algorithms for the on-line traveling salesman. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 206–217. Springer-Verlag, 1995. [aflst-caolt-95]

1119 G. Ausiello, G. F. Italiano, A. Marchetti-Spaccamela, and U. Nanni. Incremental algorithms for minimal length paths. In *Proc. ACM-SIAM Sympos. Discrete Algorithms*, pages 12–21, 1990. [aimn-iamlp-90]

1120 S. P. Austin, R. B. Jerard, and R. L. Drysdale. Comparison of discretization algorithms for nurbs surfaces with application to numerically controlled machining. *Comput. Aided Design*, 29(1):71–83, January 1997. [ajd-cdans-97]

1121 S. V. Avgustinovich and S. V. Sevastjanov. Vector summation within minimal angle. *Comput. Geom. Theory Appl.*, 2(5):235–239, March 1993. [as-vswma-93]

1122 Z. Aviad and E. Shamir. A direct dynamic solution to range search and related problems for product regions. In *Proc. 22nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 123–126, 1981. [as-ddsrs-81] *Keywords:* orthogonal range queries, integer coordinates, multidimensional search.

1123 D. Avis. A survey of heuristics for the weighted matching problem. *Networks*, 13:475–493, 1983. [a-shwmp-83] *Keywords:* heuristics, worst-case analysis, average-case analysis.

1124 D. Avis. Comments on a lower bound for convex hull determination. *Inform. Process. Lett.*, 11:126, 1980. [a-clbch-80] *Keywords:* convex hull, lower bounds, linear decision trees.

1125 D. Avis. Diameter partitioning. *Discrete Comput. Geom.*, 1:265–276, 1986. [a-dp-86] *Keywords:* planar point sets, partition, diameter.

1126 D. Avis. Generating rooted triangulations without repetitions. *Algorithmica*, 16:618–632, 1996. [a-grtwr-96]

1127 D. Avis. Lower bounds for geometric problems. In *Proc. 18th Allerton Conf. Commun. Control Comput.*, pages 35–40, 1980. [a-lbgp-80] *Keywords:* lower bounds, linear decision trees, quadratic decision trees.

1128 D. Avis. Non-partitionable point sets. *Inform. Process. Lett.*, 19:125–129, 1984. [a-npps-84] *Keywords:* discrete geometry, decomposition, range search.

1129 D. Avis. On the complexity of finding the convex hull of a set of points. *Discrete Appl. Math.*, 4:81–86, 1982. [a-cfchs-82] *Keywords:* convex hull, lower bounds, linear decision trees.

1130 D. Avis. On the partitionability of point sets in space. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 116–120, 1985. [a-ppss-85] *Keywords:* point sets, partition, half spaces. *Comments:* some results appeared in a-spiag-85. *Cites:* k-ss-73, w-pr-82, y-3spia-83, de-ssio-84, a-npps-84, yb-cf-61, m-it-62, g-ncp-63, g-gcpnc-58, yy-gaddg-85, ZZZ.

1131 D. Avis. Space partitioning and its application to generalized retrieval problems. In *Proc. Internat. Conf. Found. Data Organization*, pages 154–162, 1985. [a-spiag-85] *Keywords:* searching, point sets, partition, half spaces.

1132 D. Avis. Space partitioning and its application to generalized retrieval problems. In *Proc. Internat. Conf. Found. Data Organization, 1985*, pages 237–248, Kyoto, Japan, 1987. Plenum Press. [a-spiag-87] *Keywords:* searching, point sets, partition, half spaces.

1133 D. Avis. The number of furthest neighbors of a finite planar set. *Amer. Math. Monthly*, 91:417–420, 1984. [a-nfnfp-84] *Keywords:* combinatorial geometry, proximity.

1134 D. Avis. Worst case bounds for the Euclidean matching problem. *Comput. Math. Appl.*, 7:251–257, 1981. [a-wcbem-81] *Keywords:* heuristics, worst-case analysis.

1135 D. Avis, B. Beresford-Smith, L. Devroye, H. ElGindy, E. Guévremont, F. Hurtado, and B. Zhu. Unoriented Θ-maxima in the plane. In *Proc. of the 16th Australian Conf. in Comp. Science*, 1993. [abdeghz-umpca-93]

1136 D. Avis, B. Beresford-Smith, L. Devroye, H. ElGindy, E. Guévremont, F. Hurtado, and B. Zhu. Unoriented Θ-maxima in the plane: Complexity and algorithms. *SIAM J. Comput.*, 28:278–296, 1998. [abdeghz-utmp-98]

1137 D. Avis, B. Beresford-Smith, L. Devroye, H. ElGindy, E. Guévremont, F. Hurtado, and B. Zhu. Unoriented Θ-maxima in the plane II. in preparation. [abdeghz-ump2]

1138 David Avis and Binay K. Bhattacharya. Algorithms for computing d-dimensional Voronoi diagrams and their duals. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 159–180. JAI Press, Greenwich, Conn., 1983. [ab-acddv-83] *Keywords:* Voronoi diagrams, d-dimensional, linear programming.

1139 D. Avis, B. K. Bhattacharya, and H. Imai. Computing the volume of the union of spheres. Technical Report SOCS 87.3, McGill Univ., Montreal, PQ, 1987. [abi-cvus-87] *Precedes:* abi-cvus-88.

1140 D. Avis, B. K. Bhattacharya, and H. Imai. Computing the volume of the union of spheres. *Visual Comput.*, 3:323–328, 1988. [abi-cvus-88] *Keywords:* volume, spheres, Voronoi diagrams. *Succeeds:* abi-cvus-87.

1141 D. Avis, P. Bose, T. Shermer, J. Snoeyink, G. Toussaint, and B. Zhu. On the sectional area of convex polytopes. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C11–C12, 1996. [absstz-sacp-96] *Cites:* c-oaitd-92, cd-icott-87, bdkst-cmotc-96, dj-cccsp-73, k-cpvc-93, s-mv-93, s-labp-92, ZZZ.

1142 David Avis and David Bremner. How good are convex hull algorithms? In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 20–28, 1995. [ab-hgach-95] *Keywords:* vertex enumeration, pivoting. *Cites:* af-pachv-92, bdh-qach-93, bl-cacp-93, b-icp-83, cgaf-gstlm-94, ck-acp-70, c-ochaa-93, c-lp-83, cs-adpch-88, d-cvem-83, f-crmv0-, gkz-drmd-94, h-sretn-91, k-pptrl-74, km-hgisa-72, l-epcrn-88, lt-sptcc-91, l-rtp-91, mrtt-ddm-53, s-chaop-81, s-chdch-86, y-stgd-90, ZZZ.

1143 D. Avis, D. Bremner, and R. Seidel. How good are convex hull algorithms? *Comput. Geom. Theory Appl.*, 7:265–302, 1997. [abs-hgach-97]

1144 D. Avis and V. Chvátal. Notes on Bland's pivoting rule. *Math. Programming Study*, 8:24–34, 1978. [ac-nbpr-78]

1145 D. Avis, B. Davis, and J. M. Steele. Probabilistic analysis of a greedy heuristic for Euclidean matching. *Probab. Engin. Inform. Sci.*, 2:143–156, 1988. [ads-paghe-88]

1146 D. Avis and M. Deza. L_1 embeddability, complexity, and multicommodity flows. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 30, 1989. [ad-lecmf-89]

1147 D. Avis and M. Doskas. Algorithms for high dimensional stabbing problems. Technical Report SOCS 87.2, McGill Univ., Montreal, PQ, 1987. [ad-ahdsp-87] *Precedes:* ad-ahdsp-88.

1148 D. Avis and M. Doskas. Algorithms for high dimensional stabbing problems. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 199–210. Springer-Verlag, 1988. [ad-ahdsp-88] *Keywords:* transversals, hyperplanes, stabbing, polyhedra, linear programming. *Succeeds:* ad-ahdsp-87.

1149 D. Avis and M. Doskas. Algorithms for high dimensional stabbing problems. *Discrete Appl. Math.*, 27:59–62, 1990. [ad-ahdsp-90]

1150 D. Avis and H. ElGindy. A combinatorial approach to polygon similarity. *IEEE Trans. Inform. Theory*, IT-2:148–150, 1983. [ae-caps-83] *Keywords:* polygons, similarity, pattern matching, visibility graphs.

1151 D. Avis and H. ElGindy. Triangulating point sets in space. *Discrete Comput. Geom.*, 2:99–111, 1987. [ae-tpss-87] *Keywords:* triangulation, decomposition, three-dimensional, d-dimensional, point sets. *Succeeds:* ae-tspss-86.

1152 D. Avis and H. ElGindy. Triangulating simplicial point sets in space. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 133–141, 1986. [ae-tspss-86] *Keywords:* triangulation, decomposition, three-dimensional, d-dimensional, point sets. *Precedes:* ae-tpss-87. *Cites:* g-cp-67, ps-cgi-85, rs-tchnp-85, ph-chfsp-77, k-osps-83, ZZZ.

1153 D. Avis, H. ElGindy, and R. Seidel. Simple on-line algorithms for convex polygons. In G. T. Toussaint, editor, *Computational Geometry*, pages 23–42. North-Holland, Amsterdam, Netherlands, 1985. [aes-solac-85] *Keywords:* convex hull, on-line, planar point sets, intersection, polygons. *Annote:* Maintains convex hull of n points in $O(\log n)$ time per insertion.

1154 D. Avis, P. Erdős, and J. Pach. Distinct distances determined by subsets of a point set in space. *Comput. Geom. Theory Appl.*, 1:1–11, 1991. [aep-dddsp-91]

1155 D. Avis, P. Erdős, and J. Pach. Repeated distances in the space. *Graphs Combin.*, 4:207–217, 1988. [aep-rds-88] *Keywords:* combinatorial geometry, proximity.

1156 D. Avis and K. Fukuda. A basis enumeration algorithm for linear systems with geometric applications. *Appl. Math. Lett.*, 4(5):39–42, 1991. [af-beals-91] *Keywords:* linear programing, convex hull, oriented matroid.

1157 D. Avis and K. Fukuda. A pivoting algorithm for convex hulls and vertex enumeration of arrangements and polyhedra. Technical Report B-237, Dept. of Information Science, Tokyo Institute of Technology, Tokyo, Japan, November 1990. [af-pachv-90]

1158 D. Avis and K. Fukuda. A pivoting algorithm for convex hulls and vertex enumeration of arrangements and polyhedra. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 98–104, 1991. [af-pachv-91] *Precedes:* af-pachv-92. *Cites:* af-pachv-90, b-calp-77, ck-acp-70, c-lp-83, d-cvem-83, eos-calha-86, e-acg-87, eg-tsa-89, f-omp-82, fm-fccm-91, hiiry-owlll-90, mr-scmfa-80, mrtt-ddm-53, s-chdch-86, s-chaop-81, t-cccm-85, t-fccmo-87, t-lqpom-85, w-cefao-87, ZZZ.

1159 D. Avis and K. Fukuda. A pivoting algorithm for convex hulls and vertex enumeration of arrangements and polyhedra. *Discrete Comput. Geom.*, 8:295–313, 1992. [af-pachv-92] *Succeeds:* af-pachv-91.

1160 D. Avis and K. Fukuda. Reverse search for enumeration. Technical Report No. 92-5, Tsukuba University, Graduate School of Systems Management, Tokyo, Japan, April 1992. [af-rse-92] *Comments:* generates all enumerations of triangulations, spanning trees, etc.

1161 D. Avis and K. Fukuda. Reverse search for enumeration. *Discrete Appl. Math.*, 65:21–46, 1996. [af-rse-96] *URL:* http://www.ifor.math.ethz.ch/staff/fukuda/fukuda.html. *Annote:* Reverse search is a general exhaustive search technique which came out of the new convex hull algorithm by the authors. This technique can be applied to many enumeration problems in computer science, operations research and geometry. It is highly suitable for parallelization.

1162 D. Avis and V. P. Grishukhin. A bound on the k-gonality of facets of the hypermetric cone and related complexity problems. *Comput. Geom. Theory Appl.*, 2(5):241–254, March 1993. [ag-bkgfh-93]

1163 D. Avis, T. Gum, and G. Toussaint. Visibility between two edges of a simple polygon. *Visual Comput.*, 2(6):342–357, December 1986. [agt-vbtes-86] *Keywords:* weak edge visibility, polygons, convex hull, hidden line problems, Jordan sorting, geometric complexity.

1164 D. Avis and J. Horton. Remarks on the sphere of influence graphs. *Ann. New York Acad. Sci.*, 440:323–327, 1982. [ah-rsig-82] *Keywords:* proximity, geometric graphs.

1165 D. Avis and M. E. Houle. Computational aspects of Helly's theorem and its relatives. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 11–14, 1991. [ah-cahti-91] *Precedes:* ah-cahti-95. *Cites:* dgk-htir-63, h-umkkm-23, h-tess-91, k-cscb-53, r-mkkde-21, v-etrec-39, ZZZ.

1166 D. Avis and M. E. Houle. Computational aspects of Helly's theorem and its relatives. *Internat. J. Comput. Geom. Appl.*, 5:357–367, 1995. [ah-cahti-95] *Keywords:* computational geometry, convexity, intersection, separation. *Succeeds:* ah-cahti-91.

1167 D. Avis and H. Imai. Locating a robot with angle measurements. *J. Symbolic Comput.*, 10(3–4):311–326, 1990. [ai-lram-90]

1168 D. Avis and C. M. Kong. Generating rooted triangulations with minimum degree four. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 56–61, 1996. [ak-grtmd-96]

1169 D. Avis and D. Rappaport. Computing monotone simple circuits in the plane. In G. T. Toussaint, editor, *Computational Morphology*, pages 13–23. North-Holland, Amsterdam, Netherlands, 1988. [ar-cmscp-88]

1170 D. Avis and D. Rappaport. Computing the largest empty convex subset of a set of points. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 161–167, 1985. [ar-clecs-85] *Keywords:* planar point sets, convex subsets, discrete geometry. *Precedes:* deo-secp-88, deo-secp-90. *Cites:* ck-flcs-80, ea-lacvp-81, es-cpg-35, es-sepeg-60, e-peac-73, gp-gs-82, h-kfiep-78, h-snec7-83, m-rpdg-81, rt-slhla-83, s-pcg-77, ZZZ.

1171 D. Avis, J.-M. Robert, and R. Wenger. Lower bounds for line stabbing. *Inform. Process. Lett.*, 33:59–62, 1989. [arw-lbls-89]

1172 D. Avis and G. T. Toussaint. An efficient algorithm for decomposing a polygon into star-shaped polygons. *Pattern Recogn.*, 13:395–398, 1981. [at-eadps-81] *Keywords:* decomposition, polygons, star-shaped, coloring. *Annote:* Uses Fisk's constructive proof of Chvatal's theorem: for every n-gon there is a decomposition into $\lfloor n/3 \rfloor$ star shaped pieces. Proceeds by colouring a triangulation with three colours.

1173 D. Avis and G. T. Toussaint. An optimal algorithm for determining the visibility of a polygon from an edge. *IEEE Trans. Comput.*, C-30(12):910–1014, 1981. [at-oadvp-81] *Keywords:* combinatorial geometry, design of algorithms, construction, incrementation, geometric transformations, worst-case analysis, Voronoi diagrams, two-dimensional, three-dimensional, weighted.

1174 D. Avis, G. T. Toussaint, and B. K. Bhattacharya. On the multimodality of distances in convex polygons. *Comput. Math. Appl.*, 8:153–156, 1982. [atb-mdcp-82] *Keywords:* discrete geometry, diameter, planar point sets.

1175 D. Avis and R. Wenger. Algorithms for line transversals in space. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 300–307, 1987. [aw-alts-87] *Precedes:* aw-plts-88. *Cites:* a-dp-86, ad-ahdsp-87, b-mag-69, dgk-htir-63, es-mnwsn-87, e-ftssg-85, emprww-sls-82, et-eaide-85, gp-htthd-86, hdk-cgp-64, klz-gpcs-85, k-tsct-80, ps-cgi-85, w-ublo-86, ZZZ.

1176 D. Avis and R. Wenger. Polyhedral line transversals in space. *Discrete Comput. Geom.*, 3:257–265, 1988. [aw-plts-88] *Succeeds:* aw-alts-87.

1177 D. Avis and R. Wenger. Polyhedral line traversals in space. *Discrete Comput. Geom.*, 4, 1989. [aw-plts-89]

D. Avis. See also [2768, 4863, 4864, 9350, 10285, 13026].

D. M. Avis. See also [13780].

1178 S. Avital and H. Hanani. Graphs. *Gilyonot Lematematika*, 3:2–8, 1966. In Hebrew. [ah-g-66]

1179 Francis Avnaim. *Placement et déplacement de formes rigides ou articulées.* Thèse de doctorat en sciences, Université de Franche-Comté, Besançon, France, 1989. [a-peddf-89] *Keywords:* doctoral thesis.

1180 Francis Avnaim and Jean-Daniel Boissonnat. Polygon placement under translation and rotation. In *Proc. 5th Sympos. Theoret. Aspects Comput. Sci.*, volume 294 of *Lecture Notes Comput. Sci.*, pages 322–333. Springer-Verlag, 1988. [ab-pptr-88]

1181 Francis Avnaim and Jean-Daniel Boissonnat. Polygon placement under translation and rotation. *RAIRO Inform. Theor.*, 23:5–28, 1989. [ab-pptr-89]

1182 Francis Avnaim and Jean-Daniel Boissonnat. Practical exact motion planning of a class of robots with three degrees of freedom. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 19, 1989. [ab-pempc-89]

1183 Francis Avnaim and Jean-Daniel Boissonnat. Simultaneous containment of several polygons. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 242–250, 1987. [ab-scsp-87] *Cites:* b-srpcs-86, bfm-ipc-84, c-pcp-83, f-fapct-85, grs-kfcg-83, gs-ccrs-86, hm-ftprs-85, hmmn-sssic-84, ks-eapcf-85, oww-fabmo-85, ps-cgi-85, ss-pmp3c-82, ww-tsoab-86, y-cmsd-84, ZZZ.

1184 Francis Avnaim and Jean-Daniel Boissonnat. The polygon containment problem: 1. simultaneous containment under translation. Technical Report 689, INRIA Sophia-Antipolis, June 1987. [ab-pcp1s-87]

1185 Francis Avnaim, Jean-Daniel Boissonnat, Olivier Devillers, Franco P. Preparata, and Mariette Yvinec. Evaluating signs of determinants using single-precision arithmetic. Research Report 2306, INRIA, BP93, 06902 Sophia-Antipolis, France, 1994. [abdpy-esdus-94] *URL:* http://www.inria.fr/RRRT/RR-2306. *Precedes:* abdpy-esdus-97. *Abstract:* We propose a method to evaluate signs of 2×2 and 3×3 determinants with b-bit integer entries using only b and $(b+1)$-bit arithmetic respectively. This algorithm has numerous applications in geometric computation and provides a general and practical approach to robustness. The algorithm has been implemented and experimental results show that it slows down the computing time by only a small factor with respect to floating-point calculation.

1186 Francis Avnaim, Jean-Daniel Boissonnat, Olivier Devillers, Franco P. Preparata, and Mariette Yvinec. Evaluating signs of determinants using single-precision arithmetic. *Algorithmica*, 17(2):111–132, 1997. [abdpy-esdus-97] *URL:* http://www-sop.inria.fr/prisme/publis/abdpy-esdus-97.ps.gz. *Succeeds:* abdpy-esdus-94, abdpy-enmcs-95. *Cites:* bjmm-lsicg-93, c-sede-92, fm-nsala-91, f-nsa2d-92, f-smpst-89, fv-eeacg-93, gss-egbra-89, gy-frcg-86, hhk-rsops-89, kln-edtur-91, m-dpggt-89, m-vigau-88a, ps-cgi-85, si-gafpa-88, v-cca-79. *Abstract:* We propose a method to evaluate signs of 2×2 and 3×3 determinants with b-bit integer entries using only b and $(b+1)$-bit arithmetic respectively. This algorithm has numerous applications in geometric computation and provides a general and practical approach to robustness. The algorithm has been implemented and compared with other exact computation methods.

1187 Francis Avnaim, Jean-Daniel Boissonnat, Olivier Devillers, Franco P. Preparata, and Mariette Yvinec. Evaluation of a new method to compute signs of determinants. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C16–C17, 1995. [abdpy-enmcs-95] *URL:* http://www-sop.inria.fr/prisme/publis/abdpy-enmcs-95.ps.gz. *Precedes:* abdpy-esdus-97. *Cites:* ZZZ.

1188 Francis Avnaim, Jean-Daniel Boissonnat, and Bernard Faverjon. A practical exact motion planning algorithm for polygonal objects amidst polygonal obstacles. In *Proc. 5th IEEE Internat. Conf. Robot. Autom.*, pages 1656–1661, 1988. [abf-pempa-88]

1189 Francis Avnaim, Jean-Daniel Boissonnat, and Bernard Faverjon. A practical exact motion planning algorithm for polygonal objects amidst polygonal obstacles. In *??*, volume 391 of *Lecture Notes Comput. Sci.*, pages 67–86. 1989. [abf-pempa-89] *Keywords:* motion planning.

1190 J. Avro and D. Kirk. A survey of ray tracing acceleration techniques. In A. Glassner, editor, *An Introduction to Ray Tracing*, pages 201–262. Academic Press, San Diego, CA, 1989. [ak-srtat-89] *ISBN:* 0-12-286160-4.

1191 B. Awerbuch. Complexity of network synchronization. *J. ACM*, ??:804–823, 1985. [a-cns-85]

1192 B. Awerbuch, Y. Azar, A. Blum, and S. Vempala. Improved approximation guarantees for minimum-weight k-trees and prize-collecting salesmen. Technical Report CMU-CS-94-173, Dept. Computer Science, Carnegie-Mellon University, Pittsburgh, PA, 15213, August 1994. [aabv-iagmw-94]

1193 B. Awerbuch, Y. Azar, A. Blum, and S. Vempala. Improved approximation guarantees for minimum-weight k-trees and prize-collecting salesmen. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 277–283, 1995. [aabv-iagmw-95] *Succeeds:* aabv-iagmw-94.

1194 B. Awerbuch, Y. Azar, A. Blum, and S. Vempala. New approximation guarantees for minimum-weight k-trees and prize-collecting salesmen. *SIAM J. Comput.*, 28:254–262, 1998. [aabv-nagmw-98]

1195 B. Awerbuch, B. Berger, L. Cowen, and D. Peleg. Near-linear time construction of sparse neighborhood covers. *SIAM J. Comput.*, 28:263–277, 1998. [abcp-nltcs-98]

1196 B. Awerbuch and D. Peleg. Sparse partitions. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 503–513, 1990. [ap-sp-90]

A. Awwal. See also [7809].

1197 N. Ayache. *Artificial Vision for Mobile Robots: Stereo Vision and Multisensory Perception.* MIT Press, Cambridge, MA, 1991. [a-avmrs-91]

1198 N. Ayache, J. D. Boissonnat, L. Cohen, B. Geiger, J. Levy-Vehel, O. Monga, and P. Sander. Steps toward the automatic interpretation of 3D images. In K. H. Höhne, H. Fuchs, and S. M. Pizer, editors, *3D Imaging in Medicine*, volume F60 of *NATO ASI*, pages 107–120. Springer-Verlag, 1990. [abcglms-stai3-90]

1199 N. Ayache and B. Faverjon. Efficient registration of stereo by matching graph descriptors of edge segments. *Internat. J. Comput Vision*, ??:107–131, 1987. [af-ersmg-87]

1200 D. Ayala, P. Brunet, R. Juan, and I. Navazo. Object representation by means of nominal division quadtrees. *ACM Trans. Graph.*, 4(1):41–59, 1985. [abjn-ormnd-85]

1201 R. Ayala, E. Domínguez, A. R. Francés, A. Quintero, and J. Rubio. N-dimensional separation theorems in digital topology. In *Abstracts 10th European Workshop Comput. Geom.*, pages 29–32. Universidad de Cantabria, Santander, 1994. [adfqr-ndstd-94]

1202 Cavit Aydin and Doug Ierardi. Partitioning algorithms for transportation graphs and their applications to routing. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 245–250, 1997. [ai-patgt-97]

1203 Yossi Azar. Lower bounds for insertion methods for TSP. *Combinatorics, Probability and Computing*, 3:285–292, 1994. [a-lbimt-94] *Annote:* See also [1219]; Bafna et al independently discovered the same result.

1204 Yossi Azar and Leah Epstein. On two dimensional packing. *J. Algorithms*, 25(2):290–310, November 1997. [ae-tdp-97] *Keywords:* bin packing, rectangles, boxes, approximation algorithm.

Y. Azar. See also [527–531, 1192–1194].

1205 A. S. Azarenok, V. N. Martynchik, and N. N. Metel'skii. Computation of generalized convex approximations of planar geometric objects. *Comp. Maths Math. Phys. (English translation of Zhurnal Vychislitelnoi Matematiki i Matematicheskoi Fiziki)*, 33(12):1641–1651, 1993. [amm-cgcap-93] *Keywords:* shape approximation, generalized convexity, visibility, isothetic domain, $S-$convex hull, $S-$convex approximation. *Annote:* The author's notion of $S-$convex hull for an isothetic domain is in other words the minimal externally isothetically visible hull. An $O(rn^3)$ time $O(rn^2)$ space algorithm for $r-$vertex $S-$convex approximation of miminal area of an $n-$vertex isothetic domain is given. *Abstract:* Using generalizations of the concept of convexity, a technique is described for approximating polygonal domains by simplifying their geometric shape. An algorithm of polynomial complexity is obtained for computing a generalized-convex approximation with a priori constraints on the number of vertices of the resulting domain. The quality of the approximation is evaluated from the increment in area of the original domain which is minimized by solving a certain extremum combinatorial problem. (Author abstract) 8 Refs.

A. K. Aziz. See also [1210].

1206 J. H. Bohn and M. J. Wozny. Automatic CAD-model repair: Shell-closure. In *Proc. Sympos. on Solid Freeform Fabrication*, pages 86–94. Dept. Mech. Eng., Univ. Texas Austin, 1992. [bw-acmrs-92]

1207 L. Babai and P. Frankl. Linear algebra methods in combinatorics, part I. Technical Report, Univ. Chicago, Chicago, IL, 1988. [bf-lamcp-88]

1208 L. Babai, B. Just, and F. Meyer auf der Heide. On the limits of computations with the floor function. *Inform. Comput.*, 78(2):99–108, 1988. [bjmadh-lcff-88] *Keywords:* lower bounds, computational complexity.

L. Babai. See also [884].

1209 Mark Babikov, Diane Souvaine, and Rephael Wenger. Constructing piecewise linear homeomorphisms of polygons with holes. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 6–10, 1997. [bsw-cplhp-97]

U. Babu. See also [6983].

1210 I. Babuska and A. K. Aziz. On the angle condition in the finite element method. *SIAM J. Numer. Anal.*, 13:214–227, 1976. [ba-acfem-76]

A. Bachem. See also [7730].

Bachmann. See also [1568].

E. Backer. See also [6536].

1211 N. Badler and R. Bajcsy. 3-d representation for computer graphics and computer vision. *Comput. Graph. Image Process.*, 12:153–160, 1978. [bb-3drcg-78]

N. Badler. See also [10944]

Norman I. Badler. See also [10391, 10392, 13877].

P. O. Baehmann. See also [12113].

1212 N. Baek, S.-Y. Shin, and K.-Y. Chwa. On computing translational swept volumes. *Internat. J. Comput. Geom. Appl.*, 9(3):293–317, June 1999. [bsc-ctsv-99]

1213 N. Baek, S.-Y. Shin, and K.-Y. Chwa. Three-dimensional topological sweep for computing rotational swept volumes of polyhedral objects. *Internat. J. Comput. Geom. Appl.*, 10:131–156, 2000. [bsc-tdtsc-00]

1214 A. Baer, C. Eastman, and M. Henrion. Geometric modeling: A survey. *CAD*, 11(5):253–272, September 1979. [beh-gms-79]

1215 R. Baeza-Yates. String searching algorthms revisited. In *??*, volume 382 of *Lecture Notes Comput. Sci.*, pages 75–96. 1989. [b-ssar-89] *Keywords:* searching, string matching.

1216 R. Baeza-Yates, J. Culberson, and G. Rawlins. Searching in the plane. *Inform. Comput.*, 106:234–252, 1993. [bcr-sp-93]

1217 R. Baeza-Yates and M. Regnier. Fast algorithms for two-dimensional and multiple pattern matching. In *??*, volume 447 of *Lecture Notes Comput. Sci.*, pages 332–247. 1990. [br-fatdm-90] *Keywords:* searching, pattern matching.

1218 R. Baeza-Yates and R. Schott. Parallel searching in the plane. *Comput. Geom. Theory Appl.*, 5:143–154, 1995. [bs-psp-95]

R. Baeza-Yates. See also [6074, 11066].

1219 Vineet Bafna, Bala Kalyanasundaram, and Kirk Pruhs. Not all insertion methods yield constant approximate tours in the Euclidean plane. *Theoret. Comput. Sci.*, 125:345–353, 1994. [bkp-naimy-94] *Annote:* See also [1203]; Azar independently discovered the same result.

1220 V. Bagatelj. On the balanced divide-and-conquer equation. *Internat. J. Comput. Math.*, 19(3–4):259–266, 1986. [b-bdce-86] *Keywords:* divide and conquer.

1221 F. Bagemihl. On indecomposable polyhedra. Report ??, Univ. Rochester, Rochester, NY, ?? [b-ip-??] *Precedes:* b-ip-48a.

1222 F. Bagemihl. On indecomposable polyhedra. *Amer. Math. Monthly*, ??:411–413, September 1948. [b-ip-48a] *Succeeds:* b-ip-??

1223 J. Bagga, S. Dey, J. Emert, L. Gewali, and J. McGrew. Contracted visibility graphs of line segments. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 82–86, 1997. [bdegm-cvgls-97]

1224 J. Bagga, L. Gewali, and D. Glasser. The complexity of illuminating polygons by α-flood-lights. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 337–342, 1996. [bgg-cipaf-96]

1225 Jay Bagga, Laxmi Gewali, and Simeon Ntafos. Visibility edges, mixed edges, and unique triangulation. In *Abstracts 13th European Workshop Comput. Geom.*, page 11. Universität Würzburg, 1997. [bgn-vemeu-97] *Cites:* ZZZ.

1226 D. H. Bailey. A portable high performance multiprecision package. Technical Report RNR-90-022, NASA Ames Res. Center, May 1993. [b-phpmp-93]

1227 T. Bailey and J. Cowles. A convex hull inclusion test. *IEEE Trans. Pattern Anal. Mach. Intell.*, 9(2):312–316, 1987. [bc-chit-87] *Keywords:* convex hull, point location.

1228 J. Baillieul, R. Brockett, B. Donald, R. Murray, M. Raghavan, and S. Sastry. Mathematical questions in robotics. Technical Report TR 90-1097, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, February 1990. [bbdmrs-mqr-90]

J. Baillieul. See also [4361].

1229 H. S. Baird. Background structure in document images. In *Proc. of the IAPR 1992 Workshop on Syntactic and Structural Pattern Recognition*, page ??, 1992. [b-bsdi-92] *Keywords:* maximal empty rectangles, OCR, optical character recognition.

1230 H. S. Baird. Fast algorithms for LSI artwork analysis. In *Proc. Design Autom. Conf.*, pages 303–311, 1977. [b-falaa-77] *Precedes:* b-falaa-78.

1231 H. S. Baird. Fast algorithms for LSI artwork analysis. *J. Design Autom. Fault-Tolerant Comput.*, 2(2):179–209, 1978. [b-falaa-78] *Keywords:* , VLSI design, polygons, Boolean operations, isothetic. *Succeeds:* b-falaa-77.

1232 H. S. Baird. *Model-Based Image Matching Using Location*. Distinguished Dissertation Series. MIT Press, 1984. [b-mbimu-84]

1233 H. S. Baird, S. E. Jones, and S. J. Fortune. Image segmentation by shape-directed covers. In *Proc. of the Tenth International Conference on Pattern Recognition*, pages 820–825. IEEE Computer Society, 1990. [bjf-issdc-90] *Keywords:* maximal empty rectangles, OCR, optical character recognition.

1234 B. Bajaj and A. Royappa. Triangulation and display of arbitrary rational parametric surfaces. In R. Bergeron and A. Kaufman, editors, *IEEE Visualiuation '94 Conference*. IEEE, 1994. [br-tdarp-94]

1235 C. Bajaj. An efficient parallel solution for Euclidean shortest paths in three dimensions. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1897–1900, 1986. [b-epses-86] *Keywords:* motion planning, elementary geometry, parallel computation, geodesic distance, numerical analysis, CAD, robotics.

1236 C. Bajaj. Applying Galois theoretic algebraic methods to geometric optimization problems. In *SIAM Conf. on Geometric Modeling and Robotics*, July 1985. [b-agtam-85]

1237 C. Bajaj. Computational geometry for interrogative visualization. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 99–100, 1996. [b-cgiv-96] *Annote:* Invited Lecture by C. Bajaj.

1238 C. Bajaj. Geometric modeling with algebraic surfaces. In D. Handscomb, editor, *The Mathematics of Surfaces III*, pages 3–48. Oxford University Press, 1989. [b-gmas-89]

1239 C. Bajaj. Geometric optimization and computational complexity. Technical Report TR 84-629, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1984. [b-gocc-84]

1240 C. Bajaj. Geometric optimization and the polynomial hierarchy. In *Proc. 5th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 206 of *Lecture Notes Comput. Sci.*, pages 176–195. Springer-Verlag, December 1985. [b-goph-85] *Precedes:* b-goph-87.

1241 C. Bajaj. Geometric optimization and the polynomial hierarchy. *Theoret. Comput. Sci.*, 54(1):87–102, 1987. [b-goph-87] *Keywords:* optimization, facility location, computational complexity. *Succeeds:* b-goph-85.

1242 C. Bajaj. Limitations to algorithm solvability: Galois methods and models of computation. In *Proc. ACM Sympos. Symbolic and Algebraic Computation*, pages 71–76, 1986. [b-lasgm-86] *Keywords:* discrete geometry, algebra, complexity theory, two-dimensional, three-dimensional, CAD, robotics.

1243 C. Bajaj. Local parameterization, implicitazion and inversion of real algebraic curves. Technical Report CSD-TR-863, Purdue Univ., West Lafayette, IN, 1989. Also CAPO-89-9, Proc. AAECC-7 Conf. [b-lpiir-89]

1244 C. Bajaj. MINSUM geometric optimization problems are δ_2^P-proper. Manuscript, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1984. [b-mgopa-84] *Comments:* Updated invited version in [1241]. *Precedes:* b-goph-87.

1245 C. Bajaj. Proving geometric algorithm non-solvability: An application of factoring polynomials. *J. Symbolic Comput.*, 2:99–102, 1986. [b-pgans-86] *Keywords:* discrete geometry, algebra, complexity theory, two-dimensional, three-dimensional, CAD, robotics.

1246 C. Bajaj. Rational hypersurface display. In *Proc. 1990 Sympos. Interactive 3D Graphics*, 1990. [b-rhd-90]

1247 C. Bajaj. Reducibility among geometric location-allocation optimization problems. Technical Report TR 84-607, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1984. [b-rglao-84] *Keywords:* discrete geometry, complexity theory, optimization, two-dimensional, three-dimensional, robotics.

1248 C. Bajaj. The algebraic complexity of shortest paths in polyhedral spaces. In *Proc. 23rd Allerton Conf. Commun. Control Comput.*, pages 510–517, 1985. [b-acspp-85] *Keywords:* motion planning, geometry, algebra, complexity theory, three-dimensional, CAD, robotics.

1249 C. Bajaj. The algebraic degree of geometric optimization problems. *Discrete Comput. Geom.*, 3:177–191, 1988. [b-adgop-88] *Keywords:* discrete geometry, algebra, complexity theory, optimization, two-dimensional, three-dimensional, CAD, robotics.

1250 C. Bajaj. The emergence of algebraic curves and surfaces in geometric design. In R. Martin, editor, *Directions in Geometric Computing*, pages 1–29. Information Geometers Press, 1993. [b-eacsg-93]

1251 C. Bajaj and S. Abhyankar. Automatic parameterization of rational curves and surfaces II: Cubics and cubicoids. Report CSD-TR-592, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1986. [ba-aprcs-86] *Keywords:* algebraic geometry, design of algorithms, computer graphics, CAD.

1252 C. Bajaj, V. Anupam, and D. Schikore. Custom prosthesis design and prototyping. In Roy Rada and Claude Ghaoui, editors, *Multimedia Medical Education*, chapter 3, pages 39–47. Intellect Books, Oxford, England, 1995. [bas-cpdp-95]

1253 C. Bajaj, F. Bernardini, and G. Xu. Automatic reconstruction of surface and scalar fields from 3d scans. *Comput. Graph.*, ??:109–118, 1995. Proc. SIGGRAPH'95. [bbx-arssf-95]

1254 C. Bajaj, J. Canny, T. Garrity, and J. Warren. Factoring rational polynomials over the complexes. In *Proc. Internat. Sympos. on Symbolic and Algebraic Computation*, pages 81–90, 1989. [bcgw-frpc-89]

1255 C. Bajaj, J. Chen, and G. Xu. Modeling with cubic A-patches. *ACM Trans. Graph.*, 14(2):103–133, 1995. [bcx-mcap-95]

1256 C. Bajaj and T. Dey. Convex decomposition of polyhedra and robustness. Technical Report CSD-TR-990, Dept. Comput. Sci., Purdue Univ., 1990. [bd-cdpr-90]

1257 C. Bajaj and T. Dey. Convex decomposition of simple polyhedra. Technical Report CSD-TR-833, Dept. Comput. Sci., Purdue Univ., 1989. [bd-cdsp-89]

1258 C. Bajaj and T. K. Dey. Convex decomposition of polyhedra and robustness. *SIAM J. Comput.*, 21:339–364, 1992. [bd-cdpr-92]

1259 C. Bajaj and T. K. Dey. Polygon nesting and robustness. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 33–40, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [bd-pnr-89] *Keywords:* containment. *Precedes:* bd-pnr-90.

1260 C. Bajaj and T. K. Dey. Polygon nesting and robustness. *Inform. Process. Lett.*, 35:23–32, 1990. [bd-pnr-90] *Keywords:* containment. *Succeeds:* bd-pnr-89.

1261 C. Bajaj, T. Garrity, and J. Warren. Applications of multi-equational resultants. Technical Report 826, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1988. [bgw-amer-88]

1262 C. Bajaj, C. M. Hoffmann, J. E. Hopcroft, and R. E. Lynch. Tracing surface intersections. Report CSD-TR-728, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1987. [bhhl-tsi-87]

1263 C. Bajaj and I. Ihm. c^1 smoothing of polyhedra with implicit algebraic splines. *Comput. Graph.*, 26(2):79–88, 1992. Proc. SIGGRAPH '92. [bi-cspia-92]

1264 C. Bajaj and M. Kim. Generation of configuration space obstacles III: The case of moving algebraic curves. In *Proc. 4th IEEE Internat. Conf. Robot. Autom.*, 1987. [bk-gcso3-87]

1265 C. Bajaj and M.-S. Kim. Algorithms for planar geometric models. In *??*, volume 317 of *Lecture Notes Comput. Sci.*, pages 67–81. 1988. [bkm-apgm-88] *Keywords:* curvilinear, convex hull, decomposition, motion planning.

1266 C. Bajaj and M.-S. Kim. Compliant motion planning with geometric models. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 171–180, 1987. [bk-cmpgm-87] *Keywords:* motion planning, algebraic geometry, design of algorithms, three-dimensional, CAD, robotics. *Comments:* full version appeared as Generation of configuration space obstacles:II The moving of algebraic surfaces, the internation journal of robotics research 9:1, feb 1990, 92-112. *Cites:* a-hragr-76, ab-arpcs-87, ba-aprcs-86, ab-arpcs3-86, aa-ntsrm-76, bk-gcso2-86, bk-gcso3-87, bfh-sam-86, bcl-casac-82, c-cdmp-84, c-cpplb-84, c-cmpr-71, d-etqti-08, c-dgcs-76, d-mpsdf-84, fa-spbsg-84, f-past-75, grs-kfcg-83, gs-ccrs-86, hh-gabr-86, hk-crcs-85, h-rv-86, kw-gcsmm-79, l-spcsa-83, lw-apcfp-79, lmt-asfms-84, mmp-dgp-85, m-fspcp-85, osb-spps-85, p-mmp-78, r-rrso-80, rv-smcsr-83, ss-pmp2g-83, ss-spps-84, th-otdp-84, u-cdacc-77, w-ac-78, y-amp-85, ZZZ.

1267 C. Bajaj and M. S. Kim. Convex hull of objects bounded by algebraic curves. Report CSD-TR-697, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1987. [bk-choba-87] *Precedes:* bk-choba-91.

1268 C. Bajaj and M. S. Kim. Convex hull of objects bounded by algebraic curves. *Algorithmica*, 6:533–553, 1991. [bk-choba-91] *Succeeds:* bk-choba-87.

1269 C. Bajaj and M.-S. Kim. Generation of configuration space obstacles I: the case of a moving sphere. Report CSD-TR-565, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1985. [bk-gcso1-85] *Keywords:* motion planning, algebraic geometry, design of algorithms, three-dimensional, CAD, robotics. *Precedes:* bkm-gcsoc-88.

1270 C. Bajaj and M. S. Kim. Generation of configuration space obstacles II: the case of moving algebraic surfaces. Report CSD-TR-586, Comput. Sci., Purdue Univ., West Lafayette, IN, 1986. [bk-gcso2-86] *Keywords:* motion planning, algebraic geometry, design of algorithms, three-dimensional, CAD, robotics. *Precedes:* bk-gcsoc-89.

1271 C. Bajaj and M.-S. Kim. Generation of configuration space obstacles: the case of moving algebraic surfaces. *Algorithmica*, 4:155–172, 1989. [bk-gcsoc-89] *Succeeds:* bk-gcso2-86.

1272 C. Bajaj and M.-S. Kim. Generation of configuration-space obstacles: The case of moving sphere. *Internat. J. Robot. Autom.*, 4(1):94–99, 1988. [bkm-gcsoc-88] *Keywords:* motion planning. *Precedes:* bk-gcso1-85.

1273 C. Bajaj and M. Li. Geometric optimization and D^P-completeness. *Discrete Comput. Geom.*, 4:3–13, 1989. [bl-godc-89]

1274 C. Bajaj and M. Li. On the duality of intersections and closest points. In *Proc. 21st Allerton Conf. Commun. Control Comput.*, pages 459–461, 1983. [bl-dicp-83] *Keywords:* discrete geometry, design of algorithms, geometric transformations, computer graphics, CAD.

1275 C. Bajaj and T. T. Moh. Generalized unfoldings for shortest paths. *Internat. J. Robot. Res.*, 7:71–76, 1988. [bm-gusp-88] *Keywords:* motion planning, elementary geometry, design of algorithms, geodesic distance, CAD, robotics. *Succeeds:* bm-guspe-85.

1276 C. Bajaj and T. T. Moh. Generalized unfoldings for shortest paths in Euclidean 3-space. Technical Report CSD-TR-526, Department of Computer Science, Purdue University, 1985. [bm-guspe-85] *Precedes:* bm-gusp-88.

1277 C. Bajaj and A. Royappa. Finite representations of real parametric curves and surfaces. *Internat. J. Comput. Geom. Appl.*, 5:313–326, 1995. [br-frrpc-95] *Keywords:* real parametric curves and surfaces, varieties, computer graphics, projective domain transformations.

1278 C. Bajaj and A. Royappa. The GANITH algebraic geometry toolkit. Technical Report 914, Purdue Univ., West Lafayette, IN, 1990. CAPO Report No. CER-89-21, Also to appear in DISCO 90. [br-gagt-90]

1279 C. Bajaj and D. Schikore. Error-bounded reduction of triangle meshes with multivariate data. In *Proc. SPIE Sympos. Visual Data Exploration and Analysis III*, pages 34–45, January 1996. [bs-ebrtm-96]

1280 C. Bajaj and D. Schikore. Topology preserving data simplification with error bounds. *Computers & Graphics*, 22(1):3–12, 1998. [bs-tpdse-98]

1281 Chandrajit Bajaj and Guoliang Xu. Converting a rational curve to a standard rational Bernstein-Bézier representation. In Paul Heckbert, editor, *Graphics Gems IV*, pages 256–260. Academic Press, Boston, MA, 1994. [bx-crcsr-94] *Keywords:* Bezier curve, rational curve, NURB. *Annote:* Discusses a low-level operation on curves: conversion of a rational piecewise polynomial curve into rational Bernstein-Bezier form, a commonly used type of non-uniform rational B-spline (NURB). Rational splines are useful because they allow conic curves to be represented exactly, whereas standard (polynomial) splines do not. Contains pseudocode.

C. Bajaj. See also [55, 56, 59, 1011, 1837–1839, 4080, 7587, 8339].

1282 C. L. Bajaj. Collaborative multimedia & scientific toolkits. Course Notes, Dept. Comp. Sci., Purdue Univ., West Lafayette, Indiana, 1996. [b-cmst-95]

1283 C. L. Bajaj. Geometric computations with algebraic varieties of bounded degree. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 148–156, 1990. [b-gcavb-90] *Cites:* a-gph-88, ab-arpcs-87, ab-arpcs2-87, abcac-89, b-gmas-89, b-lpiir-89, b-rhd-90, bcgwfrpc-89, bhhl-tsi-87, br-gagt-90, b-gbamp-85, csagcp-88, c-gcp-88, ckl-sspef-89, c-te-48, cg-stssa-83, d-cag-79, f-it-84, gw-cipas-87, g-seppi-84, hag-77, h-tdaz-08, hy-prsts-87, hk-crcs-85i, jbspaac-90, k-eidat-03, k-geatd-82, k-eukav-52, keukav-59, l-mmdiq-79, l-gbger-83, l-gprs-83, msfe-02, mm-cwpcs-82, mm-chf-83, oss-picpu-87, r-ccgfo-89, s-limha-85, sr-iag-49, s-fpavp-80, sspmp2g-83, ss-pcas-87, w-tbcav-87, zs-ca1-58, zsca2-58, ZZZ.

1284 C. L. Bajaj, F. Bernadini, and G. Xu. Reconstructing surfaces and functions on surfaces from unorganized three-dimensional data. *Algorithmica*, 19(1–2):243–261, September 1997. [bbx-rsfsu-97]

1285 C. L. Bajaj and W. J. Bouma. Dynamic Voronoi diagrams and Delaunay triangulations. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 273–277, 1990. [bb-dvddt-90] *Cites:* a-sdcgp-85, b-gmas-89, bgw-amer-88, c-fsram-84, e-acg-87, ow-dsp-84t, ps-cgi-85, rsmppmo-85t, s-acvd-92, ZZZ.

1286 Chandrajit L. Bajaj, Edward J. Coyle, and Kwun-Nan Lin. Boundary and 3d triangular meshes from planar cross sections. In *Proc. 5th International Meshing Roundtable*, pages 169–178, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [bcl-b3dtm-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

1287 C. L. Bajaj and T. K. Dey. Robust decompositions of polyhedra. In *??*, volume 405 of *Lecture Notes Comput. Sci.*, pages 267–279. 1989. [bd-rdp-89] *Keywords:* polyhedron decomposition robust.

1288 C. L. Bajaj and S. Evans. Splines and geometric modeling. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 45, pages 833–850. CRC Press LLC, Boca Raton, FL, 1997. [be-sgm-97]

1289 C. L. Bajaj, C. M. Hoffman, R. E. Lynch, and J. E. Hopcroft. Tracing surface intersections. *Comput. Aided Geom. Design*, 5:285–307, 1988. [bhlh-tsi-88]

1290 C. L. Bajaj and I. Ihm. Hermite interpolation using real algebraic surfaces. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 94–103, 1989. [bi-hiura-89] *Cites:* bgmas-89, bhhl-tsi-87, d-pimcc-85, f-spm-86, hhqbs-86, m-essle-73, ms-bsstv-85a, p-dlsfas-87, rrcrbsm-84, s-igubc-87, s-pasp-85, w-bqsqc-87, wasmgc-86, w-bgm-87, ZZZ.

1291 Chandrajit L. Bajaj and Valerio Pascucci. Splitting a complex of convex polytopes in any dimension. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 88–97, 1996. [bp-sccpa-96] *Cites:* am-dhsrr-95, am-rsss-94, b-rgsdd-93, bd-cdpr-92, be-mgot-92i, c-oaitd-92, cd-icott-87, dk-fdpi-83, e-acg-87, em-sstcd-90, fm-nsala-91, g-cp-67, hk-prga-92, kopcbf-95, l-ndgcm-94, lc-mchr3-87, lm-cschu-90, m-cgitr-93, m-rpm-93, m-rsehc-93, mhc-avcev-90, n-cgpt-93, nat-mbtyp-90, pbcf-dimsc-93, pfpdiccb-95, py-ebsph-90, s-lrapi-94, s-rcaic-94, tcpos-92, tn-sopub-87, v-bimsp-91, ZZZ.

1292 C. L. Bajaj, V. Pascucci, and D. R. Schikore. Fast isocontouring for improved interactivity. In *Proc. 1996 IEEE Symposium on Volume Visualization*, pages 39–46, October 1996. [bps-fiii-96]

1293 C. L. Bajaj and A. V. Royappa. Parameterization in finite precision. *Algorithmica*, 27(1):100–114, 2000. [a-pfp-00]

C. L. Bajaj. See also [1840, 1841, 4094, 4111].

C. Bajal. See also [57].

1294 R. Bajcsy. Active perception. *Proc. IEEE*, 76(8):996–1005, 1988. [b-ap-88]

R. Bajcsy. See also [1211].

1295 J. Bajon, M. Cattoën, and S. D. Kim. A concavity characterization method for digital objects. *Signal Process.*, 9:151–161, 1985. [bck-ccmdo-85]

1296 B. Baker. Shortest paths with unit clearance among polygonal obstacles. In *SIAM Conference on Geometric Modeling and Robotics*, July 1985. [b-spucp-85]

1297 B. Baker, S. Fortune, and E. Grosse. Stable prehension with a multi-fingered hand. In *Proc. IEEE Internat. Conf. Robot. Autom.*, 1985. [bfg-spmfh-85]

1298 B. S. Baker. Approximation algorithms for NP-complete problems on planar graphs. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, 1983. [b-aancp-83]

1299 B. S. Baker. Approximation algorithms for NP-complete problems on planar graphs. *J. ACM*, 41:153–180, 1994. [b-aancp-94]

1300 B. S. Baker, D. J. Brown, and H. P. Katseff. A 5/4 algorithm for two-dimensional packing. *J. Algorithms*, 2:348–368, 1981. [bbk-5atdp-81]

1301 B. S. Baker, E. G. Coffman, Jr., and R. L. Rivest. Orthogonal packings in two dimensions. *SIAM J. Comput.*, 9:846–855, 1980. [bcr-optd-80]

1302 B. S. Baker, S. J. Fortune, and E. Grosse. Stable prehension with three fingers. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 114–120, 1985. [bfg-sptf-85]

1303 B. S. Baker, S. J. Fortune, and S. R. Mahaney. Inspection by polygon containment. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 91–100, 1984. [bfm-ipc-84] *Keywords:* polygons, containment.

1304 B. S. Baker, S. J. Fortune, and S. R. Mahaney. Polygon containment under translation. *J. Algorithms*, 7:532–548, 1986. [bfm-pct-86] *Keywords:* motion planning, polygons.

1305 B. S. Baker, E. Grosse, and C. S. Rafferty. Nonobtuse triangulation of polygons. *Discrete Comput. Geom.*, 3:147–168, 1988. [bgr-ntp-88]

1306 B. S. Baker and J. S. Schwarz. Shelf algorithms for two-dimensional packing problems. *SIAM J. Comput.*, 12:508–525, 1983. [bs-satdp-83]

1307 Henry G. Baker. Corrigenda: Intersection algorithms for lines and circles. *ACM Trans. Graph.*, 13(3):308–310, 1994. [b-cialc-94] *Keywords:* intersection, lines, circles. *Comments:* Correction to mst-ialc-89.

1308 H. H. Baker and T. O. Binford. Depth from edge and intensity bases stereo. In *Proc. 7th Internat. Joint Conf. Artif. Intell.*, pages 631–636, 1981. [bb-deibs-81]

1309 J. E. Baker, I. F. Cruz, G. Liotta, and R. Tamassia. A new model for algorithm animation over the WWW. *ACM Comput. Surv.*, 27(4):568–572, 1995. [bclt-nmaaw-95] *URL:* http://www.cs.brown.edu/cgc/papers/bclt-nmaaw-95.ps.gz. *Keywords:* algorithm animation, Java, Web, WWW, graph drawing, CGC, Brown.

1310 J. E. Baker, I. F. Cruz, G. Liotta, and R. Tamassia. Algorithm animation over the World Wide Web. In *Proc. Int. Workshop on Advanced Visual Interfaces*, pages 203–212, 1996. [bclt-aawww-96] *URL:* http://www.cs.brown.edu/cgc/papers/bclt-aawww-96.ps.gz. *Keywords:* algorithm animation, Java, Web, WWW, CGC, Brown.

1311 James E. Baker, Isabel F. Cruz, Giuseppe Liotta, and Roberto Tamassia. Animating geometric algorithms over the Web. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C3–C4, 1996. [bclt-agaow-96] *URL:* http://www.cs.brown.edu/cgc/papers/bclt-agaow-96.ps.gz. *Keywords:* algorithm animation, Java, Web, WWW, CGC, Brown. *Cites:* bclt-nmaaw-95, ZZZ.

1312 J. E. Baker, I. F. Cruz, G. Liotta, and R. Tamassia. The Mocha algorithm animation system. In *Proc. Int. Workshop on Advanced Visual Interfaces*, pages 248–250, 1996. [bclt-maas-96] *URL:* http://www.cs.brown.edu/cgc/papers/bclt-maas-96.ps.gz. *Keywords:* algorithm animation, Java, Web, WWW, CGC, Brown.

1313 J. E. Baker, I. F. Cruz, G. Liotta, and R. Tamassia. Visualizing geometric algorithms over the web. *Comput. Geom. Theory Appl.* to appear. [bclt-vga-]

James E. Baker. See also [12761].

1314 K. A. Baker, P. Fishburn, and F. S. Roberts. Partial orders of dimension 2. *Networks*, 2:11–28, 1971. [bfr-pod2-71] *Keywords:* graph drawing, planar, upward.

M. P. Baker. See also [6743].

1315 T. Baker. Three dimensional mesh generation by triangulation of arbitrary point sets. In *Proc. AIAA 8th Comput. Fluid Dynamics Conf.*, pages 255–271, 1987. [b-tdmgt-87] *Keywords:* triangulation, three-dimensional.

T. Baker. See also [7472].

1316 Timothy J. Baker. Automatic mesh generation for complex three-dimensional regions using a constrained Delaunay triangulation. *Engineering with Computers (USA)*, 5(3–4):161–175, 1989. [b-amgct-89] *Keywords:* mesh generation, Delaunay triangulation. *Annote:* Bowyer's algorithm. Constraints by fixing triangles. Uses octrees for point location in $O(\log n)$. Yet another proof that Bowyer's works. Uses a/r for tetra quality. *Abstract:* This paper describes a method for generating tetrahedral meshes. The algorithm, based on the Delaunay triangulation, can treat objects of essentially arbitrary complexity. In order to preserve the surface triangulation of solid objects, it is necessary to override the Delaunay property and redefine the triangulation when points are introduced that are close to solid boundaries. Details of this constrained Delaunay algorithm are presented and an efficient implementation of the triangulation method is described. Techniques for controlling the distribution of mesh points and tetrahedron quality are also discussed. (Author abstract) 25 Refs.

1317 Timothy J. Baker. Shape reconstruction and volume meshing for complex solids. *Internat. J. Numer. Methods Eng.*, 32(4):665–675, September 1991. [b-srvmc-91] *Keywords:* shape reconstruction, volume meshing. *Annote:* An interior point is generated for each section vertex. This is placed on the line bisecting the corner ABC, at a distance $\min(AB, BC, d/3)$, where d is the length of the segment from B to where it first leaves the polygon. Dt of these points is constructed and the surface is the boundary between tetras containing only section vertices and the other tetras. *Abstract:* The reconstruction of a solid surface from a series of cross-sections and the generation of a volume mesh that conforms with a prescribed surface are issues that arise in numerous applications. We describe an approach to both these problems that is based on the generation of a tetrahedral mesh which automatically captures a triangulation of the surface points. A simple algorithm for introducing a set of interior points permits a simple partition of the volume mesh into two disjoint sets of tetrahedra such that one set determines the interior of the solid while the second determines the exterior. (Author abstract) 10 Refs.

1318 E. Bakker, J. van Leeuwen, and R. Tan. Linear interval routing. *Algorithms Rev.*, 2(2):45–61, 1991. [blt-lir-91]

1319 Ivan J. Balaban. An optimal algorithm for finding segment intersections. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 211–219, 1995. [b-oafsi-95] *Keywords:* *Cites:* b-lbact-83, bo-arcgi-79, c-fsnaq-86, c-rcsi-86, ce-oails-92, cs-arscg-89, egs-oplms-86, l-dsorq-78, m-fppa1-88, ps-cgi-85, w-pr-82, ZZZ.

1320 E. Balas and M. Fischetti. On the monotonization of polyhedra. In *Proc. 3rd IPCO Conference Integer Programming and Combinatorial Optimization*, page ??, 1993. [bf-mp-93]

1321 E. Balas and W. Pulleyblank. The perfectly matchable subgraph polytope of a bipartite graph. *Networks*, 13:495–516, 1983. [bp-pmspb-83]

K. Balasubramanian. See also [6492].

1322 Sophie Balaven. *Génération de maillages hybrides pour la simulation de réservoirs pétroliers*. Thèse de doctorat en sciences, Ecole des Mines, Paris, France, 2001. [b-gmhsr-01] *Keywords:* doctoral thesis.

1323 L. Balbes, S. Mascarella, and D. Boyd. A perspective of modern methods in computer-aided drug design. In K. Lipkowitz and D. B. Boyd, editors, *Reviews in Computational Chemistry*, volume 5, pages 337–370. VCH Publishers, 1994. [bmb-pmmca-94]

1324 R. Balbes and J. Siegel. A robust method for calculating the simplicity and orientation of planar polygons. *Comput. Aided Geom. Design*, 8(4):327–335, October 1991. [bs-rmcso-91] *Keywords:* polygons.

1325 J. Balcázar, A. Lozano, and J. Torán. The complexity of algorithmic problems on succinct instances. *Algorithms Rev.*, 2(3):113–137, 1992. [blt-capsi-92]

1326 D. F. Baldwin. Algorithmic methods and software tools for the generation of mechanical assembly sequences. M.Sc. thesis, Massachusetts Inst. Tech., Cambridge, MA, 1990. [b-amstg-90] *Keywords:* master thesis.

M. Baldwin. See also [10389, 10390].

J. W. Bales. See also [10663].

1327 M. L. Balinsky. An algorithm for finding all vertices of convex polyhedral sets. *SIAM J. Appl. Math.*, 9:72–88, 1961. [b-afavc-61]

1328 D. H. Ballard. Generalizing the Hough transform to detect arbitrary shapes. *Pattern Recogn.*, 13:111–112, 1981. [b-ghtda-81]

1329 D. H. Ballard. Strip trees: A hierarchical representation for curves. *Commun. ACM*, 24(5):310–321, 1981. [b-sthrc-81]

1330 D. H. Ballard and C. M. Brown. *Computer Vision*. Prentice Hall, 1982. [bb-cv-82]

D. H. Ballard. See also [12793].

1331 C. Ballieux. Motion planning using binary space partitions. Technical Report Inf/src/93-25, Utrecht University, 1993. [b-mpbsp-93]

1332 A. Balog and I. Bárány. On the convex hull of the integer points in a disc. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 162–165, 1991. [bb-chipd-91] *Keywords:* convex hull, grid. *Cites:* a-lbvsc-63, a-sicp-80, bhl-ipplb-92, c-lpc-63, chkm-ipp-92, c-vdabt-22, f-eidg-82, h-eslp-90, j-ugukk-25, ks-envci-84, s-racs-88, s-ipcs-85, s-nlpcc-74, v-nips-63, w-gimk-57, ZZZ.

1333 A. Baltsan and Micha Sharir. On the shortest paths between two convex polyhedra. *J. ACM*, 35:267–287, 1988. [bs-spbtc-88] *Keywords:* shortest paths, polyhedra, convex, 3-dimensional. *Succeeds:* sb-spbtc-85.

A. Baltsan. See also [12072, 12073].

1334 Helymar Balza-Gomez. The periodicity of integral convex hulls for conics in E^2. In *Abstracts 15th European Workshop Comput. Geom.*, pages 47–49. INRIA Sophia-Antipolis, 1999. [b-pichc-99]

J. R. Banavar. See also [8404].

1335 T. F. Banchoff. Critical points and curvature for embedded polyhedra. *J. Diff. Geom.*, 1:245–256, 1967. [b-cpcep-67]

1336 T. F. Banchoff and F. Takens. Height functions with three critical points. *Illinois J. Math.*, 76:326–335, 1975. [bt-hftcp-75]

1337 F. Bancilhon. A geometric model for stochastic automata. *IEEE Trans. Comput.*, 23(12):1290–1299, 1974. [b-gmsa-74]

A. Bandyopadhyay. See also [523].

1338 Saibal Banerjee, David Mount, and Azriel Rosenfeld. Pyramid computation of neighbor distance statistics in dot patterns. *CVGIP: Graph. Models Image Process.*, 53(4):373–381, July 1991. [bmr-pcnds-91] *Keywords:* Voronoi neighbors. *Abstract:* This paper describes an algorithm for computing statistics of Voronoi neighbor distances in a dot pattern, using a cellular pyramid computer, in a logarithmic number of computational steps. Given a set of dots in a square region of the digital plane, the algorithm determines with high probability the Voronoi neighbors of the dots in the interior of the region and then computes statistics of the neighbor distances. An algorithm of this type may account for the ability of humans to perceive at a glance whether the dots in a pattern are randomly or regularly spaced, i.e., their neighbor distances have high or low variance. (Author abstract).

1339 R. E. Bank. *PLTMG User's Guide*. SIAM, 1990. [b-pug-90]

D. Banks. See also [13431].

1340 P. G. Bao and J. G. Rokne. Quadruple-step line generation. *Computers and Graphics*, 13:461–469, 1989. [br-qslg-89] *Keywords:* digital geometry, computer graphics, design of algorithms, approximation, incrementation, lines, two-dimensional, average-case analysis.

T. Baptie. See also [5027].

1341 E. Bar-Eli, P. Berman, A. Fiat, and P. Yan. On-line navigation in a room. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 237–249, 1992. [bbfy-olnr-92]

1342 E. Bar-Eli, P. Berman, A. Fiat, and P. Yan. Online navigation in a room. *J. Algorithms*, 17:319–341, 1994. [bbfy-olnr-94]

1343 G. Bar. On the level-oriented two-dimensional packing with rotation of rectangles. In R. Bodendiek and R. Henn, editors, *??*, pages 73–78. Physica-Verlag, Geidelberg, 1990. [b-lotdp-90] *Keywords:* packing, isothetic.

1344 G. Bär and C. Iturriaga. Rectangle packing in polynomial time. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 455–460, 1993. [bi-rppt-93] *Cites:* cgjt-pblot-80, o-efo-83, wkc-fpgl-88, h-prf-88, dcl-cfdfb-89, wkc-oarbb-89, vt-ftcr-90, gj-cigtn-79, ZZZ.

1345 J. Bar-Ilan, G. Kortsarz, and D. Peleg. How to allocate network centers. *J. Algorithms*, 15(3):385–415, 1993. [bkp-hanc-93]

A. Bar-Noy. See also [274].

1346 R. Bar-YeHuda and E. Ben-Hanoch. A linear time algorithm for covering simple polygons with similar rectangles. *Internat. J. Comput. Geom. Appl.*, 6:79–102, 1996. [bb-ltacs-96]

1347 R. Bar-YeHuda and E. Ben-Hanoch. An $O(n \log^* n)$ time algorithm for covering simple polygons with squares. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 186–190, 1990. [bb-otacs-90] *Keywords:* polygons, covering. *Cites:* a-acps-88, acko-cops-88, ao-crs-81, be-lrtaw-85, c-ept-90, g-amcmc-72, hs-oiuqt-79, m-fmcbi-91, nt-vpspa-75, rk-dpp-82, si-ttids-86, sl-qcia-87, wbr-cgpma-86, ZZZ.

1348 R. Bar-Yehuda and Bernard Chazelle. Triangulating disjoint Jordan chains. *Internat. J. Comput. Geom. Appl.*, 4(4):475–481, 1994. [bc-tdjc-94] *Keywords:* triangulation, polygons with holes, merging holes. *Succeeds:* cb-tsnis-92.

1349 R. Bar-Yehuda, A. Efrat, and A. Itai. A simple algorithm for maintaining the center of a planar point-set. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 252–257, 1993. [bei-samcp-93] *Succeeds:* e-samcp-93. *Cites:* as-pglpm-91, bs-dsp1s-80, e-dtdlp-91, ks-tpscv-93, msw-sblp-92, m-ltalp-82, m-apcad-83, m-ss-84, ol-ddspy-81, ps-cgi-85, st-pplup-86, s-sacse-91, ZZZ.

1350 R. Bar-Yehuda and S. Even. A local ratio theorem for approximating the weighted vertex cover problem. *Ann. Discrete Math.*, 25:27–46, 1985. [be-lrtaw-85]

1351 R. Bar-Yehuda and S. Even. On approximating a vertex cover for planar graphs. In *Proc. 14th Annu. ACM Sympos. Theory Comput.*, pages 303–309, May 1982. [be-avcpg-82]

1352 R. Bar-Yehuda, J. A. Feldman, and R. Kay. Efficient 2-SAT related routing technique. Report 830, Dept. Comput. Sci., Technion ITT, Haifa, Israel, ?? [bfk-esrrt-??] *Keywords:* wire routing, link distance. *Comments:* Given in Eilat Workshop, March 1995; submitted to Algorithmica.

1353 R. Bar-Yehuda and S. Fogel. Better constructions and new applications of good splitters. In preparation, 1990. [bf-bcnag-90]

1354 R. Bar-Yehuda and S. Fogel. Good splitters with applications to ray shooting. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 81–84, 1990. [bf-gsars-90] *Keywords:* ray tracing, arrangements. *Cites:* a-dapal-89, a-rsoas-89, bf-bcnag-90, c-prsig-87, cg-vippg-89, cw-qorss-89, e-acg-87, eghsssw-irals-89, ew-hrsls-86, hw-ensrq-87, mw-gscpt-89, ZZZ.

1355 R. Bar-Yehuda and S. Fogel. Maximal sets of k-increasing subsequences with applications to counting points in triangles. Technical Report, Technion IIT, Haifa, Israel, 1989. [bf-mskis-89]

1356 R. Bar-Yehuda and S. Fogel. Partitioning a sequence into few monotone subsequences. Technical Report 640, Technion IIT, Haifa, Israel, 1990. [bf-psfms-90]

1357 R. Bar-Yehuda and S. Fogel. Variations on ray shooting. Technical Report 639, Technion IIT, Haifa, Israel, 1990. [bf-vrs-90] *Keywords:* sheaf, ES-trees.

1358 R. Bar-Yehuda and S. Fogel. Variations on ray shooting. *Algorithmica*, 11:133–145, 1994. [bf-vrs-94] *Succeeds:* bf-vrs-90.

1359 R. Bar-Yehuda and C. Gotsman. Time/Space tradeoffs for polygon mesh rendering. CIS Report 9515, Dept. Comput. Sci., Technion ITT, Haifa, Israel, 1995. [bg-tstpm-95] *Keywords:* Hamiltonian triangulation, planar separator theorem, mesh generation. *Precedes:* bg-tstpm-96.

1360 R. Bar-Yehuda and C. Gotsman. Time/Space tradeoffs for polygon mesh rendering. *ACM Trans. Graph.*, 15(2):141–152, 1996. [bg-tstpm-96] *Keywords:* Hamiltonian triangulation, planar separator theorem, mesh generation. *Succeeds:* bg-tstpm-95.

1361 R. Bar-Yehuda and R. Grinwald. An $O(n + h^{1+\epsilon})$-time algorithm to merge h simple polygons. Technical report, Technion IIT, Haifa, Israel, 1990. [bg-otamh-90]

1362 R. Bar-Yehuda and R. Grinwald. Triangulating polygons with holes. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 112–115, 1990. [bg-tph-90] *Cites:* c-ept-90, ci-tsc-84, ctv-flvat-88i, fm-tspep-84, gjpt-tsp-78, k-osps-83, tv-otats-88, ZZZ.

R. Bar-Yehuda. See also [2938].

1363 J. Baracs. Juxtapositions. *Structural Topology*, 1:59–72, 1979. [b-j-79]

1364 D. Baraff. Analytical methods for dynamic simulation of non-penetrating rigid bodies. *Comput. Graph*, 23(3):223–232, 1989. Proc. SIGGRAPH '89. [b-amdsn-89]

1365 D. Baraff. Curved surfaces and coherence for non-penetrating rigid body simulation. *Comput. Graph.*, 24(4):19–28, 1990. [b-cscnp-90]

1366 D. Baraff. Interactive simulation of solid rigid bodies. *CGA*, 15(3):63–75, May 1995. [b-issrb-95]

1367 D. Baraff, R. Matikalli, and P. Khosla. Minimal fixturing of frictionless assemblies: Complexity and algorithms. *Algorithmica*, 19(1–2):4–39, September 1997. [bmk-mffac-97]

1368 R. Barakat and J. Reif. Lower bounds on the computational efficiency of optical computing systems. *Appl. Optics*, 26(6):1015–1018, 1987. [br-lbceo-87]

1369 R. Barakat and J. Reif. Polynomial convolution algorithm for matrix multiplication with application for optical computing. *Appl. Optics*, 26(14):2707–2711, 1987. [br-pcamm-87]

1370 I. Báránav and A. M. Vershik. On the number of convex lattice polytopes. *Geometric and Functional Analysis*, 2:381–393, 1992. [bv-nclp-92]

1371 I. Bárány. A generalization of Carathéodory's theorem. *Discrete Math.*, 40:141–152, 1982. [b-gct-82]

1372 I. Bárány. Geometric and combinatorial applications of Borsuk's theorem. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 235–249. Springer-Verlag, 1993. [b-gcabt-93] *Keywords:* survey paper, discrete geometry, Borsuk's theorem, covering, ham-sandwich cuts.

1373 I. Bárány and Z. Füredi. Computing the volume is difficult. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 442–447, 1986. [bf-cvid-86] *Precedes:* bf-cvid-87.

1374 I. Bárány and Z. Füredi. Computing the volume is difficult. *Discrete Comput. Geom.*, 2:319–326, 1987. [bf-cvid-87] *Keywords:* approximation, volume, convex. *Succeeds:* bf-cvid-86.

1375 I. Barany and Z. Furedi. Empty simplices in Euclidean space. Technical Report 689, Cornell Univ., Ithaca, New York, March 1986. [bf-eses-86]

1376 I. Bárány and Z. Furedi. Empty simplices in Euclidean space. *Canad. Math. Bull.*, 30:436–445, 1987. [bf-eses-87] *Succeeds:* bf-eses-86.

1377 I. Bárány, Z. Füredi, and L. Lovász. On the number of halving planes. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 140–144, 1989. [bfl-nhp-89] *Cites:* b-gct-82, bf-eses-86, bf-ntccn-84, e-acg-87, e-epggg-64, elss-dgpps-73, es-sgh-83, fr-hdnj-84, km-etdpp-88, r-ert-68, t-grt-66, ZZZ.

1378 I. Bárány, Z. Füredi, and L. Lovász. On the number of halving planes. *Combinatorica*, 10:175–183, 1990. [bfl-nhp-90] *Succeeds:* bfl-nhp-89.

1379 I. Bárány, R. Howe, and L. Lovász. On integer points in polyhedra: A lower bound. *Combinatorica*, 12, 1992. [bhl-ipplb-92]

1380 I. Bárány and D. G. Larman. A combinatorial property of points and ellipsoids. *Discrete Comput. Geom.*, 5:375–382, 1990. [bl-cppe-90]

1381 I. Bárány and J. Lehel. Covering with Euclidean boxes. *European J. Combin.*, 8:113–119, 1987. [bl-ceb-87] *Keywords:* points, covering, isothetic.

1382 I. Bárány, J. H. Schmerl, S. J. Sidney, and J. Urrutia. A combinatorial results abouts points and balls in Euclidean space. *Discrete Comput. Geom.*, 4:259–262, 1989. [bssu-crapb-89]

1383 I. Bárány and W. Steiger. On the expected number of k-sets. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 55–59, 1990. [bs-enks-90] *Cites:* ag-nssfs-86, acegsw-ptphp-90, bfl-nhp-89, cp-hrsaa-86, c-narsc-87, cs-arscg-89, csy-khrp-87, e-acg-87, ew-nlsfs-85, elss-dgpps-73, gp-nkssn-84, l-nhl-71, pss-ubnpk-92, w-mksfs-86, ZZZ.

1384 I. Bárány and W. Steiger. On the expected number of k-sets. *Discrete Comput. Geom.*, 11:243–263, 1994. [bs-enks-94]

1385 I. Bárány and P. Valtr. A positive fraction Erdős-Szekeres theorem. *Discrete Comput. Geom.*, 19:335–342, 1998. [bv-pfest-98]

I. Bárány. See also [532, 533, 1332].

M. M. Barash. See also [3260, 5032].

1386 M. Barbehenn and S. Hutchinson. Efficient search and hierarchical motion planning by dynamically maintaining single-source shortest paths trees. *IEEE Trans. Robot. Autom.*, 11(2):198–214, April 1995. [bh-eshmp-95]

1387 B. Barber and M. Hirsch. A robust algorithm for point in polyhedron. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 479–484, 1993. [bh-rapp-93] *Cites:* bh-ppida-92, cw-pi-90, gss-egbra-89, h-srsia-89, hhk-tirgc-88, ht-tdscp-89, k-cplp-66, lmr-eppa-84, m-maia-79, m-eat-84, t-smcua-80, f-pcg-93, k-dscpg-82, ZZZ.

1388 C. B. Barber. *Computational geometry with imprecise data and arithmetic.* PhD thesis, Princeton Univ., Princeton, NJ, 1993. [b-cgida-93] *Keywords:* doctoral thesis.

1389 C. B. Barber, D. P. Dobkin, and H. Huhdanpaa. The Quickhull algorithm for convex hull. Technical Report GCG53, Geometry Center, Univ. of Minnesota, July 1993. [bdh-qach-93] *Comments:* code available from ftp://geom.umn.edu/pub/qhull.tar.Z; view results in 3-d or 4-d with ftp://geom.umn.edu/pub/geomview/geomview-sgi.tar.Z or ftp://geom.umn.edu/pub/geomview/geomview-next.tar.Z. *Precedes:* bdh-qach-96. *Abstract:* The convex hull of a set of points is the smallest convex set that contains the points. This paper presents a convex hull algorithm that combines the 2-d Quickhull algorithm with the general dimension Beneath-beyond algorithm. It is similar to the randomized, incremental algorithms for convex hull and Delaunay triangulation. Our algorithm is simpler, uses less memory, and allows good use of virtual memory. A simple modification produces an approximate convex hull. We provide empirical evidence that the algorithm runs faster and is output sensitive.

1390 C. Bradford Barber, David P. Dobkin, and Hannu Huhdanpaa. The Quickhull algorithm for convex hulls. *ACM Trans. Math. Softw.*, 22(4):469–483, December 1996. [bdh-qach-96] *Succeeds:* bdh-qach-93.

1391 C. B. Barber and M. D. Hirsch. Point in polyhedron with imprecise data and arithmetic. Technical Report GCG46, The Geometry Center, 1992. [bh-ppida-92]

1392 L. Bardis, R. A. Jinkerson, and N. M. Patrikalakis. Localization for automated inspection of curved surfaces. *International Journal of Offshore and Polar Engineering*, 1(3):228–234, 1992. [bjp-laics-92]

1393 L. Bardis and N. M. Patrikalakis. Approximate conversion of rational B-spline patches. *Comput. Aided Geom. Design*, 6(3):189–204, 1989. [bp-acrbp-89]

1394 L. Bardis and N. M. Patrikalakis. Blending rational B-spline surfaces. In *Proc. Eurographics '89*, pages 453–462, 1989. [bp-brbs-89]

1395 L. Bardis and N. M. Patrikalakis. Surface approximation with rational B-splines. *Engineering with Computers*, 6(4):223–235, 1990. [bp-sarb90]

L. Bardis. See also [77, 7541, 10658–10661, 13064].

1396 E. H. Bareiss. Computational solution of matrix problems over an integral domain. *J. Inst. Maths Applics*, 10:68–104, 1972. [b-csmpi-72]

1397 G. Barequet. DCEL: A polyhedral database. Research Report, under submission to *ijcga*, Center for Geometric Computing, Johns Hopkins Univ., 1997. [b-dapd-97] *Precedes:* b-dpdpe-98.

1398 G. Barequet. DCEL: A polyhedral database and programming environment. *Internat. J. Comput. Geom. Appl.*, 8:619–636, 1998. [b-dpdpe-98] *Succeeds:* b-dapd-97.

1399 G. Barequet. Using geometric hashing to repair cad objects. *IEEE Comput. Sci. & Eng.*, 4(4):22–28, October 1997. [b-ughrc-97]

1400 Gill Barequet, Stina S. Bridgeman, Christian A. Duncan, Michael T. Goodrich, and Roberto Tamassia. Classical computational geometry in GeomNet. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 412–414, 1997. [bbdgt-ccgg-97] *Keywords:* internet computing, format conversion, client-server, CGC, Brown. *Cites:* abdpy-enmcs-95, bclt-nmaaw-95, bclt-aawww-96, bclt-agaow-96, bclt-maas-96, bkmnsu-egcl-95, em-sstcd-90, fgkss-ckbgc-96, f-nsa2d-95, fm-nsala-91, gy-frcg-86, gm-rad-95, gss-egbra-89, hd-mgvia-00, hhk-tirgc-88, lpt-rpqiv-96, mn-lpcgc-95, m-dpggt-89, almp-gsgv-95, o-dcgal-96, y-gctsp-90, ZZZ.

1401 Gill Barequet, Stina S. Bridgeman, Christian A. Duncan, Michael T. Goodrich, and Roberto Tamassia. GeomNet: geometric computing over the internet. *IEEE Internet Computing*, 3(2):21–29, 1999. [bbdgt-ggcoi-99] *Keywords:* internet computing, format conversion, client-server, CGC, Brown.

1402 G. Barequet, A. Briggs, M. Dickerson, C. Dima, and M. Goodrich. Animating the offset polygon distance function. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 479–480, 1997. [bbddg-aopdf-97] *Keywords:* video review. *Cites:* aaag-ntsp-95, aa-ssgpf-96, bbdg-opapp-, bdg-vdpod-, kn-lts-76, obs-stcav-92, ZZZ.

1403 G. Barequet, A. Briggs, M. Dickerson, and M. Goodrich. Offset polygon annulus placement problems. Manuscript, ??, ?? [bbdg-opapp-]

1404 G. Barequet, B. Chazelle, L. Guibas, J. Mitchell, and A. Tal. BOXTREE: A hierarchical representation for surfaces in 3D. *Comput. Graph. Forum*, 15(3):C387–C396, C484, September 1996. Proc. Eurographics'96. [bcgmt-bhrs3-96] *Keywords:* Boxtree, Collision detection, Computational geometry, Data structures, Hierarchical systems, Octrees, Piecewise linear techniques, Ray shooting, Ray tracing, Surfaces, Three dimensional computer graphics.

1405 Gill Barequet, Matthew Dickerson, and David Eppstein. On triangulating three-dimensional polygons. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 38–47, 1996. [bde-ttdp-96] *Cites:* a-kb-94, be-mgot-92i, bs-fgbp-95, bs-plibp-96, c-tsplt-91a, e-t-91, eg-tsa-89, f-pc6ck-89, go-copcg-95, k-mtpd-80, rs-dttdn-92, s-tkwsd-90, ZZZ.

1406 G. Barequet, M. Dickerson, and D. Eppstein. On triangulating three-dimensional polygons. *Comput. Geom. Theory Appl.*, 10(3):155–170, 1998. [bde-ttdp-98]

1407 G. Barequet, M. Dickerson, and M. Goodrich. Voronoi diagrams for polygon-offset distance functions. Manuscript, ??, ?? [bdg-vdpod-]

1408 Gill Barequet, Matthew Dickerson, and Petru Pau. Translating a convex polygon to contain a maximum number of points. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 61–66, 1995. [bdp-tcpcm-95] *Precedes:* bdp-tcpcm-97.

1409 Gill Barequet, Matthew Dickerson, and Petru Pau. Translating a convex polygon to contain a maximum number of points. *Comput. Geom. Theory Appl.*, 8(4):167–179, 1997. [bdp-tcpcm-97] *Succeeds:* bdp-tcpcm-95.

1410 G. Barequet, C. A. Duncan, and S. Kumar. Rsvp: A geometric toolkit for controlled repair of solid models. *IEEE Trans. Visualizat. Comput. Graph.*, 4(2):162–177, April 1998. [bdk-rgtcr-98]

1411 Gill Barequet and Gershon Elber. α-sectors of rational varieties. In *Abstracts 16th European Workshop Comput. Geom.*, pages 35–39. Ben-Gurion University of the Negev, 2000. [be-asrv-00b]

1412 G. Barequet and S. Har-Peled. Polygon containment and translational min-Hausdorff-distance between segment sets are 3SUM-hard. *Internat. J. Comput. Geom. Appl.*, 11:465–474, 2001. [bh-pctmh-01]

1413 G. Barequet and Y. Kaplan. A data front end for layered manufacturing. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 231–239, 1997. [bk-dfelm-97] *Cites:* -sis-89, b-dapd-97, bs-fgbp-95, bs-plibp-96, bw-acmrs-92, dm-otps-91, fd-ficg-82, g-cm-80, k-mtpd-80, ksl-pcdcv-97, md-sepct-93, mf-iicsf-96, sw-hdsac1-88, sh-ttsps-92, st-tsms-91, t-dsna-83, -rurcp-88, w-sve-96, ZZZ.

1414 G. Barequet and Y. Kaplan. A data front-end for layered manufacturing. *Comput. Aided Design*, 30(4):231–243, April 1998. [bk-dfelm-98]

1415 G. Barequet and S. Kumar. Repairing CAD models. In *Proc. IEEE Visualization*, pages 363–370, 1997. [bk-rcm-97]

1416 G. Barequet and M. Sharir. Filling gaps in the boundary of a polyhedron. Technical Report 277/93, Dept. Comput. Sci., Tel Aviv Univ., Tel Aviv, Israel, 1993. [bs-fgbp-93]

1417 G. Barequet and Micha Sharir. Filling gaps in the boundary of a polyhedron. *Comput. Aided Geom. Design*, 12:207–229, 1995. [bs-fgbp-95]

1418 G. Barequet and Micha Sharir. Partial surface and volume matching in three dimensions. In *Proc. 12th Annu. IAPR/IEEE Internat. Conf. Pattern Recogn.*, volume 2, pages 610–614, 1994. [bs-psvmt-94]

1419 Gill Barequet and Micha Sharir. Partial surface matching by using directed footprints. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C9–C10, 1996. [bs-psmud-96] *Cites:* bj-tdor-85, bs-psvmt-94, cd-mbrrv-86, ksss-tdmbb-86, ss-ipoot-87, ZZZ.

1420 G. Barequet and Micha Sharir. Piecewise-linear interpolation between polygonal slices. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 93–102, 1994. [bs-plibp-94] *Cites:* bs-fgbp-93, bpccd-tdcrs-81, b-srpcs-88, bg-tdrcs-92, cs-cccld-78, cllct-tatdr-88, cclbwfodbt-avebp-80, epo-taasm-91, fku-osrpc-77, gd-ngtmp-82, g-tdmho-93, gos-rpps-93, gs-pmgsc-85, hmn-fsv-93, hw-imbmm-88, ksss-tdmbb-86, kf-fsr3d-88, ksf-sstsr-88, k-acstc-75, khw-3dcmu-91, k-mtpd-80, mss-sccbp-91, s-r3doc-89, ss-ipoot-87, s-sdbcd-81, sh-srsd-81, sp-cstir-87, sp-pgmbo-88, wa-srr3d-86, ww-srbsp-93, w-cm-90, zjh-scpc-87, ZZZ.

1421 G. Barequet and Micha Sharir. Piecewise-linear interpolation between polygonal slices. *Comput. Vision Graph. Image Process.*, 63, 1996. in press. [bs-plibp-96]

1422 G. Barequet and B. Wolfers. Optimizing a corridor between two polygons with an application to polyhedral interpolation. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 32–37, 1996. [bw-ocbtp-96]

Gill Barequet. See also [12653].

H. H. Barett. See also [5982].

1423 Naser S. Barghouti, John Mocenigo, and Wenke Lee. *Grappa*: A GRAPh PAckage in Java. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 336–343. Springer-Verlag, 1997. [bml-ggpj-97] *Keywords:* graph drawing.

G. P. Barker. See also [11751].

1424 M. Barnabei, A. Brini, and G.-C. Rota. On the exterior calculus of invariant theory. *J. Algebra*, 96(1):120–160, 1985. [bbr-ecit-85]

1425 O. Barndorff-Nielsen and M. Sobel. On the distribution of the number of admissible points in a vector sample. *Theory Probab. Appl.*, XI(2):249–269, 1966. [bs-dnapv-66]

1426 M. Barner and F. Flohr. *Analysis II*. Walter de Gruyter, Berlin, 1983. [bf-a2-83]

1427 J. Barnes and P. Hut. A hierarchical $O(n \log n)$ force-calculation algorithm. *Nature*, 324(4):446–449, December 1986. [bh-hofca-86]

1428 D. W. Barnette. Generating closed 2-cell embeddings in the torus and the projective plane. *Discrete Comput. Geom.*, 2:233–247, 1987. [b-gc2ce-87]

1429 D. W. Barnette. Preassigning the shape of projections of convex polytopes. *J. Combin. Theory Ser. A*, 42:293–295, 1986. [b-pspcp-86] *Keywords:* three-dimensional, polytope, projection.

1430 D. W. Barnette. W_V paths on the torus. *Discrete Comput. Geom.*, 5:603–608, 1990. [b-wpt-90]

1431 R. Barnhill. Computer aided surface representation and design. In R. Barnhill and W. Boehm, editors, *Surfaces in Computer-Aided Geometric Design*, pages 1–24. North-Holland, 1983. [b-casrd-83]

1432 R. E. Barnhill. A survey of the representation and design of surfaces. *IEEE Comput. Graph. Appl.*, ??:9–16, October 1983. [b-srds-83] *Annote:* Suggests triangulation for basis of interpolation, using Little's minmax, rather than Delaunay Triangulation.

1433 R. E. Barnhill. Representation and approximation of surfaces. In J. R. Rice, editor, *Math. Software III*, pages 69–120. Academic Press, New York, NY, 1977. [b-ras-77]

1434 R. E. Barnhill, J. H. Brown, and I. M. Lucewicz. A new twist in cagd. *Comput. Graph. Image Process.*, 8:78–79, 1978. [bbl-ntc-78]

1435 R. E. Barnhill, G. Farin, M. Jordan, and B. R. Piper. Surface/surface intersection. *Comput. Aided Geom. Design*, 4:3–16, 1987. [bfjp-ssi-87]

1436 R. E. Barnhill and F. F. Little. Adaptive triangular cubatures. *Rocky Mountain J. Math.*, 14(1):53–75, 1984. [bl-atc-84]

1437 R. E. Barnhill and F. F. Little. Three- and four-dimensional surfaces. *Rocky Mountain J. Math.*, 14:77–102, 1984. [bl-tfds-84]

1438 R. E. Barnhill and H. S. Ou. Surfaces defined on surfaces. *Comput. Aided Geom. Design*, 7:323–336, 1990. [bo-sds-90] *Annote:* Defines triangulation of a convex surface to be the same as the convex hull. Hull algorithm is gift wrapping.

1439 R. E. Barnhill and R. F. Riesenfeld. *Computer aided geometric design*. Academic Press, New York, 1974. [br-cagd-74]

R. E. Barnhill. See also [505].

1440 D. Barnum, J. Greene, A. Smellie, and P. Sprague. Identification of common functional components among molecules. *J. Chem. Inf. Comput. Sci.*, ??, 1996. To appear. [bgss-icfcm-96]

1441 Ala Eddine Barouni, Ali Jaoua, and Nejib Zaguia. An algorithm for drawing a ring cover. In *Abstracts 15th European Workshop Comput. Geom.*, pages 157–159. INRIA Sophia-Antipolis, 1999. [bjz-adrc-99]

A. H. Barr. See also [1480,6900,10787, 12344].

1442 R. C. Barr, T. M. Gallie, and M. S. Spach. Automated production of contour maps for electrophysiology. *Computers in Biomedical Research*, 13:142–191, 1980. [bgs-apcme-80] *Annote:* Constructs triangulation. Uses McLains circle criterion for $O(n^2)$ DT.

1443 J. Barraquand, L. E. Kavraki, J.-C. Latombe, T.-Y. Li, R. Motwani, and P. Raghavan. A random sampling framework for path planning in large-dimensional configuration spaces. *Internat. J. Robot. Res.*, ??:to appear, ?? [bkllmr-rsfpp-??]

1444 J. Barraquand and J.-C. Latombe. A monte-carlo algorithm for path planning with many degrees of freedom. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1712–1717, May 1990. [bl-mcapp-90] *Location:* Cincinnati, Ohio.

1445 J. Barraquand and J.-C. Latombe. Nonholonomic mobile robots and optimal maneuvering. *Revue d'Intelligence artificielle*, 3:77–103, 1989. [bl-nmrom-89]

1446 J. Barraquand and J.-C. Latombe. Nonholonomic multi-body mobile robots: controllability and motion planning in the presence of obstacles. *Algorithmica*, 10:121–155, 1993. [bl-nmbmr-93]

1447 J. Barraquand and J.-C. Latombe. Robot motion planning: A distributed representation approach. *Internat. J. Robot. Res.*, 10:628–649, 1991. [bl-rmpdr-91]

1448 Antonio Hernández Barrera. Computing the Minkowski sum of monotone polygons. In *Abstracts 12th European Workshop Comput. Geom.*, pages 113–116. Universität Münster, 1996. [b-cmsmp-96]

1449 R. Barrera and A. M. Vazques. A hierarchical method for representing relief. In *Proc. Pecora IX Symposium in Spatial Information Technologies for Remote Sensing Today and Tomorrow*, pages 87–92, October 1984. [bv-hmrr-84]

1450 T. Barrera, J. Griffith, S. A. McKee, G. Robins, and T. Zhang. Toward a Steiner engine: Enhanced serial and parallel implementations of the iterated 1-Steiner algorithm. In *Proc. Great Lakes Sympos. VLSI*, pages 90–94, March 1993. [bgmrz-tsees-93]

1451 T. Barrera, J. Griffith, G. Robins, and T. Zhang. Narrowing the gap: Near-optimal Steiner trees in polynomial time. In *Proc. IEEE Internat. ASIC Conf.*, pages 87–90, September 1993. [bgrz-ngnos-93]

W. A. Barrett. See also [3383].

1452 Phillip Barry and Ron Goldman. Knot insertion using forward differences. In Paul Heckbert, editor, *Graphics Gems IV*, pages 251–255. Academic Press, Boston, MA, 1994. [bg-kiufd-94] *Keywords:* curve subdivision. *Annote:* Describes a fast technique for subdivision of B-spline curves and surfaces. Subdivision is a fundamental operation in modeling and rendering. Contains pseudocode.

1453 B. A. Barsky and A. D. DeRose. Geometric continuity of parametric curves: Three equivalent characterizations. *IEEE Comput. Graph. Appl.*, 9(6):60–68, November 1989. [bd-gcpct-89]

B. A. Barsky. See also [1456, 8798, 11747, 12261].

1454 Yair Bartal. On approximating arbitrary metrics by tree metrics. In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, page to appear, 1998. [b-aamtm-98]

1455 Y. Bartal. Probabilistic approximation of metric spaces and its algorithmic applications. In *Proc. 37th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 184–193, 1996. [b-pamsi-96]

1456 R. H. Bartels, J. C. Beatty, and B. A. Barsky. *An introduction to splines for use in computer graphics and geometric modeling*. Morgan Kaufman, Los Altos, CA, 1987. [bbb-isucg-87]

1457 Timothy J. Barth. Numerical aspects of computing viscous high reynolds number flows on unstructured meshes. In *AIAA 29th Aerospace Sciences Meeting*, January 1991. [b-nacvh-91]

1458 Wilhelm Barth and Ernst Huber. Computations with tight bounding volumes for general parametric surfaces. In *Abstracts 15th European Workshop Comput. Geom.*, pages 123–127. INRIA Sophia-Antipolis, 1999. [bh-ctbvg-99]

1459 J. J. Bartholdi, III and L. K. Platzman. A fast heuristic based on spacefilling curves for minimum-weight matching in the plane. *Inform. Process. Lett.*, 17:177–180, 1983. [bp-fhbsc-83]

1460 J. J. Bartholdi, III and L. K. Platzman. An $O(n \log n)$ planar travelling salesman heuristic based on spacefilling curves. *Oper. Res. Lett.*, 1(4):121–125, 1982. [bp-optsh-82] *Keywords:* travelling salesman problem, heuristic, routing, spacefilling curve, geometric graphs, optimization.

1461 J. J. Bartholdi, III and L. K. Platzman. Heuristics based on spacefilling curves for combinatorial problems in the plane. Report PDRC 84-08, School Indust. Syst. Engrg., Georgia Inst. Tech., Atlanta, GA, 1984. [bp-hbscc-84] *Keywords:* heuristics.

1462 J. J. Bartholdi, III, L. K. Platzman, R. L. Collins, and W. H. Warden, III. A minimal technology routing system for meals on wheels. *Interfaces*, 13(3):1–8, 1983. [bpcw-mtrsm-83]

J. J. Bartholdi, III. See also [10788].

1463 F. Bartling and K. Hinrichs. A plane-sweep algorithm for finding a closest pair among convex planar objects. Report 91-03, Dept. Comput. Sci., Univ. Siegen, Siegen, Germany, 1991. [bh-psafc-91] *Precedes:* bh-psafc-92.

1464 F. Bartling and K. Hinrichs. A plane-sweep algorithm for finding a closest pair among convex planar objects. In *Proc. 9th Sympos. Theoret. Aspects Comput. Sci.*, volume 577 of *Lecture Notes Comput. Sci.*, pages 221–232. Springer-Verlag, 1992. [bh-psafc-92] *Succeeds:* bh-psafc-91.

1465 Frank Bartling and Klaus Hinrichs. A plane-sweep algorithm for finding a closest pair among convex planar objects. In *Abstracts 8th European Workshop Comput. Geom.*, page 91. Utrecht University, 1992. [bh-psafc-92c]

1466 F. Bartling and K. Hinrichs. Probabilistic analysis of an algorithm for solving the k-dimensional all-nearest-neighbors problem by projection. Report 90-02, Dept. Comput. Sci., Univ. Siegen, Siegen, West Germany, 1990. [bh-paask-90]

1467 F. Bartling and K. Hinrichs. Probabilistic analysis of an algorithm for solving the k-dimensional all-nearest-neighbors problem by projection. *BIT*, 31:558–565, 1991. [bh-paask-91]

1468 J. J. Bartoldi and L. K. Platzman. Heuristics based on spacefilling curves for combinatorial problems in Euclidean space. *Manage. Sci.*, 34(3):291–305, 1988. [bp-hbscc-88] *Keywords:* optimization.

1469 E. E. Barton and I. Buchanan. The polygon package. *Comput. Aided Design*, 12:3–11, 1980. [bb-pp-80]

1470 U. Bartuschka, K. Mehlhorn, and S. Näher. A robust and efficient implementation of a sweep line algorithm for the straight line segment intersection problem. In *Proc. Workshop on Algorithm Engineering*, pages 124–135, September 1997. [bmn-reisl-97] *URL:* http://www.dsi.unive.it/~wae97/proceedings/ONLY_PAPERS/pap13.ps.gz.

1471 D. Bartz, M. Meißner, and T. Hüttner. Opengl-assisted occlusion culling for large polygonal models. *Comput. & Graphics*, 23(5):667–679, October 1999. [bmh-oaocl-99]

B. Barunmüller. See also [1663].

1472 Rakesh D. Barve, Edward F. Grove, and Jeffrey Scott Vitter. Simple randomized mergesort on parallel disks. *Parallel Comput.*, 23(4), 1997. Special issue on parallel I/O. An earlier version appears in Proc. of the 8th Annual ACM Symposium on Parallel Algorithms and Architectures (SPAA '96), Padua, Italy, June 1996, 109–118. [bgv-srmpd-97]

1473 Alexander Barvinok, David S. Johnson, Gerhard J. Woeginger, and Russell Woodroofe. Polynomial time algorithms for maximization problems in spaces with polyhedral norms. In *Sixth Conference on Integer Programming and Combinatorial Optimization*, page to appear, June 1998. [bjww-ptamp-98]

1474 Alexander I. Barvinok. A polynomial time algorithm for counting integral points in polyhedra when the dimension is fixed. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 566–572, 1993. [b-ptaci-93]

1475 Alexander I. Barvinok. Computation of exponential integrals. *Zap. Nauchn. Sem. LOMI*, 192(5):149–163, 1991. [b-cei-91]

1476 Alexander I. Barvinok. Computing the volume, counting integral points and exponential sums. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 161–170, 1992. [b-cvcip-92] *Cites:* b-cei-91, b-pedlp-88, gls-gaco-88, kb-ptacs-79, l-pvc-91, p-smfsp-80, s-ec-86, v-ctdah-87, vg-hfch-87, ZZZ.

1477 Alexander I. Barvinok. Integral geometry of higher-dimensional polytopes and the average case in combinatorial optimization. In *Proc. 36th Annu. IEEE Sympos. Found. Comput. Sci.*, page To appear, 1995. [b-ighdp-95]

1478 Alexander I. Barvinok. Lattice points and lattice polytopes. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 7, pages 133–152. CRC Press LLC, Boca Raton, FL, 1997. [b-lplp-97]

1479 Alexander I. Barvinok. Two algorithmic results for the TSP. *Math. Oper. Res.*, 21:65–84, 1996. [b-tarts-96] *Keywords:* MAX TSP, longest cycle, PTAS, approximation scheme.

1480 R. Barzel and A. H. Barr. A modeling system based on dynamics constraints. *Comput. Graph.*, 22(4):179–187, 1988. Proc. SIGGRAPH '88. [bb-msbdc-88]

1481 J. Basch, H. Devarajan, P. Indyk, and L. Zhang. Probabilistic analysis for combinatorial functions of moving points. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 442–444, 1997. [bdiz-pacfm-97] *Cites:* a-sdcgp-85, bcl-fleta-90, bgh-dsmd-97, bgsz-pekds-97, cd-vdbcd-85, d-mirvc-83, d-kgaca-90, d-hdvdl-91, e-chrsp-65, gmr-vdmpp-92, kgs-fcdmm-97, kti-mmstl-95, ow-dsp-84, r-slcdn-70, rs-udkhv-63, s-chdch-86, ZZZ.

1482 J. Basch, Leonidas J. Guibas, and J. Hershberger. Data structures for mobile data. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 747–756, 1997. [bgh-dsmd-97]

1483 J. Basch, L. J. Guibas, and G. Ramkumar. Sweeping lines and line segments with a heap. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 469–472, 1997. [bgr-sllsh-97] *Cites:* bgh-dsmd-97, bgr-rrbit-96, bo-arcgi-79, elss-dgpps-73, ew-nlsfs-85, g-bpstp-79, h-fuenl-89, ZZZ.

1484 J. Basch, Leonidas J. Guibas, and G. D. Ramkumar. Reporting red-blue intersections between two sets of connected line segments. In *Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 302–319. Springer-Verlag, 1996. [bgr-rrbit-96]

1485 J. Basch, Leonidas J. Guibas, G. D. Ramkumar, and L. Ramshaw. Polyhedral tracings and their convolution. Submitted. [bgrr-pttc-]

1486 J. Basch, L. J. Guibas, C. Silverstein, and L. Zhang. A practical evaluation of kinetic data structures. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 388–390, 1997. [bgsz-pekds-97] *Cites:* bdiz-pacfm-97, bgh-dsmd-97, gmr-vdmpp-92, ZZZ.

1487 J. Basch, L. J. Guibas, and L. Zhang. Proximity problems on moving points. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 344–351, 1997. [bgz-ppmp-97] *Cites:* ams-fnmst-92, as-rst-89, bdiz-pacfm-97, bgh-dsmd-97, bs-dsp1s-80, ggst-eamst-86, kgs-fcdmm-97, kkt-rltaf-95, kti-mmstl-95, m-mdscg-84, m-cgitr-93, o-ddds-83, s-mmdpsp-92a, st-dsdt-83, v-famst-84, wl-arrcd-85, y-cmstk-82, ZZZ.

J. Basch. See also [155].

1488 Gerard Bashein and Paul R. Detmer. Centroid of a polygon. In Paul Heckbert, editor, *Graphics Gems IV*, pages 3–6. Academic Press, Boston, MA, 1994. [bd-cp-94] *Keywords:* polygon area, polygon centroid. *Annote:* Gives formulas and code to find the centroid (center of mass) of a polygon. This is useful when simulating Newtonian dynamics. Contains C code.

F. Baskett. See also [5612].

1489 L. J. Bass and S. R. Schubert. On finding the disc of minimum radius containing a given set of points. *Math. Comput.*, 12:712–714, 1967. [bs-fdmrc-67]

1490 H. Bast and T. Hagerup. Fast parallel space allocation, estimation and integer sorting. Report MPI-I-93-123, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [bh-fpsae-93]

1491 C. M. Bastuscheck, E. Schonberg, J. T. Schwartz, and Micha Sharir. Object recognition by 3-dimensional curve matching. *Internat. J. Intell. Syst.*, 1:105–132, 1986. [bsss-or3dc-86] *Keywords:* computer vision, curves, matchings, three-dimensional.

1492 M. Bastuscheck. On the stability of grasping: three fingers and a planar polygon. In *Proc. 5th IEEE Internat. Conf. Robot. Autom.*, 1988. [b-sgtfp-88]

1493 Saugata Basu. On bounding the Betti numbers and computing the Euler characteristic of semi-algebraic sets. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 408–417, May 1996. [b-bbnce-96]

1494 S. Basu. On the combinatorial and topological complexity of a single cell. 1998. [b-ctcsc-98]

1495 S. Basu, R. Pollack, and M.-F. Roy. Complexity of computing semi-algebraic descriptions of the connected components of a semi-algebraic set. unpublished manuscript, 1998. [bpr-ccsad-98]

1496 Saugata Basu, Richard Pollack, and Marie-Françoise Roy. Computing roadmaps of semi-algebraic sets. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 168–173, 1996. [bpr-crsas-96]

1497 S. Basu, R. Pollack, and M.-F. Roy. On computing a set of points meeting every semi-algebraically connected component of a family of polynomials on a variety. *J. Complexity*, 13:28–37, 1997. [bpr-ocspm-97]

1498 S. Basu, R. Pollack, and M.-F. Roy. On the number of cells defined by a family of polynomials on a variety. *Mathematika*, 43:120–126, 1994. [bpr-oncdf-94]

1499 S. Basu, R. Pollack, and M.-F. Roy. On the number of cells defined by a family of polynomials on a variety. In K. Y. Goldberg, D. Halperin, J.-C. Latombe, and R. H. Wilson, editors, *Algorithmic Foundations of Robotics*. A. K. Peters, Wellesley, MA, 1995. [bpr-ncdfp-95]

S. Batauche. See also [7592].

1500 B. G. Batchelor. Hierarchial shape description based upon convex hulls of concavities. *J. Cybern.*, 10:205–210, 1980. [b-hsdbu-80]

1501 B. G. Batchelor. Shape description using concavity trees. In M. H. Hamza and S. G. Tzafestas, editors, *Proc. Internat. Sympos. Measurement & Control*, pages 385–390, Athens, 1978. Panhellenic Society of Mechanical & Electrical Engineers. [b-sduct-78]

1502 B. G. Batchelor. Shape descriptors for labeling concavity trees. *J. Cybern.*, 10:233–237, 1980. [b-sdlct-80]

1503 B. G. Batchelor. Two methods for finding convex hulls of planar figures. *Cybernet. Systems*, 11:105–113, 1980. [b-tmfch-80]

1504 B. G. Batchelor. Using concavity trees for shape description. *IEEE J. Comput. Digital Techniques*, 2:157–168, 1979. [b-uctsd-79]

1505 K. E. Batcher. Sorting networks and their applications. In *Proc. 1968 Spring Joint Computer Conf.*, pages 307–314, Reston, VA, 1968. AFIPS Press. [b-snta-68]

1506 C. Douglass Bateman, C. S. Helvig, Gabriel Robins, and Alexander Zelikovsky. Provably good routing tree construction with multi-port terminals. In *Proc. ACM/SIGDA International Symposium on Physical Design*, page ??, April 1997. [bhrz-pgrtc-97] *Keywords:* one-of-a-set TSP, group TSP, approximation algorithms.

1507 P. T. Bateman. Note on the coefficients of the cyclotomic polynomial. *Bull. Amer. Math. Soc.*, 55:1180–1181, 1949. [b-nccp-49]

1508 C. Batini, P. Brunetti, G. Di Battista, P. Naggar, E. Nardelli, G. Richelli, and R. Tamassia. An automatic layout facility and its applications. In *Proc. Internat. Workshop on Software Engineering Environment*, pages 139–157, Beijing, China, 1986. China Academic Publishers. [bbdnnrt-alfia-86] *Keywords:* graph drawing.

1509 C. Batini, S. Ceri, and S. B. Navathe. *Conceptual Database Design, an Entity-Relationship Approach*. Benjamin Cummings, 1992. [bcn-cdder-92]

1510 C. Batini and E. Fortunato. *Metodi per la Progettazione di Basi di Dati Statistici*. ISTAT, 1986. [bf-mpbds-86]

1511 C. Batini, L. Furlani, and E. Nardelli. What is a good diagram? A pragmatic approach. In *Proc. 4th Internat. Conf. on the Entity-Relationship Approach*, pages 312–319, 1985. [bfn-wigdp-85] *Keywords:* graph drawing.

1512 C. Batini, E. Nardelli, M. Talamo, and R. Tamassia. A graph theoretic approach to aesthetic layout of information systems diagrams. In *Proc. 10th Internat. Workshop Graph-Theoret. Concepts Comput. Sci. (Berlin June 1984)*, pages 9–18, Linz, Austria, 1984. Trauner Verlag. [bntt-gtaal-84] *Keywords:* graph drawing.

1513 C. Batini, E. Nardelli, M. Talamo, and R. Tamassia. GINCOD: a graphical tool for conceptual design of data base applications. In A. Albano, V. De Antonellis, and A. Di Leva, editors, *Computer Aided Data Base Design*, pages 33–51. North-Holland, New York, NY, 1985. [bntt-ggtcd-85] *Keywords:* graph drawing.

1514 C. Batini, E. Nardelli, and R. Tamassia. A layout algorithm for data flow diagrams. *IEEE Trans. Softw. Eng.*, SE-12(4):538–546, 1986. [bnt-ladfd-86] *Keywords:* graph drawing.

1515 C. Batini, M. Talamo, and R. Tamassia. Computer aided layout of entity-relationship diagrams. *Journal of Systems and Software*, 4:163–173, 1984. [btt-caler-84] *Keywords:* graph drawing.

C. Batini. See also [12744].

1516 S. Batnitzky, H. I. Price, P. N. Cook, L. T. Cook, and S. J. Dwyer, III. Three-dimensional computer reconstruction from surface contours for head CT examinations. *J. Comput. Assisted Tomography*, 5:60–67, 1981. [bpccd-tdcrs-81]

S. Batnitzky. See also [3516].

1517 R. Batta, A. Ghose, and U. S. Palekar. Locating facilities on the Manhattan metrics with arbitrary shaped barriers and convex forbidden regions. *Transp. Sci.*, 23(1):26–36, 1989. [bgp-lfmma-89] *Keywords:* facility location, L_1-metrics.

1518 R. Batta and L. A. Leifer. On the accuracy of demand point solutions to the planar Manhattan metric p-median problem with and without barriers to travel. *Comput. Oper. Res.*, 15(3):253–262, 1988. [bl-adpsp-88] *Keywords:* facility location, L_1-metrics.

Giuseppe Di Battista. See also [2434].

1519 M. A. Bauer. Set operations on linear quadtrees. *Comput. Vision Graph. Image Process.*, 29:248–258, 1985. [b-solq-85]

1520 F. Bauernöppel, E. Kranankis, D. Krizanc, A. Maheshwari, M. Noy, J.-R. Sack, and J. Urrutia. Optimal shooting: characterizations and applications. In *Proc. 22nd ICALP*, volume 944 of *Lecture Notes Comput. Sci.*, pages 220–231. Springer-Verlag, 1995. [bkkmnsu-osca-95]

1521 F. Bauernöppel, E. Kranankis, D. Krizanc, A. Maheshwari, J.-R. Sack, and J. Urrutia. Planar stage graphs: characterization and applications. *Theoret. Comput. Sci.*, 175, April 1997. [bkkmsu-psgca-97]

E. S. Baugher. See also [13488].

D. Baum. See also [5799].

1522 D. R. Baum, S. Mann, K. P. Smith, and J. M. Winget. Making radiosity usable: Automatic preprocessing and meshing techniques for the generation of accurate radiosity solutions. *Comput. Graph.*, 25(4):51–60, 1991. Proc. SIGGRAPH '91. [bmsw-mruap-91] *Keywords:* triangulation, computer graphics.

D. R. Baum. See also [3420].

1523 E. B. Baum. On learning a union of half spaces. *J. Complexity*, 6(1):67–101, 1990. [b-luhs-90] *Keywords:* d-dimensional, halfspaces.

1524 E. B. Baum. On the capabilities of multilayer perceptrons. *J. Complexity*, 4:19–25, 1988. [b-cmp-88]

1525 E. B. Baum and D. Haussler. What size net gives valid generalization? *Neural Computation*, 1:151–160, 1989. [bh-wsngv-89]

1526 B. G. Baumgart. A polyhedron representation for computer vision. In *Proc. AFIPS Natl. Comput. Conf.*, volume 44, pages 589–596. AFIPS Press, Alrington, Va., 1975. [b-prcv-75]

1527 B. G. Baumgart. Geometric modeling for computer vision. Technical Report STAN-CS-74463, Dept. Comput. Sci., Stanford Univ., Stanford, CA, October 1974. [b-gmcv-74]

1528 H. Baumgarten, H. Jung, and K. Mehlhorn. Dynamic point location in general subdivisions. Technical Report MPI-I-92-126, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [bjm-dplgs-92t]

1529 Hanna Baumgarten, Hermann Jung, and Kurt Mehlhorn. Dynamic point location in general subdivisions. In *Abstracts 8th European Workshop Comput. Geom.*, pages 81–83. Utrecht University, 1992. [bjm-dplgs-92]

1530 H. Baumgarten, H. Jung, and K. Mehlhorn. Dynamic point location in general subdivisions. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 250–258, 1992. [bjm-dplgs-92i]

1531 H. Baumgarten, H. Jung, and K. Mehlhorn. Dynamic point location in general subdivisions. *J. Algorithms*, 17:342–380, 1994. [bjm-dplgs-94]

1532 A. Bäumker, W. Dittrich, and F. Meyer auf der Heide. Truly efficient parallel algorithms: 1-optimal multisearch for an extension of the BSP model. In *Proc. 3rd Annu. European Sympos. Algorithms*, pages 17–30, 1995. [bdm-tepa1-95]

1533 A. Bäumker, W. Dittrich, and A. Pietracaprina. The deterministic complexity of parallel multisearch. In *Proc. 1996 Scadanavian Workshop on Algorithmic Theory*, page to appear, 1996. [bdp-dcpm-96]

1534 J. J. Bausch and K. Youcef-Toumi. Kinematic methods for automated fixture reconfiguration planning. In *Proc. 7th IEEE Internat. Conf. Robot. Autom.*, May 1990. [by-kmafr-90]

O. B. Bayazit. See also [616].

1535 M. Bayer and C. Lee. Combinatorial aspects of convex polytopes. In P. Gruber and J. Wills, editors, *Handbook of Convex Geometry*, chapter 2.3, pages 485–534. North-Holland, New York, NY, 1993. [bl-cacp-93]

1536 M. M. Bayer and A. Klapper. An new index for polytopes. *Discrete Comput. Geom.*, 6:33–47, 1991. [bk-nip-91]

1537 R. Bayer. Symmetric binary b-trees: data structure and maintenace algorithms. *Acta Inform.*, 1:290–306, 1972. [b-sbbtd-72]

1538 R. Bayer and McCreight. Organization of large ordered indexes. *Acta Inform.*, 1:173–189, 1972. [bm-oloi-72] *Keywords:* data structuring.

D. A. Bayley. See also [3651].

1539 J. Bazik, R. Tamassia, S. P. Reiss, and A. van Dam. Software visualization in teaching at Brown University. In J. Stasko, J. Domingue, M. H. Brown, and B. A. Price, editors, *Software Visualization: Programming as a Multimedia Experience*, pages 383–398. MIT Press, 1998. [btrv-svtbu-98] *Keywords:* software visualization, algorithm animation.

1540 P. Beame and J. Hastad. Optimal bounds for decision problems on the CRCW PRAM. In *Proc. 19th Annu. ACM Sympos. Theory Comput.*, pages 83–93, 1987. [bh-obdpc-87]

1541 P. Beame and J. Hastad. Optimal bounds for decision problems on the CRCW PRAM. *J. ACM*, 36(3):643–670, 1989. [bh-obdpc-89]

Paul Beame. See also [660, 661].

1542 A. F. Beardon. *The Geometry of Discrete Groups*. Graduate Texts in Mathematics. Springer-Verlag, 1983. [b-gdg-83]

1543 J. Beardwood, J. H. Halton, and J. M. Hammersley. The shortest path through many points. *Math. Proc. Camb. Phil. Soc.*, 55:299–327, 1959. [bhh-sptmp-59]

1544 J. E. Beasley. An algorithm for the Steiner problem in graphs. *Networks*, 14:147–159, 1984. [b-aspg-84]

J. C. Beatty. See also [1456].

1545 D. Beauquier and M. Nivat. On translating one polyomino to tile the plane. *Discrete Comput. Geom.*, 6:575–592, 1991. [bn-toptp-91] *Succeeds:* gn-tpot-90.

1546 D. Beauquier, M. Nivat, E. Remila, and M. Robson. Tiling figures of the plane with two bars. *Comput. Geom. Theory Appl.*, 5:1–25, 1995. [bnrr-tfptb-94]

1547 M. Beccaria, P. Bertolazzi, G. Di Battista, and G. Liotta. A tailorable and extensible automatic layout facility. In *Proc. IEEE Workshop on Visual Languages*, pages 68–73, 1991. [bbdl-tealf-91] *Keywords:* graph drawing.

D. Bechmann. See also [2287].

1548 A. Beck. Greed is (sometimes) not enough. *Amer. Math. Monthly*, 97(4):289–294, 1990. [b-gisne-90] *Keywords:* optimization, covering.

1549 J. Beck. On size Ramsey number of paths, trees, and circuits, I. *J. Graph Theory*, 7:115–129, 1983. [b-srnpt-83]

1550 J. Beck. On the lattice property of the plane and some problems of Dirac, Motzkin and Erdős in combinatorial geometry. *Combinatorica*, 3(3–4):281–297, 1983. [b-lppsp-83] *Keywords:* discrete geometry, points, arrangements.

1551 J. Beck. Roth's estimate on the discrepancy of integer sequences is nearly sharp. *Combinatorica*, 1(4):319–325, 1981. [b-redis-81]

1552 J. Beck and W. Chen. *Irregularities of distribution*. Cambridge University Press, 1987. [bc-id-87]

1553 J. Beck, R. Farouki, and J. Hinds. Surface analysis methods. *IEEE Comput. Graph. Appl.*, ??:18–36, 1986. [bfh-sam-86]

1554 J. Beck and V. Sós. Discrepancy theory. Chapter for *Handbook of Combinatorics*, to be published by North-Holland. [bs-dt-]

J. Beck. See also [486].

1555 B. Becker, P. G. Franciosa, S. Gschwind, S. Leonardi, T. Ohler, and P. Widmayer. Approximating a set of objects by two minimum area rectangles. Technical Report 21.92, Dept. Inform. Sistem., Univ. Roma La Sapienza, Rome, Italy, 1992. [bfglow-asotm-92]

1556 B. Becker, P. G. Franciosa, S. Gschwind, S. Leonardi, T. Ohler, and P. Widmayer. Enclosing a set of objects by two minimum area rectangles. *J. Algorithms*, 21:520–541, 1996. [bfglow-esotm-96]

1557 B. Becker, P. G. Franciosa, S. Gschwind, T. Ohler, G. Thiemt, and P. Widmayer. An optimal algorithm for approximating a set of rectangles by two minimum area rectangles. Technical Report 35, Inst. Inform., Univ. Freiburg, Freiburg, Germany, 1991. [bfgotw-oaasr-91t]

1558 Bruno Becker, Paolo Giulio Franciosa, Stephan Gschwind, Thomas Ohler, Gerald Thiemt, and Peter Widmayer. An optimal algorithm for approximating a set of rectangles by two minimum area rectangles. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 13–25. Springer-Verlag, 1991. [bfgotw-oaasr-91i] *Annote:* 7th Intern. Workshop Comput. Geom.

1559 B. Becker, P. G. Franciosa, S. Gschwind, T. Ohler, G. Thiemt, and P. Widmayer. Enclosing many boxes by an optimal pair of boxes. In *Proc. 9th Sympos. Theoret. Aspects Comput. Sci.*, volume 577 of *Lecture Notes Comput. Sci.*, pages 475–486. Springer-Verlag, 1992. [bfgotw-embop-92]

1560 B. Becker and G. Hotz. On the optimal layout of planar graphs. Report SFB 124 B1, Univ. Saarlandes, Saarbrücken, West Germany, 1983. [bh-olpg-83]

1561 B. Becker and G. Hotz. On the optimal layout of planar graphs with fixed boundary. *SIAM J. Comput.*, 16(5):946–972, 1987. [bh-olpgf-87] *Keywords:* graph drawing.

1562 B. Becker and H. G. Osthof. Layout with wires of balanced length. *Inform. Comput.*, 73:45–58, 1987. [bo-lwbl-87] *Keywords:* graph drawing.

1563 B. Becker and H. G. Osthof. Layouts with wires of balanced length. Report ??, Univ. Saarlandes, Saarbrücken, West Germany, 1984. [bo-lwbl-84]

1564 B. Becker, H. W. Six, and P. Widmayer. Spatial priority search: An access technique for scaleless maps. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 128–138, 1991. [bsw-spsat-91]

1565 Bruno Becker and Peter Widmayer. Maßstabsunabhängige Verwaltung von Landkarten. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 5. Universität Siegen, 1990. [bw-mvl-90]

L. Becker. See also [13281–13283].

1566 N. Beckmann, H.-P. Kriegel, R. Schneider, and B. Seeger. The R*-tree: An efficient and robust access method for points and rectangles. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 322–331, 1990. [bkss-rtera-90]

1567 B. B. Bederson. *A miniature space-variant active vision system: Cortex-I*. PhD thesis, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, 1992. [b-msvav-92] *Keywords:* doctoral thesis.

B. B. Bederson. See also [13332].

1568 Behnke, Bachmann, and Fladt. *Fundamentals of mathematics, geometry*, volume 1. MIT Press, 1986. [bbf-fmg-86]

1569 F. Behrend. Über die kleinste umbeschriebene und die größte einbeschriebene Ellipse eines konvexen Bereiches. *Math. Ann.*, 115:379–411, 1938. [b-udkuu-38]

1570 B. Behrends. Algorithmen zur Erkennung der ϵ-Kongruenz von Punktmengen und Polygonen. Master's thesis, Freie Universität Berlin, Berlin, Germany, 1990. Diploma Thesis. [b-azede-90] *Keywords:* master thesis.

B. Behrends. See also [567–569].

1571 Uwe Behrens. Fence shading. In Paul Heckbert, editor, *Graphics Gems IV*, pages 404–409. Academic Press, Boston, MA, 1994. [b-fs-94] *Keywords:* Gouraud shading, Phong shading. *Annote:* Proposes an approach halfway between Gouraud shading and Phong shading: shade along the edges of the polygon, but interpolate across the interior. Contains pseudocode.

1572 I. Beichl and F. Sullivan. A robust parallel triangulation and shelling algorithm. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 107–111, 1990. [bs-rptsa-90] *Cites:* bm-sdcs-71, dk-rtdpm-78, s-chdch-86, s-imc-73, ygkm-mdidq-, ZZZ.

I. Beichl. See also [12868].

1573 R. Beigel and J. Gill. Sorting n objects with a k-sorter. Technical report, The John Hopkins University, 1987. [bg-sos-87]

1574 W. Bein. An $O(n \log n)$ algorithm for a special class of linear programs. *Computing*, 42:309–313, 1989. [b-onasc-89] *Keywords:* linear programming.

1575 W. Bein, L. Larmore, and J. Park. The *d*-edge shortest-path problem for a Monge graph, 1992. Preprint. [blp-despp-92]

L. W. Beineke. See also [13509].

1576 Ronald Beirouti and Jack Snoeyink. Implementations of the lmt heuristic for minimum weight triangulations. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 96–105, 1998. [bs-ilmth-98]

P. A. Beling. See also [93].

1577 D. E. Bell. A theorem concerning integer lattice. *Studies Appl. Math.*, 56(2):187–188, 1977. [b-tcil-77] *Keywords:* discrete geometry, linear programming.

1578 S. B. M. Bell, F. C. Hobroyd, and D. C. Masa. A digital geometry of hexagonal pixels. *Image Vision Comput.*, 7(3):194–204, 1989. [bhm-dghp-89] *Keywords:* digital geometry.

1579 M. Bellare, S. Goldwasser, C. Lund, and A. Russel. Efficient probabilistically checkable proofs and applications to approximation. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 294–304, 1993. [bglr-epcpa-93]

1580 M. Bellare and M. Sudan. Improved non-approximability results. In *Proc. 26th Annu. ACM Sympos. Theory Comput.*, pages 184–193, 1994. [bs-inar-94]

Franck Bellemain. See also [8444].

1581 Patrice Belleville. Computing two-covers of simple polygons. Master's thesis, School of Computer Science, McGill University, 1991. [b-ctcsp-91] *Keywords:* master thesis.

1582 Patrice Belleville. Convex covers in higher dimensions. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 145–150, 1995. [b-cchd-95]

1583 P. Belleville. On restricted boundary covers and convex three-covers. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 467–472, 1993. [b-rbcct-93] *Cites:* ghlst-ltavs-87, h-fvgsp-87, o-agta-87, s-rutcp-93, cr-cpih-88, ZZZ.

1584 P. Belleville. Probing polygons minimally is hard. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 50–53, 1991. [b-ppmih-91] *Cites:* gj-cigtn-79, l-aiorp-88, ZZZ.

1585 P. Belleville. Two-guarding simple polygons. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 103–108, 1992. [b-tgsp-92] *Cites:* b-ctcsp-91, ghlst-ltavs-87, h-fuenl-89, o-agta-87, s-rutcp-93, s-rrag-92, ZZZ.

1586 P. Belleville, P. Bose, J. Czyzowicz, J. Urrutia, and J. Zaks. *k*-guarding polygons on the plane. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 381–386, 1994. [bbcuz-kgpp-94] *Cites:* bglosu-fp-93, c-ctpg-75, cruz-grag, cru-ofipt-93, f-icd-77, f-spcwt-78, o-agta-87, fru-lsoso-92, h-mg-76, ZZZ.

1587 Patrice Belleville, Mark Keil, Michael McAllister, and Jack Snoeyink. On computing edges that are in all minimum-weight triangulations. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V7–V8, 1996. [bkms-cetaa-96] *Cites:* aatr-tin-95, bde-danmw-96t, dm-ucsmw-96, k-mtpd-80, ZZZ.

1588 P. Belleville and T. Shermer. Probing polygons minimially is hard. Technical Report 91-12, Dept. Comput. Sci., Simon Fraser Univ., Burnaby, BC, December 1991. [bs-ppmh-91]

1589 P. Belleville and T. C. Shermer. Probing polygons minimally is hard. *Comput. Geom. Theory Appl.*, 2(5):255–265, March 1993. [bs-ppmih-93]

P. Belleville. See also [756–758].

J. G. Bellingham. See also [10663, 13065, 13069].

1590 R. E. Bellman. *Dynamic Programming*. Princeton University Press, Princeton, NJ, 1987. [b-dp-87]

1591 R. E. Bellman and R. S. Roth. Curve fitting by segmented straight lines. *American Statistical Association Journal*, 64:1079–1084, 1969. [br-cfssl-69]

1592 R. E. Bellman and R. S. Roth. *Methods in Approximation: Techniques for Mathematical Modelling*. D. Reidel Publishing Co., Boston, 1986. [br-matmm-86]

N. V. Belov. See also [11057, 11058].

1593 A. Below, U. Brehm, J. A. De Loera, and J. Richter-Gebert. Minimal simplicial dissections and triangulations of convex 3-polytopes. *Discrete Comput. Geom.*, 24:35–48, 2000. [bbdr-msdtc-00]

1594 A. Below, J. A. De Loera, and J. Richter-Gebert. The complexity of finding small triangulations of convex 3-polytopes. Manuscript. http://www.inf.ethz.ch/personal/richter/, 2000. [bdr-cfst-00]

1595 A. Bemporad, K. Fukuda, and F. D. Torrisi. Convexity recognition of the union of polyhedra. *Comput. Geom. Theory Appl.*, 18:141–154, 2001. [bft-crup-01]

1596 Amir M. Ben-Amram. Lower bounds on algebraic random access machines. In *Proc. 22nd Internat. Colloq. Automata Lang. Prog.*, volume 944 of *Lecture Notes Comput. Sci.*, pages 360–371. Springer-Verlag, 1995. [b-lbara-95] *Abstract:* The method of proving lower bounds for decision problems by topological component counting, previously used with respect to algebraic computation trees, is extended in this work to random access machines with operations $\{+, -, \times, /\}$ or $\{+, -, \times, \lfloor\ \rfloor\}$.

1597 Amir M. Ben-Amram. What is a "pointer machine"? *SIGACT News*, 26:88–95, 1995. [b-wipm-95]

Ben-Arroyo. See also [4740].

M. Ben-Bassat. See also [4386, 4387].

1598 S. Ben-David, A. Borodin, R. Karp, G. Tardos, and A. Wigderson. On the power of randomization in on-line algorithms. In *Proc. 22th Annu. ACM Sympos. Theory Comput.*, pages 379–386, 1990. [bbktw-prola-90]

E. Ben-Hanoch. See also [1346, 1347].

1599 Boaz Ben-Moshe and Matthew J. Katz. Approximating the diameter of a set of points in the presence of rectangular obstacles. In *Abstracts 17th European Workshop Comput. Geom.*, pages 154–157. Freie Universität Berlin, 2001. [bk-adspp-01]

1600 B. Ben-Moshe, M. J. Katz, and M. Segal. Obnoxious facility location: complete service with minimal harm. *Internat. J. Comput. Geom. Appl.*, 10:581–592, 2000. [bks-oflcs-00]

1601 Michael Ben-Or. Algebraic computation trees in characteristic $p > 0$. In *Proc. 35th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 534–539, 1994. [b-actcp-94]

1602 M. Ben-Or. Lower bounds for algebraic computation trees. In *Proc. 15th Annu. ACM Sympos. Theory Comput.*, pages 80–86, 1983. [b-lbact-83]

1603 M. Ben-Or, D. Kozen, and J. H. Reif. The complexity of elementary algebra and geometry. *J. Comput. Syst. Sci.*, 32:251–264, 1986. [bkr-ceag-86]

1604 Ben-Tzvi, D., and M. B. Sandler. A combinatorial hough transform. *Pattern Recogn. Lett.*, ??(11):167–174, 1990. [bs-cht-90]

1605 H. Bendelt and A. Dress. Reconstructing the shape of a tree from observed dissimilarity data. *Adv. Appl. Math.*, 7:309–343, 1986. [bd-rstod-86]

1606 C. M. Bender and S. A. Orszag. *Advanced mathematical methods for scientists and engineers*. International Series in Pure and Applied Mathematics. McGraw-Hill, 1978. [bo-ammse-78]

1607 E. A. Bender. Asymptotic methods in enumeration. *SIAM Rev.*, 16(4):485–515, October 1974. [b-ame-74]

1608 E. A. Bender, E. R. Candfield, and B. D. McKay. The asymptotic number of labeled connected graphs with a given number of vertices and edges. *Random Structures and Algorithms*, 1(2):127–169, 1990. [bcm-anlcg-90]

1609 M. A. Bender and M. Farach-Colton. The LCA problem revisited. In *Proceedings of the 4th Latin American Symposium on Theoretical Informatics*, volume 1776 of *Lecture Notes Comput. Sci.*, pages 88–94, Berlin, 2000. Springer-Verlag. [bf-lpr-00]

M. A. Bender. See also [759].

1610 R. Benedetti, F. Loeser, and J. J. Risler. Bounding the number of connected components of a real algebraic set. *Discrete Comput. Geom.*, 6:191–209, 1991. [blr-bnccr-91]

1611 R. Benedetti and J.-J. Risler. *Real algebraic and semi-algebraic sets*. Actualités mathématiques. Hermann, Paris, 1990. [br-rasas-90]

M. Benedikt. See also [3819].

1612 M. Benelli and R. Hassin. Optimal separable partitioning in the plane. *Discrete Appl. Math.*, 59:215–224, 1995. [bh-ospp-95] *Keywords:* bipartition, clustering, separation, optimization, diameter, Weber problem, convex hull.

1613 B.-E. Bengtsson and S. Norbeck. Construction of isarithms and isarithmic maps by computers. *BIT*, 4:87–105, 1964. [bn-ciimc-64]

Robert Benkoczi. See also [1937].

B. Bennett. See also [12903].

1614 Daniel Benninger. R-Bäume und Abfragen auf skalarwertigen Vektorkarten. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 6. Universität Siegen, 1990. [b-rbasv-90]

1615 I. Bennour and J. Cloutier. Approximation of the rectilinear Steiner tree problem with neural networks. In *Canadian Conf. on VLSI*, October 1992. [bc-arstp-92]

I. Bennour. See also [3381].

1616 M. Benouamer, P. Jaillon, D. Michelucci, and J.-M. Moreau. A lazy solution to imprecision in computational geometry. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 73–78, 1993. [bjmm-lsicg-93] *Cites:* bo-arcgi-79, c-fadsi-88, d-reidt-92, em-sstcd-88, fv-eeacg-93, gy-frcg-86, gss-egbra-89, si-cvd10-89, j-leair-93, k-sa-81, m-rfqcd-87, m-vigau-88p, m-dpggt-89, ml-csche-89, m-ia-66, m-fhrsg-90, otu-nsga-87, ps-cgi-85, ss-ccsm-85, ce-oails-88t, hns-saann-88, k-rmrs-89, kln-edtur-89, m-mdscg-84, y-gctsp-88, ZZZ.

G. Benson. See also [650].

1617 M. Benson, R. Larntz, M. Lavine, and R. Regal. The application of convex hulls in multiple dimensions. In *Computer Sci. and Statistics: Proc. 18th Sympos. on the Interface*, pages 297–301. 1986. [bllr-achmd-86] *Keywords:* convex hull.

1618 R. V. Benson. *Euclidean Geometry and Convexity*. McGraw-Hill, New York, NY, 1966. [b-egc-66]

1619 S. W. Bent, D. D. Sleator, and R. E. Tarjan. Biased search trees. *SIAM J. Comput.*, 14:545–568, 1985. [bst-bst-85]

1620 J. Bentley. Algorithms for Klee's rectangle problems. unpublished manuscript, Dept. of Computer Science, Carnegie-Mellon University, 1977. [b-akrp-77]

1621 J. L. Bentley. A case study in applied algorithm design. *Computer*, 17:75–88, 1984. [b-csaad-84]

1622 J. L. Bentley. A survey of techniques for fixed radius near neighbor searching. Report STAN-CS-78-513, Dept. Comput. Sci., Stanford Univ., Stanford, CA, 1975. [b-stfrn-75]

1623 J. L. Bentley. Algorithms for multivariate nonparametrics. Report CMU-CS-78-147, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1978. [b-amn-78]

1624 J. L. Bentley. Decomposable searching problems. *Inform. Process. Lett.*, 8:244–251, 1979. [b-dsp-79]

1625 J. L. Bentley. *Divide-and-conquer algorithms for closest point problems in multidimensional space*. Ph.D. thesis, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, 1976. Report TR-76-103. [b-dcacp-76] *Keywords:* doctoral thesis.

1626 J. L. Bentley. Experiments on traveling salesman heuristics. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 91–99, January 1990. [b-etsh-90]

1627 Jon Louis Bentley. Fast algorithms for geometric traveling salesman problems. *ORSA J. Comput.*, 4(4):387–411, 1992. [b-fagts-92] *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

1628 J. L. Bentley. K-d trees for semidynamic point sets. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 187–197, 1990. [b-kdtsp-90] *Cites:* ahu-daca-74, b-mbstu-75, b-etsh-90, b-fagts-92, bs-dcms-76, bwy-oetac-80, fr-etbs-75, fbf-afbml-77, lw-wcarp-77, m-mdscg-84, pb-wcann-80t, ps-cgi-85, s-a-88, s-rnnsk-88, s-cpl-86, z-tcg-78, ZZZ.

1629 J. L. Bentley. Multidimensional binary search trees in database applications. *IEEE Trans. Softw. Eng.*, SE-5:333–340, 1979. [b-mbstd-79]

1630 J. L. Bentley. Multidimensional binary search trees used for associative searching. *Commun. ACM*, 18(9):509–517, September 1975. [b-mbstu-75]

1631 J. L. Bentley. Multidimensional divide-and-conquer. *Commun. ACM*, 23(4):214–229, 1980. [b-mdc-80] *Succeeds:* bs-dcms-76.

1632 J. L. Bentley. Priority queues with range restriction. *Bull. EATCS*, 9:7–8, 1979. [b-pqrr-79]

1633 J. L. Bentley. *Programming Pearls*. Addison-Wesley, Reading, MA, 1985. [b-pp-85]

1634 J. L. Bentley. Solutions to Klee's rectangle problems. Technical report, Carnegie-Mellon Univ., Pittsburgh, PA, 1977. [b-skrp-77]

1635 J. L. Bentley. Squeezing constant factors of geometric algorithms. In *Proc. 19th Allerton Conf. Commun. Control Comput.*, pages 11–20, 1981. [b-scfga-81]

1636 J. L. Bentley and W. A. Burkhard. Heuristics for partial-match retrieval data base design. *Inform. Process. Lett.*, 4:132–135, 1976. [bb-hpmrd-76]

1637 J. L. Bentley and W. Carruthers. Algorithms for testing the inclusion of points in polygons. In *Proc. 18th Allerton Conf. Commun. Control Comput.*, pages 11–19, 1980. [bc-atipp-80]

1638 J. L. Bentley, K. L. Clarkson, and D. B. Levine. Fast linear expected-time algorithms for computing maxima and convex hulls. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 179–187, 1990. [bcl-fleta-90]

1639 J. L. Bentley, G. M. Faust, C. H. Papadimitriou, and F. P. Preparata. Two papers on computational geometry. Report CMU-CS-80-109, Carnegie-Mellon Univ., Pittsburgh, PA, 1980. [bfpp-tpcg-80]

1640 J. L. Bentley, G. M. Faust, and F. P. Preparata. Approximation algorithms for convex hulls. *Commun. ACM*, 25:64–68, 1982. [bfp-aach-82] *Keywords:* designing algorithms, convex hull, approximation, two-dimensional, worst-case analysis. *Annote:* $O(n)$ time.

1641 J. L. Bentley and J. H. Friedman. Data structures for range searching. *ACM Comput. Surv.*, 11:397–409, 1979. [bf-dsrs-79]

1642 J. L. Bentley and J. H. Friedman. Fast algorithms for constructing minimal spanning trees in coordinate spaces. *IEEE Trans. Comput.*, C-27:97–105, 1978. [bf-facms-78]

1643 J. L. Bentley, D. Haken, and R. W. Hon. Fast geometric algorithms for VLSI tasks. In *Proc. Comput. Conf.*, pages 88–92, 1981. [bhh-fgavt-81]

1644 J. L. Bentley, B. Kernigham, and C. Van Wyk. An elementary C cost model. *UNIX Review*, 9(2):38–48, 1991. [bkv-eccm-91]

1645 J. L. Bentley, H. T. Kung, M. Schkolnick, and C. D. Thompson. On the average number of maxima in a set of vectors and applications. *J. ACM*, 25:536–543, 1978. [bkst-anmsv-78]

1646 J. L. Bentley and H. A. Maurer. A note on Euclidean near neighbor searching in the plane. *Inform. Process. Lett.*, 8:133–136, 1979. [bm-nenns-79]

1647 J. L. Bentley and H. A. Maurer. Efficient worst-case data structures for range searching. *Acta Inform.*, 13:155–168, 1980. [bm-ewcds-80]

1648 Jon Louis Bentley, Thomas Ottmann, and Peter Widmayer. The complexity of manipulating hierarchically defined sets of rectangles. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 127–158. JAI Press, Greenwich, Conn., 1983. [bow-cmhds-83] *Keywords:* isothetic, rectangles, data structuring. *Succeeds:* bo-cmhds-82.

1649 J. L. Bentley and T. A. Ottmann. Algorithms for reporting and counting geometric intersections. *IEEE Trans. Comput.*, C-28(9):643–647, September 1979. [bo-arcgi-79] *Precedes:* b-carcg-81.

1650 J. L. Bentley and T. A. Ottmann. The complexity of manipulating hierarchically defined sets of rectangles. In *Proc. 10th Internat. Sympos. Math. Found. Comput. Sci.*, volume 118 of *Lecture Notes Comput. Sci.*, pages 1–15. Springer-Verlag, 1982. [bo-cmhds-82] *Precedes:* bow-cmhds-83.

1651 J. L. Bentley and J. B. Saxe. Algorithms on vector sets. *SIGACT News*, 11:36–39, 1979. [bs-avs-79]

1652 J. L. Bentley and J. B. Saxe. An analysis of two heuristics for the Euclidean traveling salesman problem. In *Proc. 18th Allerton Conf. Commun. Control Comput.*, pages 41–49, 1980. [bs-athet-80]

1653 J. L. Bentley and J. B. Saxe. Decomposable searching problems I: Static-to-dynamic transformations. *J. Algorithms*, 1:301–358, 1980. [bs-dsp1s-80] *Succeeds:* sb-tsdsd-79.

1654 J. L. Bentley and M. I. Shamos. A problem in multivariate statistics: algorithm, data structure, and applications. In *Proc. 15th Allerton Conf. Commun. Control Comput.*, pages 193–201, 1977. [bs-pmsad-77]

1655 J. L. Bentley and M. I. Shamos. Divide-and-conquer for linear expected time. *Inform. Process. Lett.*, 7:87–91, 1978. [bs-dclet-78]

1656 J. L. Bentley and M. I. Shamos. Divide-and-conquer in multidimensional space. In *Proc. 8th Annu. ACM Sympos. Theory Comput.*, pages 220–230, 1976. [bs-dcms-76] *Precedes:* b-mdc-80.

1657 J. L. Bentley and D. F. Stanat. Analysis of range searches in quad trees. *Inform. Process. Lett.*, 3:170–173, 1975. [bs-arsqt-75]

1658 J. L. Bentley, D. F. Stanat, and E. H. William, Jr. The complexity of finding fixed-radius near neighbors. *Inform. Process. Lett.*, 6:209–212, 1977. [bsw-cffrn-77]

1659 J. L. Bentley, B. W. Weide, and A. C. Yao. Optimal expected-time algorithms for closest-point problems. *ACM Trans. Math. Softw.*, 6:563–580, 1980. [bwy-oetac-80]

1660 J. L. Bentley and D. Wood. An optimal worst case algorithm for reporting intersections of rectangles. *IEEE Trans. Comput.*, C-29:571–577, 1980. [bw-owcar-80]

J. L. Bentley. See also [5262, 5613, 5692, 10591, 10592, 11671, 12024].

1661 Steven Benzley, Ted D. Blacker, Scott A. Mitchell, Peter Murdoch, and Timothy J. Tautges. Hexahedral mesh generation via the dual. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C4–C5, 1995. [bbmmt-hmgd-95] *Cites:* rt-gcphg-84, mbbm-cbmrc-, tmb-cbmrc-, ZZZ.

S. Benzley. See also [2061, 9980].

1662 Steven E. Benzley, Ernest Perry, Karl Merkley, Brett Clark, and Gregory D. Sjaardema. A comparison of all hexagonal and all tetrahedral finite element meshes for elastic and elasto-plastic analysis. In *Proc. 4th International Meshing Roundtable*, pages 179–192, Albuquerque, NM, 1995. Sandia National Laboratories. [bpmcs-cahat-95]

Steven E. Benzley. See also [3323, 9658, 9981, 13512].

1663 S. Berchtold, C. Böhm, B. Barunmüller, D. A. Keim, and H.-P. Kriegel. Fast parallel similarity search in multimedia databases. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 1–12, 1997. [bbbkk-fpssm-97]

1664 S. Berchtold, C. Böhm, D. A. Keim, and H.-P. Kriegel. A cost model for nearest neighbor search in high-dimensional data space. In *Proc. Annu. ACM Sympos. Principles Database Syst.*, pages 78–86, 1997. [bbkk-cmnns-97]

1665 S. Berchtold, D. A. Keim, and H.-P. Kriegel. The X-tree: An index structure for higher dimensional data. In *Proc. 22th VLDB Conference*, pages 28–39, 1996. [bkk-xtish-96]

1666 C. A. Berenstein and D. Lavine. On the number of digital straight line segments. *IEEE Trans. Pattern Anal. Mach. Intell.*, 10(6):880–888, 1988. [bl-ndsls-88] *Keywords:* digital geometry.

1667 C. A. Berenstein, L. N. Kanal, D. Lavine, and E. Olson. A geometric approach to subpixel registration accuracy. *Comput. Vision Graph. Image Process.*, 40(3):334–360, 1987. [bklo-gasra-87]

B. Beresford-Smith. See also [1135–1137].

1668 G. B. Beretta. *An implementation of a plane-sweep algorithm on a personal computer.* Ph.D. thesis, Swiss Federal Inst. Tech., Zürich, Switzerland, 1984. Report ETH 7538. [b-ipsap-84] *Keywords:* doctoral thesis.

1669 Robert-Paul Beretty, Mark H. Overmars, and A. Frank van der Stappen. Orienting polyhedral parts by pushing. In *Abstracts 16th European Workshop Comput. Geom.*, pages 136–139. Ben-Gurion University of the Negev, 2000. [bos-oppp-00]

1670 M. de Berg. Computing half-plane and strip discrepancy of planar point sets. In *Proc. 3rd Internat. Conf. on Comput. Graphics and Visualization Techniques*, pages 294–303, 1993. [b-chpsd-93] *Keywords:* discrepancy, algorithms, dynamic.

1671 M. de Berg. Computing half-plane and strip discrepancy of planar point sets. *Comput. Geom. Theory Appl.*, 6:69–83, 1996. [b-chpsd-96]

1672 M. de Berg. Dynamic output-sensitive hidden surface removal for *c*-oriented polyhedra. Report RUU-CS-91-6, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1991. [b-doshs-91] *Precedes:* b-doshs-92.

1673 M. de Berg. Dynamic output-sensitive hidden surface removal for *c*-oriented polyhedra. *Comput. Geom. Theory Appl.*, 2(3):119–140, 1992. [b-doshs-92] *Succeeds:* b-doshs-91.

1674 M. de Berg. *Efficient algorithms for ray shooting and hidden surface removal.* Ph.D. dissertation, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1992. [b-earsh-92] *Keywords:* doctoral thesis. *Precedes:* b-rsdoh-93.

1675 M. de Berg. Generalized hidden surface removal. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 1–10, 1993. [b-ghsr-93] *Precedes:* b-ghsr-96. *Cites:* am-rsps-92, b-hsrr-90, c-tsplt-91a, cegs-lscaa-89, cg-vippg-89, bhosk-ershs-91, bo-hsrco-92, e-acg-87, gao-isost-90, go-nasch-87, ghlst-ltavs-87, hs-ndssg-86, kos-ehsro-92, ms-rcibt-88, m-wcohs-87, oy-nubkm-91, rs-eoshs-88i, ZZZ.

1676 M. de Berg. Generalized hidden surface removal. *Comput. Geom. Theory Appl.*, 5:249–276, 1996. [b-ghsr-96] *Succeeds:* b-ghsr-93.

1677 Mark de Berg. Linear size binary space partitions for fat objects. In *Proc. 3rd Annu. European Sympos. Algorithms*, volume 979 of *Lecture Notes Comput. Sci.*, pages 252–263. Springer-Verlag, 1995. [b-lsbsp-95]

1678 Mark de Berg. Linear size binary space partitions for uncluttered scenes. *Algorithmica*, 28:353–366, 2000. [b-lsbsp-00]

1679 M. de Berg. On rectilinear link distance. Technical Report RUU-CS-89-13, Dept. of Computer Science, Univ. of Utrecht, 1989. [d-rld-89] *Precedes:* b-rld-91.

1680 M. de Berg. On rectilinear link distance. *Comput. Geom. Theory Appl.*, 1(1):13–34, July 1991. [b-rld-91] *Keywords:* motion planning, rectilinear paths, rectilinear polygons, linkdistance. *Succeeds:* d-rld-89. *Annote:* He considers rectilinear paths in a rectilinear simple polygon. In $O(n \log n)$ preprocessing time and space, he builds a data structure that supports $O(\log n)$ time queries for distance between two points ($O(1)$ time between two polygon vertices). He is actually searching for paths that are"smallest" in that they are shortest simultaneously in rectilinear link distance and L_1 length (which is always possible). See improvements to $O(n)$ time and space by Lingas, Maheshwari, and Sack [8863] and Schuierer [11807].

1681 M. de Berg. *Ray Shooting, Depth Orders and Hidden Surface Removal*, volume 703 of *Lecture Notes Comput. Sci.* Springer-Verlag, Berlin, Germany, 1993. [b-rsdoh-93] *Keywords:* book, ray shooting, depth orders, hidden surface removal, translation orders, graphics, data structures. *Succeeds:* b-earsh-92.

1682 M. de Berg. Shortest rectilinear path problems. In *Proc. 13th IMACS World Congress on Computation and Applied Mathematics*, pages 142–143, 1991. [b-srpp-91] *Keywords:* motion planning, shortest paths.

1683 M. de Berg. Translating polygons with applications to hidden surface removal. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 60–70. Springer-Verlag, 1990. [b-tpahs-90]

1684 Mark de Berg. Translating polygons with applications to hidden surface removal. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 7. Universität Siegen, 1990. [b-tpwah-90]

1685 M. de Berg. Trends and developments in computational geometry. *Comput. Graph. Forum*, 16:3–30, 1997. [b-tdcg-97]

1686 M. de Berg, J. Bose, D. Bremner, S. Ramaswami, and G. Wilfong. Computing constrained minimum-width annuli of point sets. In *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 3–16. Springer-Verlag, 1997. [bbbrw-ccmwa-97]

1687 M. de Berg, P. Bose, D. Bremner, S. Ramaswami, and G. Wilfong. Computing constrained minimum-width annuli of point sets. *Comput. Aided Design*, 30(4):267–275, April 1998. [bbbrw-ccmwa-98]

1688 M. de Berg, P. Bose, K. Dobrint, M. van Kreveld, M. Overmars, M. de Groot, T. Roos, J. Snoeyink, and S. Yu. The complexity of rivers in triangulated terrains. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 325–330, 1996. [bbdkogrsy-crtt-96]

1689 Mark de Berg, Otfried Cheong, Olivier Devillers, Mark van Kreveld, and Monique Teillaud. Computing the maximum overlap of two convex polygons under translations. *Theory of Computing Systems*, 31:613–628, 1998. [bcdkt-cmotc-98] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html. *Succeeds:* bdkst-cmotc-96. *Cites:* ast-apsgo-92, abb-amps-91, ag-mrpc-92, absstz-sacp-96, ab-pptr-88, c-pcp-83, c-oaitd-92, c-chdc-93, cghkkk-gpmem-93, ck-cppop-93, f-fapct-85, fj-gsrsm-84, g-cp-67, h-ampac-92, hkk-dvdmh-92i, hks-uevsi-93, l-rmp-91, msw-aotp-93, pt-cocpc-92, scklps-gadss-86, v-aitco-95. *Abstract:* Let P be a convex polygon in the plane with n vertices and let Q be a convex polygon with m vertices. We prove that the maximum number of combinatorially distinct placements of Q with respect to P under translations is $O(n^2 + m^2 + \min(nm^2 + n^2m))$, and we give an example showing that this bound is tight in the worst case. Second, we present an $O((n + m)\log(n + m))$ algorithm for determining a translation of Q that maximizes the area of overlap of P and Q. We also prove that the placement of Q that makes the centroids of Q and P coincide realizes an overlap of at least 9/25 of the maximum possible overlap. As an upper bound, we show an example where the overlap in this placement is 4/9 of the maximum possible overlap.

1690 Mark de Berg, Olivier Devillers, Katrin Dobrindt, and Otfried Schwarzkopf. Computing a single cell in the overlay of two simple polygons. *Inform. Process. Lett.*, 63(4):215–219, August 1997. [bdds-cscot-97] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html. *Succeeds:* bdds-cscut-95. *Cites:* bds-lric-94, bdsty-arsol-92, cct-rpatd-92, cs-arscg-89, d-rysoa-92, gks-ricdv-92, gss-gmppt-89, m-cgitr-93, s-sfira-91. *Abstract:* This note combines the lazy randomized incremental construction scheme with the technique of "connectivity acceleration" to obtain an $O(n(\log^\star n)^2)$ time randomized algorithm to compute a single face in the overlay of two simple polygons in the plane.

1691 Mark de Berg, Olivier Devillers, Katrin Dobrindt, and Otfried Schwarzkopf. Computing a single cell in the union of two simple polygons. Research Report 2626, INRIA, BP93, 06902 Sophia-Antipolis, France, 1995. [bdds-cscut-95] *URL:* http://www.inria.fr/RRRT/RR-2626. *Precedes:* bdds-cscot-97. *Abstract:* This note presents a non trivial combination of two techniques previously used with randomized incremental algorithms: the lazy cleaning scheme [1695] to maintain structures with 'non local' definition and the $O(n \log^\star n)$ acceleration when some additional information about the data is known [3358, 4015, 11942]. Authors assume that the reader is somehow familiar with this techniques. If, we are interested in computing a single face in the intersection of two simple polygons, the two previous techniques can be used. The lazy approach allows to compute a single face in an arrangement of line segments in expected time $O(n\alpha(n)\log n)$ but this technique do not exploit the organization of the segments in simple polygons. The accelerated framework compute the whole intersection of the two simple polygon in $O(n \log^\star n + A)$ where $A = O(n^2)$ is the number of intersection points, and then the relevant connected component can be extracted easily in $O(n)$ time. The two techniques can be combined to reach an algorithm whose expected time complexity is $O(n \log^{\star 2} n)$ which improve previous bounds above.

1692 Mark de Berg, Olivier Devillers, Marc van Kreveld, Otfried Schwarzkopf, and Monique Teillaud. Computing the maximum overlap of two convex polygons under translations. In *Proc. 7th Annu. Internat. Sympos. Algorithms Comput.*, volume 1178 of *Lecture Notes Comput. Sci.*, pages 126–135. Springer-Verlag, 1996. [bdkst-cmotc-96] *Precedes:* bcdkt-cmotc-98.

1693 Mark de Berg and Katrin Dobrindt. On levels of detail in terrains. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C26–C27, 1995. [bd-ldt-95] *Keywords:* Delaunay triangulation, surface simplification, decimation. *Cites:* dmp-htmsf-94, k-osps-83, l-cembt-91, ps-cgi-85, ZZZ.

1694 M. de Berg, K. Dobrindt, and O. Schwarzkopf. On lazy randomized incremental construction. Tech. Report UU-CS-1994-12, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, March 1994. [bds-lric-94t] *URL:* ftp://ftp.cs.ruu.nl/pub/RUU/CS/techreps/CS-1994/1994-12.ps.gz. *Keywords:* vertical decomposition, trapezoidal map, point location. *Comments:* Full version of bds-lric-94.

1695 M. de Berg, K. Dobrindt, and O. Schwarzkopf. On lazy randomized incremental construction. In *Proc. 26th Annu. ACM Sympos. Theory Comput.*, pages 105–114, 1994. [bds-lric-94] *Comments:* Full and ftp-able version see bds-lric-94t.

1696 M. de Berg, K. Dobrindt, and O. Schwarzkopf. On lazy randomized incremental construction. *Discrete Comput. Geom.*, 14:261–286, 1995. [bds-lric-95]

1697 M. de Berg and K. T. G. Dobrindt. On levels of details in terrains. *Graph. Models Image Process.*, 60(1):1–12, January 1998. [bd-ldt-98] *Succeeds:* bd-ldt-95.

1698 M. de Berg, H. Everett, and H. Wagener. Translation queries for sets of polygons. Report RUU-CS-91-30, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1991. [bew-tqsp-91] *Keywords:* convex hull, embedding, depth order.

1699 M. de Berg, H. Everett, and H. Wagener. Translation queries for sets of polygons. *Internat. J. Comput. Geom. Appl.*, 5:221–242, 1995. [bew-tqsp-95] *Keywords:* convex hull, embedding, depth order. *Succeeds:* bew-tqsp-91.

1700 Mark de Berg and Marko de Groot. Binary space partitions for sets of cubes. In *Abstracts 10th European Workshop Comput. Geom.*, pages 85–88. Universidad de Cantabria, Santander, 1994. [bg-bspsc-94]

1701 Mark de Berg, Marko de Groot, and Mark Overmars. New results on binary space partitions in the plane. In *Proc. 4th Scand. Workshop Algorithm Theory*, volume 824 of *Lecture Notes Comput. Sci.*, pages 61–72. Springer-Verlag, 1994. [bgo-nrbsp-94] *Precedes:* bgo-nrbsp-97.

1702 Mark de Berg, Marko de Groot, and Mark Overmars. New results on binary space partitions in the plane. *Comput. Geom. Theory Appl.*, 8:317–333, 1997. [bgo-nrbsp-97] *Succeeds:* bgo-nrbsp-94.

1703 M. de Berg, M. de Groot, and M. Overmars. Perfect binary space partitions. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 109–114, 1993. [bgo-pbsp-93] *Precedes:* bgo-pbsp-97. *Cites:* bos-cvdo-92, fkn-vsgpt-80, go-nhpcg-93, hs-asdch-90, ol-mcp-81, ow-nmcvg-88, py-ebsph-90, py-obspo-92, ZZZ.

1704 M. de Berg, M. de Groot, and M. Overmars. Perfect binary space partitions. *Comput. Geom. Theory Appl.*, 7:81–91, 1997. [bgo-pbsp-97] *Succeeds:* bgo-pbsp-93.

1705 Mark de Berg, Leonidas Guibas, Dan Halperin, Mark Overmars, Otfried Schwarzkopf, Micha Sharir, and Monique Teillaud. Reaching a goal with directional uncertainty. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 1–10. Springer-Verlag, 1993. [bghosst-rgdu-93] *URL:* ftp://ftp.cs.ruu.nl/pub/RUU/CS/techreps/CS-1994/1994-09.ps.gz. *Precedes:* bghosst-rgdu-95.

1706 Mark de Berg, Leonidas Guibas, Dan Halperin, Mark Overmars, Otfried Schwarzkopf, Micha Sharir, and Monique Teillaud. Reaching a goal with directional uncertainty. *Theoret. Comput. Sci.*, 140:301–317, 1995. [bghosst-rgdu-95] *URL:* ftp://ftp.cs.ruu.nl/pub/RUU/CS/techreps/CS-1994/1994-09.ps.gz. *Succeeds:* bghosst-rgdu-93.

1707 M. de Berg, Leonidas J. Guibas, and D. Halperin. Vertical decompositions for triangles in 3-space. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 1–10, 1994. [bgh-vdt3s-94] *Cites:* ass-sulbl-89, as-tsbac-90, as-car-92, bo-arcgi-79, c-cpplb-84, c-ochan-91, ce-oails-92, cegs-sessr-89, cegs-lscaa-89, cf-dvrsi-90, cegsw-ccbac-90, c-racpq-88, cs-arscg-89, gt-dtdpl-91, gs-dfbt-78, gs-pmgsc-85, hs-nqbmp-93, hs-ndssg-84, hw-ensrq-87, h-fuenl-89, m-rsehc-92, m-hsrrm-91, m-rmstf-91, ps-cgi-85, pt-eplcs-92, s-atubl-93, t-dsna-83, ws-prnds-88, ZZZ.

1708 M. de Berg, Leonidas J. Guibas, and D. Halperin. Vertical decompositions for triangles in 3-space. *Discrete Comput. Geom.*, 15:35–61, 1996. [bgh-vdt3s-96]

1709 M. de Berg, D. Halperin, M. Overmars, and M. van Kreveld. Sparse arrangements and the number of views of polyhedral scenes. manuscript, 1991. [bhok-sanvp-91] *Precedes:* bhok-sanvp-92, bhok-sanvp-97.

1710 M. de Berg, D. Halperin, M. Overmars, and M. van Kreveld. Sparse arrangements and the number of views of polyhedral scenes. Technical Report RUU-CS-92-24, Dept. Comput. Sci., Univ. Utrecht, Utrecht, Netherlands, 1992. [bhok-sanvp-92] *Succeeds:* bhok-sanvp-91. *Precedes:* bhok-sanvp-97.

1711 M. de Berg, D. Halperin, M. Overmars, and M. van Kreveld. Sparse arrangements and the number of views of polyhedral scenes. *Internat. J. Comput. Geom. Appl.*, 7:175–195, 1997. [bhok-sanvp-97] *Succeeds:* bhok-sanvp-92,bhok-sanvp-91.

1712 M. de Berg, D. Halperin, M. Overmars, J. Snoeyink, and M. van Kreveld. Efficient ray shooting and hidden surface removal. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 21–30, 1991. [bhosk-ershs-91] *Keywords:* ray tracing, hidden surface removal, random sampling. *Cites:* as-anspt-91, ako-iqco-91, as-zasha-91, cegpsss-ccclr-90, cegs-lscaa-89, cg-vippg-89, csw-qoubs-90, cj-sersi-91, cs-vppt-89, bo-hsrap-90, de-ssio-87, dk-ladsc-85, e-acg-87, m-aodq-90, m-wcohs-87, os-oshsr-89, p-srs3d-90, p-nrrsi-91, sml-rtatp-88, s-pcg-88, ZZZ.

1713 M. de Berg, D. Halperin, M. Overmars, J. Snoeyink, and M. van Kreveld. Efficient ray shooting and hidden surface removal. *algo*, 12:30–53, 1994. [bhosk-ershs-94] *Succeeds:* bhosk-ershs-91.

1714 Mark de Berg, Matthew Katz, Mark Overmars, A. Frank van der Stappen, and Jules Vleugels. Models and motion planning. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 83–94. Springer-Verlag, 1998. [bkosv-mmp-98]

1715 M. de Berg, M. J. Katz, A. F. van der Stappen, and J. Vleugels. Realistic input models for geometric algorithms. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 294–303, 1997. [bksv-rimga-97] *Cites:* aks-cdorp-95, am-rsss-92, afkmnsu-ampcb-92, cg-fclds-86, cg-ssvip-88, b-lsbsp-95, fpt-opcpa-81, lw-vdllm-80, mmpssw-ftdlm-91, mms-qsrs-94, os-rsplf-96, py-ebsph-90, ps-cgi-85, sv-rslde-96, s-mpafo-94, so-mpelo-95, k-fpfcu-93, v-ffrim-97, ZZZ.

1716 M. de Berg and M. van Kreveld. Rectilinear decompositions with low stabbing number. Tech. Report RUU-CS-93-25, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1993. [bk-rdlsn-93]

1717 M. de Berg and M. van Kreveld. Rectilinear decompositions with low stabbing number. *Inform. Process. Lett.*, 52:215–221, 1994. [bk-rdlsn-94]

1718 Mark de Berg and Marc van Kreveld. Trekking in the alps without freezing or getting tired. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 121–132. Springer-Verlag, 1993. [bk-tawfg-93] *URL:* ftp://ftp.cs.ruu.nl/pub/RUU/CS/techreps/CS-1994/1994-02.ps.gz.

1719 M. de Berg and M. van Kreveld. Trekking in the alps without freezing or getting tired. *Algorithmica*, 18:306–323, 1997. [bk-tafgt-97]

1720 M. de Berg, M. van Kreveld, and Bengt J. Nilsson. Shortest path queries in rectilinear worlds of higher dimension. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 51–60, 1991. [bkn-spqrw-91] *Cites:* c-crmp-87, cr-nlbtr-87, c-tpca-82, c-tsplt-90i, cg-fclds-86, ch-spp-90, ckv-rsptp-87, b-rld-91, bkno-fsppo-90i, rlw-rsppr-89, d-ntpcg-59, k-ealdp-89, ll-fmrdp-81, l-prp-78, lp-esppr-84, lpsssstwy-clcsp-87, m-mdscg-84, m-oasrp-89, mmp-dgp-87, mrw-mlpop-90, os-cgd3p-89, rs-spesp-85, s-cg-78, ss-spps-86, s-mlppr-87, ZZZ.

1721 M. de Berg, M. van Kreveld, Bengt J. Nilsson, and M. H. Overmars. Finding shortest paths in the presence of orthogonal obstacles using a combined L_1 and link metric. Report RUU-CS-90-20, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1990. [bkno-fsppo-90t] *Precedes:* bkno-fsppo-90i.

1722 M. de Berg, M. van Kreveld, Bengt J. Nilsson, and M. H. Overmars. Finding shortest paths in the presence of orthogonal obstacles using a combined L_1 and link metric. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 213–224. Springer-Verlag, 1990. [bkno-fsppo-90i] *Keywords:* shortest paths, rectilinear paths, rectilinear obstacles, combined metric. *Succeeds:* bkno-fsppo-90t. *Annote:* They consider rectilinear paths among n axis-parallel line segment obstacles (possibly crossing). They preprocess in time $O(n^2)$, space $O(n \log n)$, for single-source shortest paths in query time $O(\log n)$. Distance is measured in a combined metric: linear combination of rectilinear link distance and L_1 path length.

1723 M. de Berg, M. van Kreveld, Bengt J. Nilsson, and M. H. Overmars. Shortest path queries in rectilinear worlds. *Internat. J. Comput. Geom. Appl.*, 2(3):287–309, 1992. [bkno-spqrw-92] *Keywords:* shortest paths, rectilinear paths, rectilinear obstacles, combined metric. *Abstract:* In this paper, a data structure is given for two and higher dimensional shortest path queries. For a set of n axis-parallel rectangles in the plane, or boxes in d-space, and a fixed target, it is possible with this structure to find a shortest rectilinear path avoiding all rectangles or boxes from any point to this target. Alternatively, it is possible to find the length of the path. The metric considered is a generalization of the L_1-metric and the link metric, where the length of a path is its L_1-length plus some (fixed) constant times the number of turns on the path. The data structure has size $O((n \log n)^{d-1})$, and a query takes $O(\log^{d-1} n)$ time (plus the output size if the path must be reported). As a byproduct, a relatively simple solution to the single shot problem is obtained; the shortest path between two given points can be computed in time $O(n^d \log n)$ for $d \geq 3$ and in time $O(n^2)$ in the plane.

1724 M. de Berg, M. van Kreveld, R. van Oostrum, and M. Overmars. Simple traversal of a subdivision without extra storage. *International Journal on Geographical Information Science*, 11:359–373, 1997. [bkoo-stses-97]

1725 Mark de Berg, Marc van Kreveld, Mark Overmars, and Otfried Schwarzkopf. *Computational Geometry: Algorithms and Applications*. Springer-Verlag, Berlin, 1997. [bkos-cgaa-97] *URL:* http://www.cs.ruu.nl/geobook/. *ISBN:* 3-540-61270-X. *Keywords:* textbook.

1726 Mark de Berg, Marc van Kreveld, Mark Overmars, and Otfried Schwarzkopf. *Computational Geometry: Algorithms and Applications*. Springer-Verlag, Berlin, Germany, 2nd edition, 2000. [bkos-cgaa-00] *Succeeds:* bkos-cgaa-97.

1727 M. de Berg, M. van Kreveld, M. Overmars, and O. Schwarzkopf. Computational geometry by example. Manuscript, ??, 1995. [bkos-cge-95]

1728 M. de Berg, M. van Kreveld, and S. Schirra. A new approach to subdivision simplification. In *Proc. 12th Internat. Sympos. Comput.-Assist. Cartog.*, pages 79–88, 1995. [bks-nass-95] *Keywords:* line simplification, generalization.

1729 M. de Berg, M. van Kreveld, and S. Schirra. Line simplification consistent with tag points. In *Proc. Auto-Carto 12*, 1995. to appear. [bks-lsctp-95]

1730 M. de Berg, M. van Kreveld, O. Schwarzkopf, and J. Snoeyink. Point location in zones of k-flats in arrangements. *Comput. Geom. Theory Appl.*, 6:131–143, 1996. [bkss-plzkf-96] *Keywords:* zones, arrangements, point location, many cells. *Succeeds:* bks-plzkf-91i.

1731 M. de Berg, M. van Kreveld, and J. Snoeyink. Point location in zones of k-flats in arrangements. Report RUU-CS-91-9, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1991. [bks-plzkf-91t] *Precedes:* bks-plzkf-91i.

1732 M. de Berg, M. van Kreveld, and J. Snoeyink. Point location in zones of k-flats in arrangements. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 228–232, August 1991. [bks-plzkf-91i] *Succeeds:* bks-plzkf-91t. *Cites:* bks-plzkf-91t, csw-qoubs-90, c-narsc-87, cs-arscg-89, e-acg-87, eos-calha-86, m-aodq-90, m-lpltw-84, hw-ensrq-87, ZZZ.

1733 M. de Berg, M. van Kreveld, and J. Snoeyink. Two- and three-dimensional point location in rectangular subdivisions. Report RUU-CS-91-29, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1991. [bks-ttdpl-91] *Precedes:* bks-ttdpl-92.

1734 M. de Berg, M. van Kreveld, and J. Snoeyink. Two- and three-dimensional point location in rectangular subdivisions. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 352–363. Springer-Verlag, 1992. [bks-ttdpl-92] *Succeeds:* bks-ttdpl-91. *Precedes:* bks-ttdpl-95.

1735 M. de Berg, M. van Kreveld, and J. Snoeyink. Two- and three-dimensional point location in rectangular subdivisions. *J. Algorithms*, 18:256–277, 1995. [bks-ttdpl-95] *Succeeds:* bks-ttdpl-92.

1736 M. de Berg, J. Matoušek, and O. Schwarzkopf. Piecewise linear paths among convex obstacles. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 505–514, 1993. [bms-plpco-93] *URL:* ftp://ftp.cs.ruu.nl/pub/RUU/CS/techreps/CS-1993/1993-20.ps.gz. *Keywords:* configuration space, motion planning, convex, robotics. *Precedes:* bms-plpco-95. *Abstract:* Let B be a set of n arbitrary (possibly intersecting) convex obstacles in $\mathbf{R}^d$. It is shown that any two points which can be connected by a path avoiding the obstacles can also be connected by a path consisting of $O(n^{(d-1)\lfloor d/2+1 \rfloor})$ segments. The bound cannot be improved below $\Omega(n^d)$. For disjoint obstacles, a $\Theta(n)$ bound is proved. By a well-known reduction, the general case result also upper bounds the complexity for a translational motion of an arbitrary convex robot among convex obstacles. In the planar case, asymptotically tight bounds and efficient algorithms are given.

1737 M. de Berg, J. Matoušek, and O. Schwarzkopf. Piecewise linear paths among convex obstacles. *Discrete Comput. Geom.*, 14:9–29, 1995. [bms-plpco-95] *Keywords:* configuration space, motion planning, convex, robotics. *Succeeds:* bms-plpco-93.

1738 M. de Berg, H. Meijer, M. Overmars, and G. Wilfong. Computing the angularity tolerance. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 331–336, 1996. [bmow-cat-96] *Precedes:* bmow-cat-98.

1739 M. de Berg, H. Meijer, M. Overmars, and G. Wilfong. Computing the angularity tolerance. *Internat. J. Comput. Geom. Appl.*, 8:467–, 1998. [bmow-cat-98] *Succeeds:* bmow-cat-96.

1740 Mark de Berg, René van Oostrum, and Mark Overmars. Simple traversal of a subdivision without extra storage. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C5–C6, 1996. [boo-stswe-96] *Cites:* af-rse-92, bkos-cge-95, egs-oplms-86, fr-cfecp-94, gc-sontr-86, gcr-acmut-77, gm-tsocc-78, pm-aiecg-90, pm-tdds-90, ZZZ.

1741 Mark de Berg and Mark Overmars, editors. *Abstracts 8th European Workshop Comput. Geom.*, volume RUU-CS-92-10. Utrecht University, 1992. [bo-ewcg-92]

1742 M. de Berg and M. Overmars. Dominance in the presence of obstacles. In *Proc. 14th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 344 of *Lecture Notes Comput. Sci.*, pages 190–201. Springer-Verlag, 1988. [bo-dpo-88] *Keywords:* domination, maximal elements, rectangular visibility.

1743 M. de Berg and M. Overmars. Hidden surface removal for c-oriented polyhedra. *Comput. Geom. Theory Appl.*, 1(5):247–268, 1992. [bo-hsrco-92] *Keywords:* hidden surface removal, c-oriented polyhedra, output-sensitive algorithms. *Succeeds:* bo-hsrap-90.

1744 M. de Berg, M. Overmars, and M. van Kreveld. Finding complete bipartite subgraphs in bipartite graphs. *Algorithms Rev.*, 1(2):79–85, 1990. [bok-fcbsb-90]

1745 M. de Berg, M. Overmars, and O. Schwarzkopf. Computing and verifying depth orders. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 138–145, 1992. [bos-cvdo-92] *Keywords:* hidden line/surface elimination, three-dimensional. *Cites:* am-rsps-91, am-dhsrr-91, as-anps-91, c-tsplt-90i, cegpsss-ccclr-90, csw-qoubs-90, b-doshs-91, bhosk-ershs-91, bo-hsrap-90, fkn-vsgpt-80, go-nasch-87, hb-cg-86, kos-ehsro-91, m-ept-91, n-tsott-86, os-oshsr-89, py-ebsph-90, pvy-osgpv-90, ZZZ.

1746 M. de Berg, M. Overmars, and O. Schwarzkopf. Computing and verifying depth orders. *sicomp*, 23:437–446, 1994. [bos-cvdo-94] *Succeeds:* bos-cvdo-92.

1747 M. de Berg and M. H. Overmars. Hidden surface removal for axis-parallel polyhedra. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 252–261, 1990. [bo-hsrap-90] *Keywords:* hidden surface removal, ray tracing. *Succeeds:* bo-hsrco-90. *Precedes:* bo-hsrco-92.

1748 M. de Berg and M. H. Overmars. Hidden surface removal for c-oriented polyhedra. Report RUU-CS-90-33, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1990. [bo-hsrco-90] *Precedes:* bo-hsrap-90.

1749 M. de Berg and O. Schwarzkopf. Cuttings and applications. Report RUU-CS-92-26, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, August 1992. [bs-ca-92] *Keywords:* cuttings, random sampling, hopcroft's problem, counting intersections, point location. *Precedes:* bs-ca-95.

1750 M. de Berg and O. Schwarzkopf. Cuttings and applications. *Internat. J. Comput. Geom. Appl.*, 5:343–355, 1995. [bs-ca-95] *Keywords:* cuttings, random sampling, segment intersection counting, Hopcroft's problem, point location. *Succeeds:* bs-ca-92.

M. de Berg. See also [156–158, 335, 828, 829, 12467].

1751 M. T. de Berg, S. Carlsson, and M. H. Overmars. A general approach to dominance in the plane. *J. Algorithms*, 13:274–296, 1992. [bco-gadp-92] *Keywords:* domination, rectangular visibility.

M. T. de Berg. See also [8322, 10502].

1752 B. Berge. Two theorems in graph theroy. *Proc. Nat. Acad. Sci. USA*, 43:842–844, 1957. [b-ttgt-57]

1753 C. Berge. *Graphs*. North-Holland, 1985. [b-g-85]

1754 C. Berge. Sur le couplage maximum d'un graphe. *C. R. Acad. Sciences, Paris*, 247:258–259, 1958. [b-slcmd-58]

1755 C. Berge and V. Chvátal, editors. *Topics on Perfect Graphs*, volume 21 of *Ann. Discrete Math.* North-Holland, 1984. [bc-tpg-84]

1756 P. Berge, Y. Pomeau, and C. Vidal. *Order within Chaos: towards a Deterministic Approach to Turbulence*. John Wiley & Sons, New York, 1984. [bpv-ocdat-84]

1757 G. Van den Bergen. A fast robust gjk implementation for collision detection of convex objects. *J. Graphics Tools*, 4(2):7–25, 1999. [v-frgic-99]

1758 Bonnie Berger, Jon Kleinberg, and Tom Leighton. Reconstructing a three-dimensional model with arbitrary errors. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 449–458, May 1996. [bkl-rtdma-96]

1759 B. Berger and J. Rompel. Simulating $(\log^c n)$-wise independence in NC. *J. ACM*, 38(4):1026–1046, 1991. [br-slwin-91]

1760 B. Berger, J. Rompel, and P. W. Shor. Efficient NC algorithms for set cover with applications to learning and geometry. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, volume 30, pages 54–59, 1989. [brs-enasc-89]

1761 B. Berger and P. Shor. Approximation algorithms for the maximum acyclic subgraph problem. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 236–243, 1990. [bs-aamas-90] *Keywords:* graph drawing.

B. Berger. See also [1195].

1762 M. Berger. *Géométrie 3. convexes et polytopes, polyèdres réguliers, aires et volumes*. Fernand Nathan, Paris, 1974. [b-g3cep-74]

1763 M. Berger. *Géométrie (vols. 1-5)*. Fernand Nathan, Paris, 1977. [b-g-77]

1764 M. Berger. *Geometry (vols. 1-2)*. Springer-Verlag, 1987. [b-g-87] *Succeeds:* b-g-77.

1765 M. Berger and B. Gostiaux. *Géométrie différentielle*. Armand Collin, 1972. [bg-gd-72]

1766 M. Berger and I. Rigoutsos. An algorithm for point clustering and grid generation. *IEEE Trans. Syst. Man Cybern.*, 21(5):1278–1286, 1991. [br-apcgg-91]

1767 R. Berger. The undecidability of the domino problem. *Memoirs Amer. Math. Soc.*, 66, 1966. [b-udp-66]

1768 O. Berkman, B. Schieber, and U. Vishkin. A fast parallel algorithm for finding the convex hull of a sorted point set. *Internat. J. Comput. Geom. Appl.*, 6:231–242, 1996. [bsv-fpafc-96]

1769 E. R. Berlekamp. On subsets with intersections of even cardinality. *Canad. Math. Bull.*, 12:363–366, 1969. [b-siec-69]

1770 J. D. Berman and K. Hanes. Volumes of polyhedra inscribed in the unit sphere e^3. *Mathematische Annalen*, 188:78–84, 1970. [bh-vpius-70]

1771 Mark Berman. Large sample bias in least squares estimators of a circular arc center and its radius. *Comput. Vision Graph. Image Process.*, 45:126–128, 1989. [b-lsbls-89]

1772 Piotr Berman. On-line searching and navigation. In Amos Fiat and Gerhard Woeginger, editors, *Online Algorithms: The State of the Art*, volume 1442 of *Lecture Notes Comput. Sci.*, pages 232–241. Springer-Verlag, 1998. [b-olsn-98] *Comments:* chapter 10 of fw-ola-98.

1773 Piotr Berman, Avrim Blum, Amos Fiat, Howard Karloff, Adi Rosen, and Michael Saks. Randomized robot navigation algorithms. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 75–84, 1996. [bbfkrs-rrna-96] *Keywords:* mobile robot, competitive ratio, shortest paths, randomized strategies, rectangular obstacles.

1774 P. Berman and B. DasGupta. Approximating the rectilinear polygon cover problems. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 229–235, 1992. [bd-arpcp-92] *Cites:* ckss-crr-81, co-srrcp-87, cr-cpih-88, f-pgslh-89, fk-acrri-84, hk-nammb-73, l-pnrh-82, mc-ivs-80, os-snhpd-83, lllmp-tddo2-79, bd-rarpc-92, bs-caisp-92, l-ocopg-85, o-mdrp-82, almss-iap-92, l-bbpcp-88, m-ncscp-78, mrs-pgocc-88, ZZZ.

1775 P. Berman and B. DasGupta. Results on approximating of the rectilinear cover problem. Technical Report CS-92-07, Pennsylvania State University, April 1992. [bd-rarpc-92]

1776 Piotr Berman and M. Karpinski. Randomized navigation to a wall through convex obstacles. Technical Report 85118-CS, Bonn University, 1994. [bk-rnwco-94]

1777 P. Berman and A. Lingas. A nearly optimal parallel algorithm for the Voronoi diagram of a convex polygon. *Theoret. Comput. Sci.*, 174:193–202, 1997. [bl-nopav-97]

1778 P. Berman and V. Ramaiyer. Improved approximations for the Steiner tree problem. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 325–334, January 1992. [br-iastp-92]

1779 P. Berman and V. Ramaiyer. Improved approximations for the Steiner tree problem. *J. Algorithms*, 17:381–408, 1994. [br-iastp-94]

1780 P. Berman and G. Schnitger. On the complexity of approximating the independent set problem. *Inform. Comput.*, 96(1):77–94, January 1992. [bs-caisp-92]

P. Berman. See also [1341,1342].

W. J. Berman. See also [10753].

1781 J. C. Bermond. Hamiltonian graphs. In L. W. Beineke and R. J. Wilson, editors, *Selected Topics in Graph Theory*. Academic Press, London, UK, 1978. [b-hg-78]

1782 M. Bern. Approximate closest-point queries in high dimensions. *Inform. Process. Lett.*, 45:95–99, 1993. [b-acpqh-93]

1783 M. Bern. Compatible tetrahedralizations. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 281–288, 1993. [b-ct-93] *Cites:* agss-ltacv-89, ae-tpss-87, be-mgot-92t, c-cpplb-84, c-oaitd-92, cegs-dwclp-92, cp-tncp-90, de-iabns-93, dk-fdpi-82, dc-chtt-91, epw-tpstd-90, e-dtdlp-92, gp-cdpb-88, hs-cpmfl-92, k-osps-83, l-tsfpp-11, rs-dttdn-92, s-udzvd-28, g-vcem-77, h-fssp-81, ZZZ.

1784 M. Bern. Faster exact algorithms for Steiner trees in planar networks. *Networks*, 20(1):109–120, 1990. [b-feast-90] *Keywords:* Steiner tree.

1785 M. Bern. Hidden surface removal for rectangles. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 183–192, 1988. [b-hsrr-88] *Precedes:* b-hsrr-90. *Cites:* cg-fc1ds-86, dsst-mdsp-86, e-ndrs-81, em-ioo-81, fmn-dgds-85, g-pahle-87i, gmpr-nrll-77, go-nasch-85, m-pst-81, m-wcohs-87, m-ceicw-86, ps-cgi-85, pvy-cavsi-88, st-pplup-86, ekz-diepq-77, wl-arrcd-85, ZZZ.

1786 M. Bern. Hidden surface removal for rectangles. *J. Comput. Syst. Sci.*, 40:49–69, 1990. [b-hsrr-90] *Succeeds:* b-hsrr-88.

1787 M. Bern. Triangulations. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 22, pages 413–428. CRC Press LLC, Boca Raton, FL, 1997. [b-t-97]

1788 M. Bern and D. Bienstock. Polynomially solvable special cases of the Steiner tree problem in planar networks. *Ann. Oper. Res.*, 33(1–4):405–418, 1991. [bb-psscs-91] *Keywords:* Steiner tree.

1789 M. Bern, L. P. Chew, D. Eppstein, and J. Ruppert. Dihedral bounds for mesh generation in high dimensions. Manuscript, ??, 1993. [bcer-dbmgh-93]

1790 Marshall Bern, Paul Chew, David Eppstein, and Jim Ruppert. Dihedral bounds for mesh generation in high dimensions. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 189–196, 1995. [bcer-dbmgh-95]

1791 M. Bern, E. D. Demaine, D. Eppstein, and B. Hayes. A disk-packing algorithm for an origami magic trick. In *Proc. Internat. Conf. Fun with Algorithms*, June 1998. [bdeh-dpaomt-98]

1792 M. Bern, E. D. Demaine, D. Eppstein, and E. Kuo. Unfoldable polyhedra. In *Proc. 11th Canad. Conf. Comput. Geom.*, pages 13–16, 1999. Full version: http://arXiv.org/abs/cs/9908003/. [bdek-up-99] *URL:* http://www.cs.ubc.ca/conferences/CCCG/elec_proc/elecproc.html.

1793 M. Bern, E. D. Demaine, D. Eppstein, E. Kuo, A. Mantler, and J. Snoeyink. Unfoldable polyhedra with convex faces. *Comput. Geom. Theory Appl.*, ??:?–?, 2001. [bdems-uptf-01]

1794 M. Bern, D. Dobkin, and D. Eppstein. Triangulating polygons without large angles. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 222–231, 1992. [bde-tpwla-92] *Precedes:* bde-tpwla-95. *Cites:* ba-acfem-76, bgr-ntp-88, b-casrd-83, beemt-eiot-92i, be-psntp-91, be-mgot-92i, beg-pgmg-90, et-ubcdt-92, etw-otama-90, e-amwt-92, gcr-acmut-77, g-eblit-75, ms-cinap-92, mv-qmgtd-92i, sdhk-lht-91, ZZZ.

1795 M. Bern, D. Dobkin, and D. Eppstein. Triangulating polygons without large angles. *Internat. J. Comput. Geom. Appl.*, 5:171–192, 1995. [bde-tpwla-95] *Keywords:* computational geometry, mesh generation, triangulation, angle condition. *Succeeds:* bde-tpwla-92.

1796 M. Bern, D. Dobkin, D. Eppstein, and R. Grossman. Visibility with a moving point of view. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 107–117, 1990. [bdeg-vmpv-90]

1797 M. Bern, D. Dobkin, D. Eppstein, and R. Grossman. Visibility with a moving point of view. *Algorithmica*, 11:360–378, 1994. [bdeg-vmpv-94] *Keywords:* visibility.

1798 M. Bern, H. Edelsbrunner, D. Eppstein, S. Mitchell, and T. S. Tan. Edge-insertion for optimal triangulations. Tech. Report EDC UILU-ENG-92-1702, Univ. Illinois, Urbana, IL, 1992. [beemt-eiot-92t] *Precedes:* beemt-eiot-93.

1799 M. Bern, H. Edelsbrunner, D. Eppstein, S. Mitchell, and T. S. Tan. Edge-insertion for optimal triangulations. In *Proc. Latin Amer. Sympos. Theoret. Informatics*, volume 583 of *Lecture Notes Comput. Sci.*, pages 46–60. Springer-Verlag, 1992. [beemt-eiot-92i] *Precedes:* beemt-eiot-93.

1800 M. Bern, H. Edelsbrunner, D. Eppstein, S. Mitchell, and T. S. Tan. Edge insertion for optimal triangulations. *Discrete Comput. Geom.*, 10(1):47–65, 1993. [beemt-eiot-93] *Keywords:* points, triangulation. *Succeeds:* beemt-eiot-92t, beemt-eiot-92i.

1801 M. Bern and D. Eppstein. Approximation algorithms for geometric problems. In Dorit S. Hochbaum, editor, *Approximation Algorithms for NP-Hard Problems*, pages 296–345. PWS Publishing Company, Boston, MA, 1997. [be-aagp-97] *Succeeds:* be-gaa-95.

1802 M. Bern and D. Eppstein. Geometric approximation algorithms, 1995. manuscript. [be-gaa-95] *Precedes:* be-aagp-97.

1803 M. Bern and D. Eppstein. Mesh generation and optimal triangulation. Tech. Report CSL-92-1, Xerox PARC, Palo Alto, CA, 1992. [be-mgot-92t] *Precedes:* be-mgot-92i.

1804 M. Bern and D. Eppstein. Mesh generation and optimal triangulation. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*, pages 23–90. World Scientific, Singapore, 1992. [be-mgot-92i] *Keywords:* survey paper, mesh generation, optimal triangulation, Steiner triangulation. *Succeeds:* be-mgot-92t. *Precedes:* be-mgot-95.

1805 M. Bern and D. Eppstein. Mesh generation and optimal triangulation. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 47–123. World Scientific, Singapore, 2nd edition, 1995. [be-mgot-95] *Keywords:* survey paper, mesh generation, optimal triangulation, Steiner triangulation. *Succeeds:* be-mgot-92i.

1806 Marshall Bern and David Eppstein. Multivariate regression depth. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 315–321, 2000. [be-mrd-00]

1807 M. Bern and D. Eppstein. Polynomial-size nonobtuse triangulation of polygons. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 342–350, 1991. [be-psntp-91] *Keywords:* triangulation, polygons. *Precedes:* be-psntp-92. *Cites:* bgr-ntp-88, beg-pgmg-90, bg-dpd-91, c-cdt-87, etw-otama-90, e-fpdtm-90, f-cfemg-72, g-dpnet-84, ll-gdtpg-86, ls-tacdt-80, ms-getcc-88, sdhk-lht-91, s-let-78, ZZZ.

1808 M. Bern and D. Eppstein. Polynomial-size nonobtuse triangulation of polygons. *Internat. J. Comput. Geom. Appl.*, 2(3):241–255, 449–450, 1992. [be-psntp-92] *Keywords:* mesh generation, triangulation, angle condition. *Succeeds:* be-psntp-91.

1809 M. Bern and D. Eppstein. Worst-case bounds for subadditive geometric graphs. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 183–188, 1993. [be-wcbsg-93] *Cites:* akt-om-84, gp-smt-68, k-hlcet-89, s-rpmbp-85, s-lbrst-91, s-wcmrs-92, ss-piets-92, s-sefnl-81, s-pwcac-90, ss-wcgmu-90, ss-wcgrs-89, u-cav-92, ZZZ.

1810 M. Bern, D. Eppstein, P. K. Agarwal, N. Amenta, P. Chew, T. Dey, D. P. Dobkin, H. Edelsbrunner, C. Grimm, L. J. Guibas, J. Harer, J. Hass, A. Hicks, C. K. Johnson, G. Lerman, D. Letscher, P. Plassmann, E. Sedgwick, J. Snoeyink, J. Weeks, C. Yap, and D. Zorin. Emerging challenges in computational topology, 1999. Report on an NSF Workshop on Computational Topology, June 11-12, Miami Beach, FL. [be-ecct-99]

1811 M. Bern, D. Eppstein, and J. Gilbert. Provably good mesh generation. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 231–241, 1990. [beg-pgmg-90] *Keywords:* VLSI design.

1812 M. Bern, D. Eppstein, and J. Gilbert. Provably good mesh generation. *J. Comput. Syst. Sci.*, 48:384–409, 1994. [beg-pgmg-94]

1813 M. Bern, D. Eppstein, L. J. Guibas, J. Hershberger, S. Suri, and J. Wolter. The centroid of points with approximate weights. In *Proc. 3rd Annu. European Sympos. Algorithms*, volume 979 of *Lecture Notes Comput. Sci.*, pages 460–472. Springer-Verlag, 1995. [beghs-cpaw-95]

1814 M. Bern, D. Eppstein, P. Plassman, and F. Yao. Horizon theorems for lines and polygons. In J. Goodman, R. Pollack, and W. Steiger, editors, *Discrete and Computational Geometry: Papers from the DIMACS Special Year*, volume 6 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 45–66. American Mathematical Society, Association for Computing Machinery, Providence, RI, 1991. [bepy-htlp-91] *Keywords:* arrangements, horizon, pseudo lines.

1815 Marshall Bern, David Eppstein, and Shan-Hua Teng. Parallel construction of quadtrees and quality triangulations. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 188–199. Springer-Verlag, 1993. [bet-pcqqt-93]

1816 M. Bern, D. Eppstein, and S.-H. Teng. Parallel construction of quadtrees and quality triangulations. *Internat. J. Comput. Geom. Appl.*, 9(6):517–532, 1999. [bet-pcqqt-99]

1817 M. Bern, D. Eppstein, and F. Yao. The expected extremes in a Delaunay triangulation. In *Proc. 18th Internat. Colloq. Automata Lang. Program.*, volume 510 of *Lecture Notes Comput. Sci.*, pages 674–685. Springer-Verlag, 1991. [bey-eedt-91i]

1818 M. Bern, D. Eppstein, and F. Yao. The expected extremes in a Delaunay triangulation. *Internat. J. Comput. Geom. Appl.*, 1:79–91, 1991. [bey-eedt-91a] *Keywords:* Delaunay triangulation, probabilistic analysis.

1819 M. Bern and J. Gilbert. Drawing the planar dual. Manuscript, 1991. [bg-dpd-91]

1820 M. Bern, D. Greene, A. Raghunathan, and M. Sudan. Online algorithms for locating checkpoints. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, pages 359–368, 1990. [bgrs-olalc-90]

1821 Marshall Bern and Barry Hayes. The complexity of flat origami. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 175–183, 1996. [bh-cfo-96] *Keywords:* NP-hardness, crease patterns, flat folding, flat foldability.

1822 M. Bern, S. Mitchell, and J. Ruppert. Linear-size nonobtuse triangulation of polygons. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 221–230, 1994. [bmr-lsntp-94] *Cites:* agss-ltacv-89, ba-acfem-76, bgr-ntp-88, b-pug-90, bs-dsp1s-80, bcer-dbmgh-93, bde-tpwla-92, be-psntp-92, be-mgot-92t, beg-pgmg-90, c-ig-61, et-ubcdt-93, f-savd-87, goy-cvdsl-93, -mrg-92, ms-cinap-92, m-rtpsl-93, m-fctwm-94, m-pabst-93, mkf-arbam-92, ps-cgi-85, r-cag-61, r-nsaq2-93, sg-cmpbf-92, sf-afem-73, t-pssug-90, v-sfepw-93, ZZZ.

1823 Marshall Bern and Paul Plassmann. Mesh generation. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 291–332. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [bp-mg-00] *Annote:* Chapter 6 of su-hcg-00.

1824 Marshall Bern and Amit Sahai. Pushing disks together – The continuous-motion case. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 119–125, 1996. [bs-pdtcm-96]

1825 Marshall Bern and Amit Sahai. Pushing disks together – The continuous-motion case. *Discrete Comput. Geom.*, 20:499–514, 1998. [bs-pdtcm-98]

M. Bern. See also [636–642, 830–832].

1826 M. W. Bern. Two probabilistic results on rectilinear Steiner trees. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 433–441, 1986. [b-tprrs-86] *Precedes:* b-tprrs-88.

1827 M. W. Bern. Two probabilistic results on rectilinear Steiner trees. *Algorithmica*, 3:191–204, 1988. [b-tprrs-88] *Succeeds:* b-tprrs-86.

1828 M. W. Bern, H. J. Karloff, P. Raghavan, and B. Schieber. Fast geometric approximation techniques and geometric embedding problems. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 292–301, 1989. [bkrs-fgatg-89] *Precedes:* bkrs-fgatg-92. *Cites:* aa-pcaap-88, bfp-aach-82, bb-gweto-87, cf-shvd-88, c-wcanh-76, c-lat-84, ft-fhtui-87, ggj-sncgp-76, gj-cigtn-79, h-aagep-89, ll-wsisa-85, py-crstp-82, ps-cgi-85, s-a-83, sy-lbcft-76, v-ghm-88, v-amwmp-89, ekz-diepq-77, ZZZ.

1829 Marshall W. Bern, Howard J. Karloff, Prabhakar Raghavan, and Baruch Schieber. Fast geometric approximation techniques and geometric embedding problems. *Theoret. Comput. Sci.*, 106(2):265–281, December 1992. [bkrs-fgatg-92] *Succeeds:* bkrs-fgatg-89.

F. Bernadini. See also [1284].

1830 J. Bernal. An expected linear 3-dimensional Voronoi diagram algorithm. Technical Report NISTIR 4340, National Inst. of Standards and Technology, Gaithersburg, MD, June 1990. [b-el3dv-90] *Keywords:* Voronoi diagram, expected complexity, expected linear. *Abstract:* Let S be a set of n sites chosen independently from a uniform distribution in a cube in 3-dimensional Euclidean space. In this paper, an expected O(n) algorithm for constructing the Voronoi diagram for S together with numerical results obtained from an implementation of the algorithm are presented.

1831 J. Bernal. Bibliographic notes on Voronoi diagrams. Technical report, National Institute of Standards and Technology, Gaithersburg, MD 20899, 1992. [b-bnvd]

1832 J. Bernal. Constructing Delaunay triangulations for sets constrained by line segments. Technical Report NIST/TN-1252, Mathematical Analysis Div., National Inst. of Standards and Technology (NEL), Gaithersburg, MD, September 1988. [b-cdtsc-88] *Keywords:* Delaunay triangulations, ntiscomnbs. *Abstract:* In the paper, the authors propose a simple algorithm for constructing a Delaunay triangulation for a finite set of points in the plane constrained by a finite collection of line segments. The algorithm constructs first a Delaunay triangulation for the set, and then generates from it a sequence of triangulations as each line segment is incorporated into the previously obtained triangulation. An expected time analysis shows the algorithm to be linear if the number of line segments is kept constant.

1833 J. Bernal. Expected $O(N)$ and $O(N^{4/3})$ algorithms for constructing Voronoi diagrams in two and three dimensions. Technical Report NBSIR-87/3679, National Bureau of Standards (NEL), Gaithersburg, MD. Mathematical Analysis Div., November 1987. [b-eooac-87] *Keywords:* Voronoi diagrams, computational geometry, computational complexity, two dimensional, three dimensional, ntiscomnbs. *Abstract:* Bentley, Weide and Yao have proposed an expected O(N) cell technique for computing Voronoi diagrams in two dimensions that does not generalize readily to three. In this paper their work is further developed and generalized to produce expected O(N) and O(N sup 4/3) algorithms for constructing Voronoi diagrams in two and three dimensions, respectively. Computational experience is presented for the algorithm in two dimensions.

1834 J. Bernal. On the expected complexity of the 3-dimensional Voronoi diagram. Technical Report NISTIR 4321, National Inst. of Standards and Technology, Gaithersburg, MD, May 1990. [b-ec3dv-90] *Keywords:* Voronoi diagram, expected complexity, expected linear. *Abstract:* Let S be a set of n sites chosen independently from a uniform distribution in a cube in 3-dimensional Euclidean space. In this paper, work by Bentley, Weide and Yao is extended to show that the Voronoi diagram for S has an expected O(n) number of faces. A consequence of the proof of this result is that the Voronoi diagram for S can be constructed in expected O(n) time.

1835 J. D. Bernal and J. L. Finney. II. geometry of random packing of hard spheres. *Discussions of the Faraday Society*, 43:62–69, 1967. [bf-2grph-67] *Annote:* VD (in 3D) used as model of liquid. Calc stats, number of neighbours, face distributions. Algorithm: $O(n^4)$ all combinations of four centres near target point.

1836 M. A. Bernard. On the automated drawing of graphs. In *Proc. 3rd Caribbean Conf. on Combinatorics and Computing*, pages 43–55, 1981. [b-adg-81] *Keywords:* graph drawing.

1837 F. Bernardini and C. Bajaj. Sampling and reconstructing manifolds using alpha-shapes. Technical Report CSD-TR-97-013, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1997. [bb-srmua-97t]

1838 F. Bernardini, C. Bajaj, J. Chen, and D. Schikore. Automatic reconstruction of 3D CAD models from digital scans. Technical Report CSD-TR-97-012, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1997. [bbcs-ar3dc-97]

1839 F. Bernardini, C. Bajaj, J. Chen, and D. Schikore. Triangulation-based object reconstruction methods. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 481–484, 1997. [bbcs-tborm-97] *Keywords:* video review. *Cites:* bbx-arssf-95, bbx-rsfsu-97, bcx-mcap-95, bs-ebrtm-96, bb-srmua-97t, bbcs-ar3dc-97, b-gstds-84, em-tdas-94, ZZZ.

1840 Fausto Bernardini and Chandrajit L. Bajaj. Sampling and reconstructing manifolds using alpha–shapes. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 193–198, 1997. [bb-srmua-97]

1841 F. Bernardini, C. L. Bajaj, J. Chen, and D. R. Schikore. Automatic reconstruction of 3D CAD models from digital scans. *Internat. J. Comput. Geom. Appl.*, 9:327–369, 1999. [bbcs-ar3dc-99]

1842 Fausto Bernardini, Vincenzo Ferrucci, and Alberto Paoluzzi. Computation of free configuration space by solid modelling techniques. In *Abstracts 8th European Workshop Comput. Geom.*, pages 13–16. Utrecht University, 1992. [bfp-cfcss-92]

1843 F. Bernardini, J. Mittleman, H. Rushmeir, C. Silva, and G. Taubin. The ball-pivoting algorithm for surface reconstruction. *IEEE Transactions on Visualization and Computer Graphics*, 5(4), 1999. [bmrst-bpasr-99]

F. Bernardini. See also [1253, 10578].

1844 F. Bernhart and P. C. Kainen. The book thickness of a graph. *J. Combin. Theory*, Ser. B 27:320–331, 1979. [bk-btg-79]

1845 F. C. Bernstein, T. F. Koetzle, G. J. B. Williams, E. F. Meyer, Jr., M. D. Brice, J. R. Rodgers, O. Kennard, T. Shimanouchi, and M. Tasumi. The protein data bank: A computer based archival file for macromolecular structure. *J. Molecular Biology*, 112:535–542, 1977. [bkwmbrkst-pdbcb-77]

F. C. Bernstein. See also [67].

1846 H. J. Bernstein. Determining the shape of a convex n-sided polygon by using $2n + k$ tactile probes. *Inform. Process. Lett.*, 22:255–260, 1986. [b-dscns-86]

1847 H. J. Bernstein. Determining the shape of a convex n-sided polygon using $2n+k$ tactile probes. Technical Report 125, Courant Inst. Math. Sci., New York Univ., New York, NY, June 1984. Robotics Report No. 29. [b-dscns-84]

1848 R.-P. Berretty, K. Goldberg, M. Overmars, and F. Van der Stappen. On fence design and the complexity of push plans for orienting parts. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 21–29, 1997. [bgos-fdcpp-97] *Cites:* aks-cdorp-95, ahlm-spfoj-96, am-ppopp-92, afkmnsu-ampcb-92, bbg-smutv-95, bdm-ulbpv-96, bpg-cfpa-93, ci-copod-95, clr-ia-90, b-lsbsp-95, em-esm-88, g-oppws-93, kos-ehsro-92, lm-spmcp-96, m-mgpo-82, mpssw-ftdlm-94, n-aaadp-86, os-rsplf-96, ps-mpsw-88, ps-prmsw-88, rg-mapp-95, sgo-gecmp-96, sho-cfsrm-93, so-mpafo-94, wgpb-cadpf-96, ZZZ.

1849 Robert-Paul Berretty, Ken Goldberg, Mark H. Overmars, and A. Frank van der Stappen. Computing fence designs for orienting parts. *Comput. Geom. Theory Appl.*, 10:249–262, 1998. [bgos-cfdop-98] *Succeeds:* bgos-fdcpp-97.

1850 R.-P. Berretty, M. Overmars, and A. F. van der Stappen. Dynamic motion planning in low density environments. Report UU-CS-1997-20, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1997. [bos-dmpld-97b]

1851 R.-P. Berretty, M. Overmars, and A. F. van der Stappen. Dynamic motion planning in low obstacle density environments. In *Proc. Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 3–16. Springer-Verlag, 1997. [bos-dmpld-97]

1852 Jonathan Berry, Nathaniel Dean, Mark Goldberg, Gregory Shannon, and Steven Skiena. Graph drawing and manipulation with LINK. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 425–437. Springer-Verlag, 1997. [bdgss-gdml-97] *Keywords:* graph drawing.

1853 Joseph K. Berry. *Beyond Mapping: Concepts, Algorithms, and Issues in GIS.* GIS World, Fort Collins, CO, 1993. [b-bmcai-93] *ISBN:* 0-9625063-6-2.

1854 Patrice Bertin, Didier Roncin, and Jean Vuillemin. Introduction to programmable active memories. Research Report 3, Digital Paris Research Laboratory, June 1989. [brv-ipam-89]

Patrice Bertin. See also [12028].

1855 P. Bertolazzi, R. F. Cohen, G. Di Battista, R. Tamassia, and I. G. Tollis. How to draw a series-parallel digraph. Technical Report UTDCS-9-92, The University of Texas at Dallas, 1992. [bcdtt-hdspd-92t] *Succeeds:* bcdtt-hdspd-92, bdtt-hdspd-91. *Precedes:* bcdtt-hdspd-94, bcdtt-hdspd-92.

1856 P. Bertolazzi, R. F. Cohen, G. Di Battista, R. Tamassia, and I. G. Tollis. How to draw a series-parallel digraph. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 272–283. Springer-Verlag, 1992. [bcdtt-hdspd-92] *Keywords:* graph drawing. *Succeeds:* bdtt-hdspd-91,bcdtt-hdspd-92t. *Precedes:* bcdtt-hdspd-94.

1857 P. Bertolazzi, R. F. Cohen, G. Di Battista, R. Tamassia, and I. G. Tollis. How to draw a series-parallel digraph. *Internat. J. Comput. Geom. Appl.*, 4:385–402, 1994. [bcdtt-hdspd-94] *Keywords:* graph drawing, planar, upward. *Succeeds:* bcdtt-hdspd-92, bdtt-hdspd-91, bcdtt-hdspd-92t.

1858 P. Bertolazzi and G. Di Battista. On upward drawing testing of triconnected digraphs. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 272–280, 1991. [bd-udttd-91] *Keywords:* graph drawing, planar graph representation. *Cites:* b-g-85, bl-tcopi-76, cnao-laepg-85, fr-dfscp-82, dlr-bgudp-90, dt-aprad-88, dt-ipt-89, dtt-arsdd-89, et-adgab-89, e-ga-79, ht-ept-74, hl-updss-91, jnr-dippl-87, k-fpos-87, kr-pl-75, lec-aptg-67, lp-mt-86, nc-pgta-88, p-plpg-76, ru-roptc-88, s-oamnf-80, t-eggmn-87, t-paog-89, tm-dpp-77, ZZZ.

1859 Paola Bertolazzi, Giuseppe Di Battista, and Walter Didimo. Computing orthogonal drawings with the minimum number of bends. In Frank Dehne, Andrew Rau-Chaplin, Jörg-Rüdiger Sack, and Roberto Tamassia, editors, *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 331–344. Springer-Verlag, 1997. [bdd-codmn-97]

1860 Paola Bertolazzi, Giuseppe Di Battista, and Walter Didimo. Quasi-upward planarity. In S. H. Whitesides, editor, *Graph Drawing (Proc. GD '98)*, volume 1547 of *Lecture Notes Comput. Sci.*, pages 15–29. Springer-Verlag, 1998. [bdd-qup-98] *Keywords:* graph drawing, upward.

1861 P. Bertolazzi, G. Di Battista, and G. Liotta. Parametric graph drawing. Technical Report 6/67, IASI–CNR, Rome, Italy, 1992. [bdl-pgd-92] *Keywords:* graph drawing.

1862 P. Bertolazzi, G. Di Battista, and G. Liotta. Parametric graph drawing. *IEEE Trans. Softw. Eng.*, 21(8):662–673, 1995. [bdl-pgd-95] *Keywords:* graph drawing, system.

1863 P. Bertolazzi, G. Di Battista, G. Liotta, and C. Mannino. Upward drawings of triconnected digraphs. *Algorithmica*, 6(12):476–497, 1994. [bdlm-udtd-94] *Keywords:* graph drawing, upward, planar.

1864 P. Bertolazzi, G. Di Battista, C. Mannino, and R. Tamassia. Optimal upward planarity testing of single-source digraphs. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 37–48. Springer-Verlag, 1993. [bdmt-oupts-93]

1865 P. Bertolazzi, G. Di Battista, C. Mannino, and R. Tamassia. Optimal upward planarity testing of single-source digraphs. *SIAM J. Comput.*, 27(1):132–169, 1998. [bdmt-oupts-98] *Keywords:* graph drawing, upward, planar.

1866 P. Bertolazzi, G. Di Battista, R. Tamassia, and I. G. Tollis. How to draw a series-parallel digraph, 1991. manuscript. [bdtt-hdspd-91] *Precedes:* bcdtt-hdspd-92, bcdtt-hdspd-94, bcdtt-hdspd-92t.

1867 P. Bertolazzi, C. Guerra, and S. Salza. A parallel algorithm for the visibility problem inside a simple polygon. In *??*, volume 399 of *Lecture Notes Comput. Sci.*, pages 65–71. 1989. [bgs-pavpi-89] *Keywords:* parallel computation, visibility.

1868 P. Bertolazzi, S. Salza, and C. Guerra. A parallel algorithm for the visibility problem from a point. *J. Parallel Distrib. Comput.*, 9(1):11–14, 1990. [bsg-pavpp-90] *Keywords:* parallel computation, visibility.

P. Bertolazzi. See also [1547, 3425].

1869 M. Bertolotto, E. Bruzzone, and L. De Floriani. Acyclic hierarchical cell complexes. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 279–284, 1993. [bbd-ahc-93] *Cites:* fp-htbmt-92, mrl-tdugg-91, w-vomp-92,.

1870 A. A. Bertossi. Parallel circle-cover problem. *Inform. Process. Lett.*, 27:133–139, 1988. [b-pccp-88] *Keywords:* parallel computation, circle, covering.

1871 C. Bertram-Kretzberg, T. Hofmeister, and H. Lefmann. An algorithm for Heilbronn's problem. *SIAM J. Comput.*, 30:383–390, 2000. [bhl-ahp-00]

1872 Y. Bertrand and J.-F. Dufourd. Algebraic specification of a 3D-modeler based on hypermaps. *CVGIP: Graph. Models Image Process.*, 56:29–60, 1994. [bd-asmbh-94]

1873 D. P. Bertsekas. *Constrained Optimization and Lagrange Multiplier Methods.* Academic Press, New York, NY, 1982. [b-colmm-82]

1874 D. P. Bertsekas and J. N. Tsitsiklis. *Parallel and distributed Computation: Numerical Methods.* Prentice Hall, Englewood Cliffs, NJ, 1989. [bt-pdcnm-89]

1875 D. J. Bertsimas and M. X. Goemans. On the parsimonious property of connectivity problems. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 388–396, 1990. [bg-ppcp-90]

1876 D. Bertzimas. Worst-case examples for the spacefilling curve heuristics for the Euclidean Travelling Salesman Problem. *Oper. Res. Lett.*, 8(5):241–244, 1989. [b-wcesc-89] *Keywords:* optimization.

1877 J. Besag. Spatial interaction and the statistical analysis of lattice systems. *J. Roy. Statist. Soc. Ser. B*, 36:192–236, 1974. [b-sisal-74]

1878 G. M. Beshers and R. H. Campbell. Maintained and constructor attributes. In *Proc. ACM Symp. on Language Issues in Programming Environments*, pages 34–42, 1985. [bc-mca-85]

1879 A. S. Besicovitch. On Kakeya's problem and a similar one. *Mathematische Zeitschrift*, 27:312–320, 1928. [b-kpso-28]

1880 N. M. Beskin. *Images of geometric solids.* Mir Publishers, Moscow, 1985. [b-igs-85]

1881 P. J. Besl and R. C. Jain. Three-dimensional object recognition. *ACM Comput. Surv.*, 17:75–154, 1985. [bj-tdor-85]

1882 S. N. Bespamyathnikh. An efficient algorithm for the three-dimensional diameter problem. *Discrete Comput. Geom.*, 25:235–255, 2001. [b-eatdd-01]

1883 S. N. Bespamyathnikh. Constructing minimum spanning trees in R^k_∞ and triangulation of the k-cube. manuscript. [b-cmstt-]

1884 Sergei Bespamyatnikh. An efficient algorithm for enumeration of triangulations. 10th Annual Fall Workshop on Computational Geometry. http://www.cs.ubc.ca/~besp/cgw.ps.gz, 2000. [b-eaet-00]

1885 S. Bespamyatnikh. An efficient algorithm for the three-dimensional diameter problem. *Discrete Comput. Geom.*, 25(2):235–255, 2000. [b-eatddp-00]

1886 Sergei Bespamyatnikh. Efficient algorithm for finding 2 largest empty circles. In *Abstracts 15th European Workshop Comput. Geom.*, pages 37–38. INRIA Sophia-Antipolis, 1999. [b-eaf2l-99]

1887 S. Bespamyatnikh, B. Bhattacharya, M. Keil, D. Kirkpatrick, and M. Segal. Efficient algorithms for centers and medians in interval and circular-arc graphs. *Networks*, ??, 2002. to appear. [bbkks-eacm-01]

1888 S. Bespamyatnikh, K. Kedem, M. Segal, and A. Tamir. Optimal facility location under various distance functions. *Internat. J. Comput. Geom. Appl.*, 10:523–534, 2000. [bkst-oflvd-00]

1889 S. Bespamyatnikh, D. Kirkpatrick, and J. Snoeyink. Generalizing ham sandwich cuts to equitable subdivisions. *Discrete Comput. Geom.*, 24(4):605–622, 2000. [bds-ghsces-00]

1890 Sergei Bespamyatnikh and Michael Segal. Covering a set of points by two axis–parallel boxes. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 33–38, 1997. [bs-cspta-97]

1891 S. Bespamyatnikh and J. Snoeyink. Queries with segments in Voronoi diagrams. *Comput. Geom. Theory Appl.*, 16(1):23–33, 2000. [bs-qsvd-00]

1892 Sergei N. Bespamyatnikh. An efficient algorithm for the three-dimensional diameter problem. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 137–146, 1998. [b-eatdd-98]

1893 Sergei N. Bespamyatnikh. An optimal algorithm for closest pair maintenance. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 152–161, 1995. [b-oacpm-95] *Keywords:* dynamic closest pair. *Cites:* am-annqf-93, amnsw-oaann-94, b-lbact-83, bst-bst-85, bs-dcms-76, bet-pcqqt-93, b-rasdc-94, ck-dmdps-92, ck-adcpn-95, cpt-uadpl-93, ct-ccgtd-93, grss-rdsdc-93i, grss-sracp-93, ks-ntead-94, ls-ekcpo-92i, ps-cgi-85, s-sisie-91, sh-cpp-75, s-dsadc-93, ss-oaolc-92, sss-oaolc-92, st-dsdt-83, s-drpla-91, s-mmdpsl-91a, s-mmdpsp-92a, s-ntsdc-90, v-oaann-86, v-oaann-89, ZZZ.

1894 S. N. Bespamyatnikh. An optimal algorithm for closest-pair maintenance. *Discrete Comput. Geom.*, 19:175–195, 1998. [b-oacpm-98]

1895 S. N. Bespamyatnikh. An optimal algorithm for dynamic post-office problem in R_1^2 and related problems. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 101–106, 1996. [b-oadpo-96]

1896 S. N. Bespamyatnikh. Dynamic algorithms for approximate neighbor searching. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 252–257, 1996. [b-daans-96]

1897 S. N. Bespamyatnikh. On constructing minimum spanning trees in R_1^k. *Algorithmica*, 18:524–529, 1997. [b-ocmst-97]

1898 S. N. Bespamyatnikh. The region approach for some dynamic closest-point problems. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 75–80, 1994. [b-rasdc-94] *Keywords:* region approach, dynamic maintenance, data structures. *Cites:* b-cmstt-, c-fadsi-88, gbt-srtgp-84, ks-ntead-, ls-ekcpo-92i, lw-dsdrq-82, s-eis-92, s-dsadc-93, s-mmdpsl-91a, s-mmdpsp-92a, s-ntsdc-90, w-mstpt-87, y-cmstk-82, hy-t-61, ZZZ.

1899 Margrit Betke, Ronald L. Rivest, and Mona Singh. Piecemeal learning of an unknown environment. In *Proc. 6th ACM Conf. Comput. Learning Theory*, pages 277–286, July 1993. [brs-plue-93]

1900 Margrit Betke, Ronald L. Rivest, and Mona Singh. Piecemeal learning of an unknown environment. *Machine Learning*, 18(2–3):231–254, 1995. [brs-plue-95] *Succeeds:* brs-plue-93.

1901 V. Betke and P. McMullen. Lattice points in lattice polyhedra. *Monatsch. Math.*, 99(4):253–265, 1985. [bm-lplp-85] *Keywords:* discrete geometry, polyhedra.

1902 D. Beus and D. Crockett. Automated production of 1 : 24,000 scale quadrangle maps. In *Proc. 1994 ASPRS/ACSM Annual Convention and Exposition*, volume 1, pages 94–99, 1994. [bc-ap1sq-94]

1903 H. Bez and J. Edwards. Distributed algorithm for the planar convex hull problem. *Comput. Aided Design*, 22(2):81–86, 1990. [be-dapch-90] *Keywords:* convex hull, parallel computation.

1904 Andras Bezdek. On optimal route planning evading cubes in the three space. *Beiträge zur Algebra und Geometrie*, ??, 1997. [b-orect-97] *Abstract:* Let $\mathcal{P}$ be a finite arrangement of non-overlapping open cubes with side-lengths not exceeding 1 in the 3-dimensional euclidean space. Let S and T be two points lying outside the open cubes. Assume one needs to find a short path emanating from S and terminating at T avoiding the cubes of $\mathcal{P}$ under the restriction that the cubes are not known prior to the search. In fact the positions and the side-lengths of the cubes become known to the searcher as the cubes are contacted. We give an algorithm to construct a path of length less than $\frac{3}{2}d+3\sqrt{3}\log d+5$, where $d > 3\sqrt{3}$ denotes the distance between S and T.

1905 A. Bezdek. On the density of dual circle coverings. *Geom. Dedicata*, 33(2):227–238, 1990. [b-ddcc-90] *Keywords:* arrangements of circles, Sylvester problem.

1906 A. Bezdek and K. Bezdek. When it is possible to translate a convex polygon into another one? *Stud. Sci. Math. Hungary*, 21:337–342, 1986. [bb-wiipt-86] *Keywords:* convex polygon, containment.

1907 A. Bezdek, K. Bezdek, and T. Bisztriczky. On illumination in the plane by line segments. *Geom. Dedicata*, 41(1):39–50, 1992. [bbb-ipls-92] *Keywords:* visibility.

1908 A. Bezdek, K. Bezdek, and T. Bisztriczky. On Krasnosselsky-type illumination problems. Research Paper 676, Univ. of Calgary, Calgary, Canada, July 1989. [bbb-ktip-89]

1909 A. Bezdek, K. Bezdek, and E. Makai. Interior points of the convex hull of few points in E^d. *Monatsh. Math.*, 111(3):181–186, 1991. [bbm-ipchf-91] *Keywords:* convex hull, d-dimensional.

1910 A. Bezdek and W. Kuperberg. Placing and moving spheres in the gaps of a cylinder packing. Technical Report, Dept. of Math, Cornell Univ, ?? [bk-pmsgc-??] *Keywords:* cylinder packing, closeness, motion planning.

1911 A. Bezdek, W. Kuperberg, and E. Makai. Maximum density space packing with parallel strings of spheres. *Discrete Comput. Geom.*, 6:277–283, 1991. [bkm-mdspp-91]

1912 K. Bezdek. Hadwiger-Levi's covering problem revisited. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 199–233. Springer-Verlag, 1993. [b-hlcpr-93] *Keywords:* survey paper, discrete geometry, covering by homothets, illumination.

1913 Károly Bezdek. Improving Roger's upper bound for the density of unit ball packings in Euclidean d-space for all $d \geq 8$. In *Abstracts 17th European Workshop Comput. Geom.*, pages 191–194. Freie Universität Berlin, 2001. [b-irubd-01]

1914 K. Bezdek. The problem of illumination of the boundary of a convex body by affine subspaces. *Mathematika*, 38(2):362–375, 1991. [b-pibcb-91] *Keywords:* visibility, convex, polyhedra.

K. Bezdek. See also [1906–1909].

1915 M. Bezem and J. van Leeuwen. On estimating the complexity of logarithmic decompositions. *Inform. Process. Lett.*, 26(6):321–324, 1988. [bl-ecld-88]

1916 P. Bezier. *Numerical Control - Mathematics and Aplications.* John Wiley & Sons, London, UK, 1972. [b-ncma-72]

1917 J. Bhadury and R. Chandrasekaran. Finding the set of all minimal nested convex polygons. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 26–31, 1996. [bc-fsamn-96]

1918 J. Bhadury, V. Chandru, A. Maheshwari, and R. Chandrasekaran. Art gallery problems for convex nested polygons. *INFORMS J. Comput.*, 9(1):100–110, 1997. [bcmc-agpcn-97]

1919 D. Bhagavathi, V. Bokka, H. Gurla, S. Olariu, J. L. Schwing, I. Stojmenović, and J. Zhang. Time-optimal visibility-related algorithms on meshes with multiple broadcasting. In *Proc. 1993 Internat. Conf. Application-Specific Array Processors, Venice, Italy*, page ??, October 1993. [bbgossz-tovra-93] *Keywords:* parallel computation. *Comments:* to appear.

1920 D. Bhagavathi, P. Looges, S. Olariu, J. L. Schwing, and J. Zhang. Fast selection algorithms on meshes with multiple broadcasting. In *Proc. Internat. Conf. Parallel Process.*, 1992. [blosz-fsamb-92]

1921 D. Bhagavathi, S. Olariu, J. L. Schwing, W. Shen, L. Wilson, and J. Zhang. Convexity problems on meshes with multiple broadcasting. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 365–370, 1992. [bosswz-cpmmb-92] *Keywords:* convex polygons, meshes with muliple broadcasting, diameter, enclosing rectangle, inscribed triangle, time-optimal algorithms, image processing, computer vision. *Cites:* cdr-ultbp-86, ds-gmmmc-79, dh-pcsa-73, fs-dmaer-75, l-ipaaa-92, l-spcsa-83, pl-pdavs-88, ps-cgi-85, rk-dpp-82, t-mss-85, ag-hpc-90, bb-cv-82, blosz-fsamb-92, bps-aamv-89, kr-icmmb-89, losz-sema-, l-cvdmc-85, ml-cascv-89, osz-tosam-92, p-cg-78, pr-apmb-87, v-mvavi-91, v-spa-91, ZZZ.

1922 D. Bhagavathi, S. Olariu, W. Shen, and L. Wilson. A time-optimal multiple search algorithm on enhanced meshes, with applications. Technical Report TR-092-08, Department of Computer Science, Old Dominion University, 1992. [bosw-tomsa-92t] *Precedes:* bosw-tomsa-92.

1923 D. Bhagavathi, S. Olariu, W. Shen, and L. Wilson. A time-optimal multiple search algorithm on enhanced meshes, with applications. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 359–364, 1992. [bosw-tomsa-92] *Succeeds:* bosw-tomsa-92t. *Cites:* l-ipaaa-92, tk-smcpc-77, a-obfma-86, am-pbs-90, bosw-tomsa-92t, b-fmapg-84, ml-cascv-89.

1924 Praveen Bhaniramka, Rephael Wenger, and Roger Crawfis. Isosurfacing in higher dimensions. In *Proceedings of Visualization 2000*, pages 267–273, 2000. [bwc-ihd-00]

1925 S. Bhanji, H. C. Purchase, R. F. Cohen, and M. James. Validating graph drawing aesthetics: A pilot study. Technical Report 336, University of Queensland, Department of Computer Science, 1995. [bpcj-vgdaa-95] *Keywords:* graph drawing, aesthetics, human-computer interaction.

1926 S. K. Bhaskar, A. Rosenfeld, and A. Y. Wu. Parallel processing of regions represented by linear quadtrees. *Comput. Vision Graph. Image Process.*, 42(3):371–380, 1988. [brw-pprrl-88] *Keywords:* quad trees, parallel computations, digital geometry.

S. K. Bhaskar. See also [13702].

1927 V. Bhaskaran, B. K. Natarajan, and K. Konstantinides. Optimal piecewise-linear compression of images. In *Data Compression Conference*. IEEE Press, 1993. [bnk-oplci-93]

1928 J. Bhasker and S. Sahni. A linear algorithm to find a rectangular dual of a planar triangulated graph. *Algorithmica*, 3:247–278, 1988. [bs-lafrd-88] *Keywords:* graph drawing.

1929 Dinesh Bhatia. Improved algorithms for two dimensional grid routing. In *Proc. 18th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, page ??, 1992. [b-iatdg-92]

1930 Randeep Bhatia, Sudipto Guha, Samir Khuller, and Yoram J. Sussmann. Facility location with dynamic distance functions. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 23–34. Springer-Verlag, 1998. [bgks-flddf-98]

1931 R. P. Bhatia and K. L. Lawrence. Two-dimensional finite element mesh generation based on stripwise automatic triangulation. *Comput. Struct.*, 36(2):309–319, 1990. [bl-tdfem-90] *Keywords:* two-dimensional finite element mesh, finite element mesh generation, stripwise automatic triangulation, central mesh generation, laplacian smoothing. *Annote:* Advancing front scheme. Tri that maximizes A/P^2 is chosen. *Abstract:* A new mesh generator, capable of discretizing arbitrary, two-dimensional, multiply connected domains into triangles with a prescribed spatial density, has been developed. The technique is based on stripwise automatic triangulation. The triangulation strategy has been enhanced using two heuristics. The first is a method to temporarily reorient a region before submitting it for generation. The second is a technique to find and repair 'omitted patches' near sharply curved boundaries. Despite employing a set of heuristics, the resulting scheme is versatile, robust, and demonstrates a near linear growth rate. (Author abstract) 17 Refs.

P. C. P. Bhatt. See also [9111, 10078, 10079, 11672].

1932 S. Bhatt, F. Chung, F. Leighton, and A. Rosenberg. Optimal simulations of tree machines. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 274–282, 1986. [bclr-ostm-86]

1933 S. Bhatt and S. Cosmadakis. The complexity of minimizing wire lengths in VLSI layouts. *Inform. Process. Lett.*, 25:263–267, 1987. [bc-cmwlv-87] *Keywords:* graph drawing.

1934 S. N. Bhatt and F. T. Leighton. A framework for solving VLSI graph layout problems. *J. Comput. Syst. Sci.*, 28:300–343, 1984. [bl-fsvgl-84] *Succeeds:* l-lsvwi-82.

V. Bhatt. See also [2140].

1935 B. Bhattacharya. An algorithm for computing order k Voronoi diagrams in the plane. Report Tech. Rep. 83-9, Comput. Sci. Dept., Simon Fraser Univ., 1983. [b-acokv-83]

1936 B. Bhattacharya. Worst-case analysis of a convex hull algorithm. Report Tech. Rep., Comput. Sci. Dept., Simon Fraser Univ., 1982. [b-wcach-82]

1937 Binay Bhattacharya and Robert Benkoczi. On computing the optimal bridge between two convex polygons. *Inform. Process. Lett.*, 79:215–221, 2001. [bb-cobbt-01]

1938 B. Bhattacharya, J. Czyzowicz, P. Egyed, G. Toussaint, I. Stojmenović, and J. Urrutia. Computing shortest transversals of sets. Technical Report SOCS 90.23, McGill Univ., Montreal, PQ, 1990. [bcetsu-csts-90]

1939 B. Bhattacharya, J. Czyzowicz, P. Egyed, G. Toussaint, I. Stojmenović, and J. Urrutia. Computing shortest transversals of sets. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 71–80, 1991. [bcetsu-csts-91] *Keywords:* stabbing. *Precedes:* bcetsu-csts-92. *Cites:* ab-eact-87, ad-ahdsp-90, arw-lbls-89, bl-dicp-83, bt-cst-90t, bet-csdix-, b-gtfga-80, dgk-htir-63, d-ltatt-84, e-cedbt-85, e-ftssg-85, eg-tsa-86, egs-ueplf-89, emprww-sls-82, ew-spdtl-89, ew-ospdc-91, gpw-gtt-91, h-fuenl-89, hiir-wolla-89, k-sades-91t, m-ltalp-83, mt-fmvdb-85, o-olafs-81, ol-mcp-81, s-cesl-85, v-cbrdf-87, ZZZ.

1940 B. Bhattacharya, J. Czyzowicz, P. Egyed, G. Toussaint, I. Stojmenović, and J. Urrutia. Computing shortest transversals of sets. *Internat. J. Comput. Geom. Appl.*, 2(4):417–442, 1992. [bcetsu-csts-92] *Keywords:* computational geometry, shortest transversal, envelope, butterfly polygon. *Succeeds:* bcetsu-csts-91.

1941 B. Bhattacharya, P. Egyed, and G. Toussaint. Computing the wingspan of a butterfly. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 88–91, 1991. [bet-cwb-91] *Cites:* agt-vbtes-86, bkt-dsvp-89, bt-cst-91a, bcetsu-csts-91, cd-icott-87, dk-ladsc-85, e-cedbt-85, mt-fmvdb-85, ZZZ.

1942 Binay Bhattacharya and Hossam El-Gindy. Biased search and k-point clustering. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 141–146, 1997. [be-bskpc-97]

1943 B. Bhattacharya, H. Everett, and G. Toussaint. A counterexample to a dynamic algorithm for convex hulls of line arrangements. *Pattern Recogn. Lett.*, 12(3):145–147, 1991. [bet-cdach-91] *Keywords:* errata, convex hull.

1944 B. Bhattacharya and S. K. Ghosh. Characterizing LR-visibility polygons and related problems. *Comput. Geom. Theory Appl.*, 18:19–36, 2001. [bg-clvpr-01]

1945 B. Bhattacharya, D. G. Kirkpatrick, and G. T. Toussaint. Determining sector visibility of a polygon. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 247–254, 1989. [bkt-dsvp-89] *Cites:* ab-eact-87, aw-alts-87, aw-plts-88, at-oadvp-81, bl-dicp-83, b-lbact-83, e-ftssg-85, eow-gfcs-83, e-hdpa-85, emprww-sls-82, et-eaide-85, g-ct-58, hv-splsp-49, k-dwvsp-88, l-tcctc-80, ma-lafch-79, mt-rltcp-87, o-olafs-81, r-dcikc-88a, rs-sp-77, ss-oadwv-86, st-ccssp-88, ta-chapi-82, t-ccu-84a, ZZZ.

1946 Binay Bhattacharya and Asish Mukhopadhyay. A linear time algorithm for computing the minimum perimeter triangle enclosing a convex polygon. In *Abstracts 17th European Workshop Comput. Geom.*, pages 43–47. Freie Universität Berlin, 2001. [bm-ltacm-01]

1947 B. Bhattacharya and T. Shermer. Polygonal separators and digital shape recognition. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 74–77, 1990. [bs-psdsr-90] *Cites:* b-cspps-88, dr-clp-80, k-dcscp-82, ka-dd-84, na-dc-84, na-digp-85, na-ds-90, ol-mcp-81, t-stc-88, ZZZ.

1948 B. Bhattacharya and G. Toussaint. Computing minimal spanning covers of sets. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 24, 1989. [bt-cmscs-89]

1949 B. Bhattacharya and G. Toussaint. Computing shortest transversals. Technical Report SOCS 90.6, School of Computer Science, McGill University, 1990. [bt-cst-90t] *Keywords:* stabbing. *Comments:* revised April 1991.

1950 B. Bhattacharya and G. Toussaint. Computing shortest transversals. In *Proc. 18th Internat. Colloq. Automata Lang. Program.*, volume 510 of *Lecture Notes Comput. Sci.*, pages 649–660. Springer-Verlag, 1991. [bt-cst-91i] *Keywords:* stabbing.

1951 B. Bhattacharya and G. Toussaint. Computing shortest transversals. *Computing*, 46(3):93–119, 1991. [bt-cst-91a] *Keywords:* stabbing, line fitting. *Annote:* of n given line segments in the plane in $O(n \log^2 n)$ time, and related problems.

B. Bhattacharya. See also [1887, 9775, 9926].

Bhargab B. Bhattacharya. See also [10038].

1952 B. K. Bhattacharya. An efficient on-line Chebyshov approximation algorithm for a finite planar pointset. In *Proc. Allerton Conf. Commun. Control Comput.*, volume 1, pages 107–108, 1988. [b-eolca-88] *Keywords:* line fitting, points, optimization.

1953 B. K. Bhattacharya. Application of computational geometry to pattern recognition problems. Technical Report 82-3, Dept. Comput. Sci., Simon Fraser Univ., Burnaby, BC, 1982. [b-acgpr-82]

1954 B. K. Bhattacharya. *Applications of computational geometry to pattern recognition problems.* Ph.D. thesis, School Comput. Sci., McGill Univ., Montreal, PQ, 1980. [b-acgpr-80] *Keywords:* doctoral thesis.

1955 B. K. Bhattacharya. Circular separability of planar point sets. In G. T. Toussaint, editor, *Computational Morphology*, pages 25–39. North-Holland, Amsterdam, Netherlands, 1988. [b-cspps-88]

1956 Binay K. Bhattacharya. Usefulness of angle-sweep over line-sweep. In *Proc. 11th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, page ??, 1991. [b-uasls-91]

1957 B. K. Bhattacharya, P. Egyed, and G. T. Toussaint. On computing shortest distances inside X-shaped polygons. Manuscript. [bet-csdix-]

1958 B. K. Bhattacharya and H. ElGindy. A new linear convex hull algorithm for simple polygons. *IEEE Trans. Inform. Theory*, IT-30:85–88, 1984. [be-nlcha-84]

1959 B. K. Bhattacharya, S. Jadhav, A. Mukhopadhyay, and J.-M. Robert. Optimal algorithms for some smallest intersection radius problems. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 81–88, 1991. [bjmr-oassi-91] *Keywords:* prune and search, optimization. *Cites:* bt-cst-90t, bcetsu-csts-90, b-fihs-78, c-lpot-86, c-pcmce-85, d-ltatt-84, d-mstia-86, gs-spscp-89, hdk-cgp-64, hiir-wolla-89, m-ltalp-83, m-lpltw-84, s-cg-78, s-lpchm-90, s-qgs-57, s-pavsf-60, ZZZ.

1960 Binay K. Bhattacharya and Asish Mukhopadhyay. Computing in linear time a chord from which a simple polygon is weakly internally visible. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 22–31. Springer-Verlag, 1995. [bm-cltcs-95]

1961 B. K. Bhattacharya, A. Mukhopadhyay, and G. T. Toussaint. A linear time algorithm for computing the shortest line segment from which a polygon is weakly visible. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 412–424. Springer-Verlag, 1991. [bmt-ltacs-91] *Keywords:* polygon, visibility.

1962 B. K. Bhattacharya and A. Rosenfeld. Contour codes of isothetic polygons. *Comput. Vision Graph. Image Process.*, 50(3):353–363, 1990. [br-ccip-90] *Keywords:* isothetic, shape.

1963 B. K. Bhattacharya and S. Sen. On a simple, practical, optimal, output-sensitive randomized planar convex hull algorithm. *J. Algorithms*, 25:177–193, 1997. [bs-spoos-97]

1964 B. K. Bhattacharya and G. T. Toussaint. A counterexample to a diameter algorithm for convex polygons. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-4:306–309, 1982. [bt-cdacp-82] *Succeeds:* st-fer-80. *Precedes:* st-ccdac-82.

1965 B. K. Bhattacharya and G. T. Toussaint. A linear algorithm for determining translation separability of two simple polygons. Report SOCS-86.1, School Comput. Sci., McGill Univ., Montreal, PQ, 1986. [bt-ladts-86]

1966 B. K. Bhattacharya and G. T. Toussaint. Efficient algorithms for computing the maximum distance between two finite planar sets. *J. Algorithms*, 4:121–136, 1983. [bt-eacmd-83]

1967 B. K. Bhattacharya and G. T. Toussaint. Fast algorithms for computing the diameter of a finite planar set. *Visual Comput.*, 3:379–388, 1988. [bt-facdf-88]

1968 B. K. Bhattacharya and G. T. Toussaint. On geometric algorithms that use the furthest-point Voronoi diagram. In G. T. Toussaint, editor, *Computational Geometry*, pages 43–61. North-Holland, Amsterdam, Netherlands, 1985. [bt-gatuf-85] *Succeeds:* tb-gatuf-81.

1969 B. K. Bhattacharya and G. T. Toussaint. Time- and storage-efficient implementation of an optimal convex hull algorithm. *Image Vision Comput.*, 1:140–144, 1983. [bt-tseio-83]

1970 B. K. Bhattacharya and J. Zorbas. Solving the two-dimensional findpath problem using a line-triangle representation of the robot. Technical Report, School Comput. Sci., Simon Fraser Univ., Burnaby, BC, 1986. [bz-stdfp-86]

1971 B. K. Bhattacharya and J. Zorbas. Solving the two-dimensional findpath problem using a line-triangle representation of the robot. *J. Algorithms*, 9:449–469, 1988. [bz-stdfp-88]

B. K. Bhattacharya. See also [159, 963, 1138–1140, 1174, 5264, 7459, 7460, 13027–13031].

1972 P. Bhattacharya and A. Rosenfeld. Polygonal ribbons in two and three dimensions. Report ??, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1994. [br-prttd-94] *Keywords:* ribbons, strips, orientability, twist, Hamiltonian triangulation.

V. C. Bhavsar. See also [3782].

1973 T. Bially. Space-filling curves: Their generation and their application to bandwidth reduction. *IEEE Trans. Inform. Theory*, 15:658–664, 1969. [b-sfctg-69]

1974 A. Bialostocki and P. Dierker. On simple Hamiltonian cycles in a 2-colored complete graph. *Ars Combin.*, 21:13–16, 1991. [bd-shc2c-91]

1975 G. Bianchi and M. Longinetti. Reconstructing plane sets from projections. *Discrete Comput. Geom.*, 5:223–242, 1990. [bl-rpsp-90]

J. M. Bibby. See also [9194].

1976 E. Bibelnieks and P. M. Dearing. Neighborhood subtree tolerance graphs. *Discrete Appl. Math.*, 43:13–26, 1993. [bd-nstg-93]

C. S. Biddlecombe. See also [6781].

1977 T. Biedl. Improved orthogonal drawings of 3-graphs. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 295–299, 1996. [b-iod3g-96]

1978 T. Biedl. Optimal orthogonal drawings of connected plane graphs. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 306–311, 1996. [b-oodcp-96]

1979 T. Biedl, E. Demaine, M. Demaine, S. Lazard, A. Lubiw, J. O'Rourke, M. Overmars, S. Robbins, I. Streinu, G. Toussaint, and S. Whitesides. Locked and unlocked polygonal chains in 3D. In *Proc. 10th ACM-SIAM Sympos. Discrete Algorithms*, pages 866–867, January 1999. Full version Smith Tech. Rep. 060, Oct. 1999; LANL arXive cs.CG/9910009. [bddlloorstw-lupc3d-99]

1980 T. Biedl, E. Demaine, M. Demaine, S. Lazard, A. Lubiw, J. O'Rourke, M. Overmars, S. Robbins, I. Streinu, G. Toussaint, and S. Whitesides. Locked and unlocked polygonal chains in 3D. *Discrete Comput. Geom.*, 26(3):269–282, 2001. [bddlloorstw-lupc3d-01] *Comments:* Much detail left out; see full versions. *Succeeds:* bddlloorstw-lupc3d-99.

1981 T. Biedl, E. Demaine, M. Demaine, A. Lubiw, J. O'Rourke, M. Overmars, S. Robbins, I. Streinu, G. T. Toussaint, and S. Whitesides. On reconfiguring tree linkages: Trees can lock. In *Proc. 10th Canad. Conf. Comput. Geom.*, pages 4–5, 1998. Full version LANL arXive cs.CG/9910024; to appear in *Discrete Math.* [bddloorsw-orfltcl-98]

1982 T. Biedl, E. Demaine, M. Demaine, A. Lubiw, J. O'Rourke, M. Overmars, S. Robbins, and S. Whitesides. Unfolding some classes of orthogonal polyhedra. In *Proc. 10th Canad. Conf. Comput. Geom.*, pages 70–71, 1998. Fuller version in Elec. Proc. http://cgm.cs.mcgill.ca/cccg98/proceedings/welcome.html. [bddloorw-uscop-98]

1983 T. Biedl and G. Kant. A better heuristic for orthogonal graph drawings. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 24–35. Springer-Verlag, 1994. [bk-bhogd-94] *Keywords:* graph drawing.

1984 T. Biedl and G. Kant. A better heuristic for orthogonal graph drawings. *Comput. Geom. Theory Appl.*, 9:159–180, 1998. [bk-bhogd-98]

1985 Therese Biedl, Anna Lubiw, and Julie Sun. When can a net fold to a polyhedron? In *Proc. 11th Canad. Conf. Comput. Geom.*, pages 1–4, 1999. [bls-wcnfp-99]

1986 T. Biedl, T. Shermer, S. Whitesides, and S. Wismath. Orthogonal 3-D graph drawing. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 76–86. Springer-Verlag, 1997. [bsww-o3dgd-97] *Keywords:* graph drawing.

Therese Biedl. See also [160].

1987 T. C. Biedl. Heuristics for *3d*-orthogonal graph drawings. In *Proc. 4th Twente Workshop on Graphs and Combinatorial Optimization*, pages 41–44, 1995. [b-h3ogd-95] *Keywords:* graph drawing, 3D, orthogonal.

1988 Therese C. Biedl. New lower bounds for orthogonal drawings. *J. Graph Algorithms Appl.*, 2(7):1–31, 1998. [b-nlbod-98] *URL:* http://www.cs.brown.edu/publications/jgaa/accepted/98/Biedl98.2.7.ps.g%z. *Succeeds:* b-nlbog-96.

1989 T. C. Biedl. New lower bounds for orthogonal graph drawings. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 28–39. Springer-Verlag, 1996. [b-nlbog-96]

1990 Therese C. Biedl. Relating bends and size in orthogonal graph drawings. *Inform. Process. Lett.*, 65:111–115, 1998. [b-rbsog-98] *Keywords:* graph drawing, orthogonal.

1991 T. C. Biedl, E. D. Demaine, S. Lazard, S. M. Robbins, and M. A. Soss. Convexifying monotone polygons. Technical Report CS-99-03, Univ. Waterloo, Ontario, 1999. [bdlrs-cmp-99]

1992 T. C. Biedl and M. Kaufmann. Area-efficient static and incremental graph darwings. In R. Burkard and G. Woeginger, editors, *Algorithms (Proc. ESA '97)*, volume 1284 of *Lecture Notes Comput. Sci.*, pages 37–52. Springer-Verlag, 1997. [bk-aesig-97]

1993 Therese C. Biedl, Brendan P. Madden, and Ioannis G. Tollis. The three-phase method: A unified approach to orthogonal graph drawing. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 391–402. Springer-Verlag, 1997. [bmt-tpmua-97] *Keywords:* graph drawing.

1994 Therese C. Biedl, Brendan P. Madden, and Ioannis G. Tollis. The three-phase method: A unified approach to orthogonal graph drawing. *Internat. J. Comput. Geom. Appl.*, 10(6):553–580, 2000. [bmt-tpmua-00] *Succeeds:* bmt-tpmua-97.

1995 E. Bienenstock, D. Geman, and S. Geman. A relational approach in object recognition. Technical Report, Brown Univ., Providence, RI, 1988. [bgg-raor-88]

1996 E. Bienenstock, D. Geman, S. Geman, and D. E. McClure. Phase II technical report, development of laser radar ATR algorithms. Technical Report DAAL02-89-C-0081, CECOM Center for Night Vision and Electro-Optics, October 1990. [bggm-p2trd-90]

1997 D. Bienstock. Some provably hard crossing number problems. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 253–260, 1990. [b-sphcn-90] *Precedes:* b-sphcn-91. *Cites:* bd-brcn-, eg-cnp-73, gj-cninc-83, gp-ccncp-80, gp-pgcsc-80, gp-ms-83, gp-sccca-84, gp-prpa-85, gp-taafp-86, gps-crotr-89, g-as-72, km-igs-94, l-civ-83, t-rdg-88, t-ttcn-70, ZZZ.

1998 D. Bienstock. Some provably hard crossing number problems. *Discrete Comput. Geom.*, 6:443–459, 1991. [b-sphcn-91] *Succeeds:* b-sphcn-90.

1999 D. Bienstock and N. Dean. Bounds on rectilinear crossing numbers. Submitted. [bd-brcn-]

2000 D. Bienstock and E. Győri. An extremal problem on sparse 0-1 matrices. *SIAM J. Discrete Math.*, 4:17–27, 1991. [bg-eps01-91]

2001 D. Bienstock and C. L. Monma. On the complexity of embedding planar graphs to minimize certain distance measures. *Algorithmica*, 5(1):93–109, 1990. [bm-cepgm-90] *Keywords:* optimization, proximity.

2002 D. Bienstock and C. L. Monma. Optimal enclosing regions in planar graphs. Manuscript, ?? [bm-oerpg-??] *Precedes:* bm-oerpg-89.

2003 D. Bienstock and C. L. Monma. Optimal enclosing regions in planar graphs. *Networks*, 19(1):79–94, 1989. [bm-oerpg-89] *Keywords: Succeeds:* bm-oerpg-??

D. Bienstock. See also [1788].

2004 Eric A. Bier. Snap-dragging in three dimensions. *Computer Graphics*, 24(2):193–204, 1990. [b-sdtd-90] *Keywords:* Methodology and Techniques, Interaction techniques, Scene composition, interactive design, geometric construction, constraint systems.

2005 E. A. Bier and K. R. Sloan, Jr. Pointing and placing with homogeneous transforms. Report ??, Architect. Mach. Group, Massachusetts Inst. Tech., Xerox Palo Alto Res. Center, ?? [bs-ppht-??]

2006 H. Bieri. Raster-Polyeder. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [b-rp-89]

2007 H. Bieri and W. Nef. A recursive plane-sweep algorithm, determining all cells of a finite division of R^d. *Computing*, 28:189–198, 1982. [bn-rpsad-82]

2008 H. Bieri and W. Nef. A sweep-plane algorithm for computing the Euler characteristic of polyhedra represented in boolean form. *Computer*, 34(4):287–302, 1985. [bn-space-85] *Keywords:* space sweep, polyhedra.

2009 H. Bieri and W. Nef. A sweep-plane algorithm for computing the volume of polyhedra represented in boolean form. *Linear Algebra and its Applications*, 52–53:69–97, 1983. [bn-spacv-83]

2010 H. Bieri and W. Nef. Algorithms for the Euler characteristic and related additive functionals of digital objects. *Comput. Vision Graph. Image Process.*, 28:166–175, 1984. [bn-aecra-84]

2011 H. Bieri and W. Nef. Elementary set operations with d-dimensional polyhedra. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 97–112. Springer-Verlag, 1988. [bn-esodd-88] *Annote:* 4th Intern. Workshop Comput. Geom.

2012 H. Bieri and H. Noltemeier, editors. *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1991. [bn-cgmaa-91] *Annote:* 7th Intern. Workshop Comput. Geom.

2013 Hanspeter Bieri and Peter-Michael Schmidt. An on-line algorithm for constructing sweep planes in regular position. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 27–35. Springer-Verlag, 1991. [bs-olacs-91] *Annote:* 7th Intern. Workshop Comput. Geom.

2014 Hanspeter Bieri and Peter-Michael Schmidt. On the orders of finitely many points induced by rotational sweeps. In *Abstracts 8th European Workshop Comput. Geom.*, pages 61–63. Utrecht University, 1992. [bs-ofmpi-92]

2015 H. Bieri and P.-M. Schmidt. On the permutations generated by rotational sweeps of planar point sets. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 179–184, 1996. [bs-pgrsp-96]

2016 Hanspeter Bieri and Peter-Michael Schmidt. Recognizing permutations generated by sweeps of planar point sets. In *Abstracts 9th European Workshop Comput. Geom.*, pages 10–13. FernUniversität Hagen, 1993. [bs-rpgsp-93]

H. Bieri. See also [10091].

L. G. Biesecker. See also [8287].

2017 N. Biggs. *Algebraic Graph Theory*. Cambridge University Press, 1st edition, 1974. [b-agt-74]

2018 N. Biggs. *Algebraic Graph Theory*. Cambridge University Press, 2nd edition, 1993. [b-agt-93]

N. Biggs. See also [700].

R. S. Biggs. See also [5804].

L. R. Bigongiari. See also [3516].

J. Bigün. See also [11803].

2019 G. Bilardi and A. Nicolau. Adaptive bitonic sorting: An optimal parallel algorithm for shared memory machines. Technical Report 86-769, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, August 1986. [bn-absop-86]

2020 G. Bilardi and A. Nicolau. Adaptive bitonic sorting: An optimal parallel algorithm for shared-memory machines. *Inform. Comput.*, 18:216–228, 1989. [bn-absop-89]

2021 G. Bilardi and F. P. Preparata. A minimum area VLSI network for $O(\log n)$ time sorting. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 64–70, 1984. [bp-mavno-84] *Precedes:* bp-mavno-85.

2022 G. Bilardi and F. P. Preparata. A minimum area VLSI network for $O(\log n)$ time sorting. *IEEE Trans. Comput.*, C-34:336–343, 1985. [bp-mavno-85] *Succeeds:* bp-mavno-84.

2023 G. Bilardi and F. P. Preparata. Lower bounds to processor-time tradeoffs under bounded-speed message propagation. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 1–12. Springer-Verlag, 1995. [bp-lbptt-95]

2024 G. Bilardi and F. P. Preparata. Probabilistic analysis of a new geometric searching technique. Manuscript, ??, ?? [bp-pangs-??] *Keywords:* point location, probabilistic analysis.

2025 Gianfranco Bilardi and Majid Sarrafzadeh. Optimal VLSI circuits for the discrete Fourier transform. In Franco P. Preparata, editor, *Parallel and Distributed Computing*, volume 4 of *Adv. Comput. Res.*, pages 87–101. JAI Press, Greenwich, Conn., 1987. [bs-ovcdf-87]

2026 L. Billera. Homology theory of smooth splines: generic triangulations and a conjecture of Strang. *Trans. Amer. Math. Soc.*, 310:325–340, 1988. [b-htssg-88]

2027 L. J. Billera and A. Björner. Face numbers of polytopes and complexes. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 15, pages 291–310. CRC Press LLC, Boca Raton, FL, 1997. [bb-fnpc-97]

2028 L. J. Billera, P. Filliman, and B. Sturmfels. Constructions and complexity of secondary polytopes. *Adv. Math.*, 83:155–179, 1990. [bfs-ccsp-90]

2029 L. J. Billera and C. W. Lee. A proof of the suffiency of McMullen's conditions for f-vectors of simplicial polytopes. *J. Combin. Theory Ser. A*, 31(3):237–255, 1981. [bl-psmcf-81]

2030 L. J. Billera and K. E. Magurn. Balanced subdivision and enumeration in balanced spheres. *Discrete Comput. Geom.*, 2:297–317, 1987. [bm-bsebs-87]

2031 L. J. Billera and L. L. Rose. A dimension series for multivariate splines. *Discrete Comput. Geom.*, 6:107–128, 1991. [br-dsms-91]

L. M. Billow. See also [88].

J. Bilmes. See also [6445].

T. O. Binford. See also [1308].

2032 R. H. Bing. Some aspects of the topology of 3-manifolds related to the Poincaré conjecture. In *Lectures in Modern Mathematics*, volume 2, pages 93–128. John Wiley & Sons, 1964. [b-sat3m-64] *Keywords:* triangulation, three-dimensional, shellability, topology. *Annote:* possibly some other topics.

2033 D. Bini and V. Y. Pan. *Fundamental Algorithms*, volume 1 of *Polynomial and Matrix Computations*. Birkhäuser, Boston, MA, 1994. [bp-fa-94]

N. Birdwell. See also [350].

2034 B. Birgisson and G. Shannon. Graphview: A workstation-based environment for viewing graphs and animating graph algorithms. Technical Report 295, Department of Computer Science, Indiana University, 1989. [bs-gwbev-89] *Keywords:* graph drawing.

2035 R. Birk. Lösung von Varianten des Post-Office-Problems mit Hilfe von Skip List Range Trees. Masters thesis, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1996. [b-lvpop-96] *Keywords:* masters thesis.

2036 Y. Birk and J. B. Lotspiech. A fast algorithm for connecting grid points to the boundary with nonintersecting straight lines. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 465–474, 1991. [bl-facgp-91]

2037 Birkhoff, Garret, and S. MacLane. *A Survey of Modern Algebra*. MacMillan, New York, NY, 3rd edition, 1965. [bgm-sma-65]

2038 G. Birkhoff. *Lattice Theory*. American Mathematical Society, Providence, RI, 1967. [bi-pl-67] *Keywords:* graph drawing, planar, upward, lattice.

G. M. Birtwistle. See also [3374].

2039 F. G. Bischoff. Computational geometry for reactor applications. *Trans. Amer. Nuclear Soc.*, 57:112–113, 1988. [b-cgra-88] *Keywords:* facility location.

2040 P. Biscondi and J.-M. Moreau. Computer-aided road network design. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 229–234, 1995. [bm-carnd-95]

2041 E. Bishop and D. Bridges. *Constructive Analysis*. Springer-Verlag, Berlin, Germany, 1985. [bb-ca-85]

2042 V. Bistiolas, D. Sofotassios, and A. Tsakalidis. Computing rectangle enclosures. Technical Report 90.12.3?, Univ. of Patras, Greece, 1990. [bst-cre-90] *Precedes:* bst-cre-93.

2043 V. Bistiolas, D. Sofotassios, and A. Tsakalidis. Computing rectangle enclosures. *Comput. Geom. Theory Appl.*, 2(6):303–308, 1993. [bst-cre-93] *Keywords:* isothetic, enclosure. *Succeeds:* bst-cre-90.

2044 V. Bistiolas, D. Sofotassios, and A. Tsakalidis. On point and segment enclosures. Technical Report 90.06.18, Univ. of Patras, Greece, 1990. [bst-pse-90]

V. Bistiolas. See also [476].

2045 Supriya Biswas, D. Chithra Prasad, and Sudebkumar Prasant Pal. Recognizing weakly convex visible polygons. *Comput. Geom. Theory Appl.*, 10:171–186, 1998. [bpp-rwcvp-98]

2046 T. Bisztricky and G. Fejes Tóth. A generalization of the Erdős-Szekeres theorem. *J. Reine Angew. Math.*, 395:167–170, 1989. [bt-gest-89]

2047 T. Bisztriczky, P. McMullen, R. Schneider, and A. Ivić Weiss, editors. *Polytopes: Abstract, Convex and Computational*, volume 440 of *NATO ASI Series*. Kluwer Academic Publishers, 1994. [bmsw-pacc-94]

T. Bisztriczky. See also [1907, 1908].

2048 D. Bitton, D. J. DeWitt, D. K. Hsiao, and J. Menon. A taxonomy of parallel sorting. *ACM Comput. Surv.*, 16(3):287–318, 1984. [bdhm-tps-84]

A. Björk. See also [3706].

2049 Iliana Bjorling-Sachs. *Variations on the Art Gallery Theorem*. PhD thesis, Rutgers University, 1993. [b-vagt-93] *Keywords:* doctoral thesis.

2050 Iliana Bjorling-Sachs and Diana L. Souvaine. A tight bound for edge guards in monotone polygons. Technical Report 92-52, DIMACS, Rutgers University, 1992. [bs-tbegm-92t]

2051 I. Bjorling-Sachs and D. L. Souvaine. A tight bound for guarding polygons with holes. Report LCSR-TR-165, Lab. Comput. Sci. Res., Rutgers Univ., New Brunswick, NJ, 1991. [bs-tbgph-91] *Keywords:* visibility, point guards, art gallery, simple polygon with holes.

2052 I. Bjorling-Sachs and D. L. Souvaine. An efficient algorithm for guard placement in polygons with holes. *Discrete Comput. Geom.*, 13:77–109, 1995. [bs-eagpp-95]

2053 I. Bjorling-Sachs and D. L. Souvaine. Tight bounds for edge guards in monotone polygons and rectilinear monotone polygons. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 93–98, 1992. [bs-tbegm-92] *Cites:* a-agpiv-84, c-ctpg-75, gjpt-tsp-78, o-agta-87, st-gprp-88, s-rrag-90, ZZZ.

I. Bjorling-Sachs. See also [12389, 12390].

2054 A. Björner. Topological methods. In R. L. Graham, M. Grötschel, and L. Lovász, editors, *Handbook of Combinatorics*, chapter 34, pages 1819–1872. North-Holland, Amsterdam, 1995. [b-tm-95]

2055 A. Björner, P. H. Edelman, and G. M. Ziegler. Hyperplane arrangements with a lattice of regions. *Discrete Comput. Geom.*, 5:263–288, 1990. [bez-halr-90]

2056 A. Björner, M. Las Vergnas, N. White, B. Sturmfels, and G. M. Ziegler. *Oriented Matroids*. Cambridge University Press, Cambridge, 1993. [blwsz-om-93]

2057 Anders Björner, László Lovász, and Andrew Chi-Chih Yao. Linear decision trees: Volume estimates and topological bounds. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 170–177, 1993. [bly-ldtve-93]

2058 A. Björner and G. M. Ziegler. Combinatorial stratification of complex arrangements. *J. Amer. Math. Soc.*, 5:105–149, 1992. [bz-csca-92]

A. Björner. See also [2027].

2059 P. E. Bjorstad and O. B. Widlund. Iterative methods for the solution of elliptic problems on regions partitioned into substructures. Report TR136, Dept. Comput. Sci., New York Univ., New York, NY, 1984. [bw-imsep-84]

2060 Ted Blacker. The cooper tool. In *Proc. 5th International Meshing Roundtable*, pages 13–29, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [b-ct-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

2061 T. D. Blacker, W. J. Bohnhoff, T. L. Edwards, J. R. Hipp, R. R. Lober, S. A. Mitchell G. D. Sjaardema, T. J. Tautges, T. J. Wilson, W. R. Oakes, S. Benzley, J. C. Clements, L. Lopez-Buriek, S. Parker, M. Whitely, D. White, and E. Trimble. *CUBIT mesh generation environment volume 1: users manual*. Sandia National Laboratories, Albuquerque, NM, May 1994. SAND94-1100. [bbehlmstwobclpwwt-cmgev-94]

T. D. Blacker. See also [1661, 9980, 12836].

D. Blackmore. See also [13371].

2062 C. E. Blair and R. G. Jeroslow. Extension of a theorem of Balas. *Discrete Appl. Math.*, 9:11–26, 1984. [bj-etb-84]

E. H. Blake. See also [7149].

2063 Gregoria Blanco, Jesús García López, Ferran Hurtado, Pedro Ramos, and Vera Sacristán. Incidence angle constrained visibility. In *Abstracts 12th European Workshop Comput. Geom.*, pages 27–28. Universität Münster, 1996. [blhrs-iacv-96]

G. Blanco. See also [983, 984].

2064 R. G. Bland. A combinatorial abstraction of linear programming. *J. Combin. Theory Ser. B*, 23:33–57, 1977. [b-calp-77]

2065 R. G. Bland. New finite pivoting rules for the simplex method. *Math. Oper. Res.*, 2:103–107, 1977. [b-nfprs-77]

2066 R. G. Bland and M. Las Vergnas. Orientability of matroids. *J. Combin. Theory*, 23:94–123, 1978. [bv-om-78]

2067 J. Blaney and S. Dixon. A good ligand is hard to find: Automated docking methods. *Perspectives in Drug Discovery and Design*, 1:310–319, 1993. [bd-glihf-93]

2068 H. Blanken, A. Ubema, P. Meek, and B. Akker. The generalized grid file: description and performance aspects. In *Proc. IEEE Internat. Conf. Data Eng.*, pages 380–388, 1990. [buma-ggfdp-90] *Keywords:* data structuring.

2069 Gabriele Blankenagel and Ralf Hartmut Güting. EST: Externe Segment Trees. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 8. Universität Siegen, 1990. [bg-eest-90]

2070 G. Blankenagel and R. H. Güting. Internal and external algorithms for the points-in-regions problem: the inside join of georelational algebra. Report 228, Fachber. Inform., Univ. Dortmund, Dortmund, West Germany, 1987. [bg-ieapr-87] *Precedes:* bg-ieapr-88.

2071 G. Blankenagel and R. H. Güting. Internal and external algorithms for the points-in-regions problem: the inside join of georelational algebra. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 85–89. Springer-Verlag, 1988. [bg-ieapr-88] *Comments:* extended abstract. *Succeeds:* bg-ieapr-87. *Precedes:* bg-ieapr-90. *Annote:* 4th Intern. Workshop Comput. Geom.

2072 G. Blankenagel and R. H. Güting. Internal and external algorithms for the points-in-regions problem: the inside join of georelational algebra. *Algorithmica*, 5:251–276, 1990. [bg-ieapr-90] *Succeeds:* bg-ieapr-88.

2073 W.-E. Blanz, D. Petkovic, and J. L. C. Sanz. Algorithms and architectures for machine vision. In C. H. Chen, editor, *Signal Processing Handbook*. M. Dekker, New York, 1989. [bps-aamv-89]

2074 W. Blaschke. *Kreis und Kugel*. ??, Leipzig, 1916. [b-kuk-16]

M. W. Blasgen. See also [6324].

2075 Guy Blelloch, Gary L. Miller, and Dafna Talmor. Developing a practical projection-based parallel Delaunay algorithm. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 186–195, 1996. [bmt-dppbp-96] *Cites:* acgoy-pcg-88, bey-eedt-91a, bmt-pdti-94, bchsz-ipndp-94, bl-psgps-94, csy-oscpf-95, c-pagp-80, cgo-mftpe-90, dddfk-rp3dc-95, d-sdcac-86, es-otatd-91, gg-ptpch-91, gs-pmgsc-85, ks-upcha-86, lf-ppc-80, m-piadt-92, mttw-dbnmt-95, ol-mcp-81, ps-cgi-85, rs-pnrst-89, sh-cpp-75, s-epacp-94, sd-csdta-95, tsbp-dpatd-93, t-dmwhf-63, vvm-eetpa-92, ZZZ.

2076 G. Blelloch, G. L. Miller, and D. Talmor. Parallel Delaunay triangulation imlpementation. In *Proc. 4th MSI Workshop Comput. Geom.*, October 1994. [bmt-pdti-94]

2077 G. E. Blelloch, S. Chatterjee, J. C. Hardwick, J. Sipelstein, and M. Zagha. Implementation of a portable nested data-parallel language. *J. Parallel Distrib. Comput.*, 21(1):4–14, April 1994. [bchsz-ipndp-94]

2078 G. E. Blelloch, C. E. Leiserson, B. M. Maggs, C. G. Plaxton, S. J. Smith, and M. Zagha. A comparison of sorting algorithms for the connection machine CM-2. In *Proc. 3rd ACM Sympos. Parallel Algorithms Architect.*, pages 3–16, 1991. [blmpsz-csacm-91]

2079 G. E. Blelloch and J. Little. Parallel solutions to geometric problems on the scan model of computation. In *Proc. Internat. Conf. Parallel Process.*, volume 3, pages 218–222, 1988. [bl-psgps-88] *Keywords:* parallel computation.

2080 G. E. Blelloch and J. J. Little. Parallel solutions to geometric problems in the scan model of computation. *J. Comput. Syst. Sci.*, 48(1):90–115, February 1994. [bl-psgps-94]

2081 G. E. Blelloch, G. L. Miller, J. C. Hardwick, and D. Talmor. Design and implementation of a practical parallel Delaunay algorithm. *Algorithmica*, 24(3):243–269, 1999. [bmht-dippd-99]

2082 C. Bliek. *Computer Methods for Design Automation*. Ph.D. thesis, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1992. [b-cmda-92] *Keywords:* doctoral thesis.

2083 J. Blinn. A homogeneous formulation for lines in three-space. *Comput. Graph.*, 11(2):237–241, 1977. Proc. SIGGRAPH '77. [b-hflts-77]

2084 J. F. Blinn. A method for removing some degeneracies in hidden line and ray tracing calculations. Technical report, Jet Propulsion Lab., ?? [b-mrsdh-]

2085 J. F. Blinn. A trip down the graphics pipeline: Line clipping. *IEEE Comput. Graph. Appl.*, 11(1):98–105, 1991. [b-tdgpl-91] *Keywords:* clipping.

J. F. Blinn. See also [8473].

2086 E. D. Bloch. Complexes whose boundaries cannot be pushed around. *Discrete Comput. Geom.*, 4:365–374, 1989. [b-cwbcb-89]

2087 J. Blömer. Computing sums of radicals in polynomial time. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 670–677, 1991. [b-csrpt-91]

2088 J. Blömer. How to denest Ramanujan's nested radicals. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 447–457, 1992. [b-hdrnr-92]

J. Blömer. See also [568–571].

2089 P. A. Bloniarz and S. S. Ravi. An $\omega(n \log n)$ lower bound for decomposing a set of points into chains. *Inform. Process. Lett.*, 31:319–322, 1989. [br-olbds-89] *Keywords:* lower bounds, points.

2090 G. S. Bloom. A counterexamlpe to a theorem of Piccard. *J. Combin. Theory Ser. A*, 22:378–379, 1977. [b-ctp-77]

2091 Jules Bloomenthal. An implicit surface polygonizer. In Paul Heckbert, editor, *Graphics Gems IV*, pages 324–349. Academic Press, Boston, MA, 1994. [b-isp-94] *Keywords:* iso-surface, marching cubes, polygonization. *Annote:* Gives code to polygonize an arbitrary implicit surface. Polygonization is a common approach to implicit surface rendering and volume rendering. When combined with code for trilinear interpolation code, a program for polygonizing volume data can easily be constructed. The resulting polygonizations will be superior to those generated by the "Marching Cubes" algorithm, in many cases. Contains C code.

2092 Jules Bloomenthal, editor. *Introduction to Implicit Surfaces*, volume 391. Morgan-Kaufmann, 1997. [b-iis-97]

2093 J. Bloomenthal. Polygonization of implicit surfaces. *Comput. Aided Geom. Design*, 5(4):341–355, 1988. [b-pis-88] *Keywords:* surface fitting.

S. D. Blostein. See also [894].

2094 Avrim Blum and Prasad Chalasani. An on-line algorithm for improving performance in navigation. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 2–11, 1993. [bc-olaip-93]

2095 A. Blum and P. Chalasani. An on-line algorithm for improving performance in navigation. *SIAM J. Comput.*, 29:1907–1938, 2000. [bc-oaipn-00]

2096 A. Blum, P. Chalasani, and S. Vempala. A constant-factor approximation for the k-MST problem in the plane. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 294–302, 1995. [bcv-cfakm-95]

2097 Avrim Blum and Ravi Kannan. Learning an intersection of k halfspaces over a uniform distribution. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 312–320, 1993. [bk-likhu-93]

2098 A. Blum, P. Raghavan, and B. Schieber. Navigating in unfamiliar geometric terrain. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 494–503, 1991. [brs-nugt-91] *Keywords:* path planning, on-line. *Comments:* Computing Reviews 9111-0883. *Succeeds:* brs-nut-90, brs-nugt-97. *Cites:* py-spwm-89.

2099 A. Blum, P. Raghavan, and B. Schieber. Navigating in unfamiliar geometric terrain. *SIAM J. Comput.*, 26(1):110–137, February 1997. [brs-nugt-97] *Succeeds:* brs-nugt-91.

2100 A. Blum, P. Raghavan, and B. Schieber. Navigating in unfamiliar terrain. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, 1990. [brs-nut-90] *Precedes:* brs-nugt-91.

2101 A. Blum and R. Rivest. Training a 3-node neural network is NP-complete. In *Proc. 1st. Workshop Comput. Learning Th.*, pages 9–18, 1988. [br-t3nnn-88]

A. Blum. See also [1192–1194, 1773, 9728].

2102 H. Blum. A geometry for biology. *Math. Analysis of Fundamental Biological Phenomena*, 231(1):19–30, 1974. [b-gb-74]

2103 H. Blum. A transformation for extracting new descriptors of shape. In W. Wathen-Dunn, editor, *Models for the Perception of Speech and Visual Form*, pages 362–380. MIT Press, 1967. [b-tends-67]

H. Blum. See also [8651].

2104 L. Blum, M. Shub, and S. Smale. On a theory of computation and complexity over the real numbers: NP-completeness, recursive functions and universal machines. *Bull. Amer. Math. Soc.*, 21(1–46), 1989. [bss-tccrn-89]

2105 M. Blum, R. W. Floyd, V. Pratt, R. L. Rivest, and R. E. Tarjan. Time bounds for selection. *J. Comput. Syst. Sci.*, 7:448–461, 1973. [bfprt-tbs-73]

2106 Manuel Blum and Sampath Kannan. Designing programs that check their work. *J. ACM*, 42(1):269–291, January 1995. [bk-dpcw-95]

2107 M. Blum and S. Kannan. Programs that check their work. In *Proc. 21st Annu. ACM Sympos. Theory Comput.*, 1989. [bk-ptctw-89]

2108 M. Blum and D. Kozen. On the power of the compass (or, why mazes are easier to search than graphs). In *Proc. 19th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 132–142, 1978. [bk-pcwma-78]

2109 Manuel Blum, Michael Luby, and Ronitt Rubinfeld. Self-testing/correcting with applications to numerical problems. *J. Comput. Syst. Sci.*, 47(3):549–595, 1993. [blr-stcan-93] *Succeeds:* blr-scanp-90.

2110 M. Blum, M. Luby, and R. Rubinfeld. Selftesting/correcting with applications to numerical problems. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, pages 73–83, 1990. [blr-scanp-90]

2111 N. Blum and K. Mehlhorn. On the average number of rebalancing operations in weight-balanced trees. *Theoret. Comput. Sci.*, 11:303–320, 1980. [bm-anrow-80]

N. Blum. See also [572].

2112 L. M. Blumenthal and K. Menger. *Studies in Geometry*. W. H. Freeman, San Francisco, CA, 1970. [bm-sg-70]

2113 A. Blumer, A. Ehrenfeucht, D. Haussler, and M. Warmuth. Classifying learnable geometric concepts with vapnik-chervonenkis dimension. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, 1986. [bbehw-clgcv-86]

2114 A. Blumer, A. Ehrenfeucht, D. Haussler, and M. Warmuth. Learnability and the Vapnik-Chervonenkis dimension. *J. ACM*, 36:929–965, 1989. [behw-clgcv-89] *Keywords:* pattern recognition, probability theory, probabilistic geometry, approximation, separation, probabilistic analysis.

2115 Marko Boben, Harald Gropp, and Tomaž Pisanski. Computer drawings of non-symmetric configurations. In *Abstracts 14th European Workshop Comput. Geom.*, pages 37–40. Universitat Polytènica de Catalunya, Barcelona, 1998. [bgp-cdnsc-98]

2116 J. Bobowski and J. M. Wills. Regular polyhedra with hidden symmetry. *The Mathematical Intelligencer*, 10(11):27–32, 1988. [bw-rphs-88]

D. G. Bobrow. See also [12481].

2117 J. Bobrow, S. Dubowsky, and J. Gibson. Time-optimal control of robot manipulators. *Internat. J. Robot. Res.*, 4(3), 1985. [bdg-tocrm-85]

2118 J. E. Bobrow, S. Dubowsky, and J. S. Gibson. On the optimal control of robotic manipulators with actuator constraints. In *Proc. ACC*, pages 782–787, 1983. [bdg-ocrma-83]

2119 Maxime Bocher. *Introduction to higher algebra*. Macmillan, 1907. [b-iha-07]

2120 Daciana Bochis and Marisa Mazon. Combinatorial structure of Dirichlet partitions. In *Abstracts 13th European Workshop Comput. Geom.*, pages 51–54. Universität Würzburg, 1997. [bm-csdp-97]

2121 Daciana Bochis and Francisco Santos. On the maximal number of facets of 3-dimensional Dirichlet stereohedra. In *Abstracts 14th European Workshop Comput. Geom.*, pages 41–43. Universitat Polytènica de Catalunya, Barcelona, 1998. [bs-mnf3d-98]

Daciana Bochis. See also [9337].

2122 D. F. Bochis, M. J. González-López, and T. Recio. Simulation program of the path tracking for any irredundant planar manipulator and the 6R manipulator. In *Abstracts 11th European Workshop Comput. Geom.*, pages 71–73. Universität Linz, 1995. [bgr-sppta-95]

2123 J. Bochnak, M. Coste, and M.-F. Roy. *Géométrie Algébrique Réelle*. Springer-Verlag, Heidelberg, 1987. [bcr-gar-87]

2124 H. H. Bock. *Automatische Klassifikation*. Vandenhoeck & Ruprecht, Göttingen, West Germany, 1974. [b-ak-74]

D. L. Bodian. See also [12179].

2125 L. Bodin and L. Levy. The arc partitioning problem. Technical report, College of Bus. and Mgmt., Univ. of Maryland at College Park, February 1989. [bl-app-89]

H. L. Bodlaender. See also [7744, 7745].

2126 W. Boehm, G. Farin, and J. Kahmann. A survey of curve and surface methods in CAGD. *Comput. Aided Geom. Design*, 1(1):1–60, 1984. [bfk-scsmc-84]

2127 E. Boender. A survey of intersection algorithms for curved surfaces. *Comput. Graph. (UK)*, 15(1):109–115, 1991. [b-siacs-91] *Keywords:* intersection, curvilinear, three-dimensional, survey.

2128 F. G. Boese. Surface drawing made simple – but not too simple. *Comput. Aided Design*, 20(5):249–258, June 1988. [b-sdmsb-88]

2129 T. B. Boffey and J. Karkazis. p-medians and multi-medians. *J. Oper. Res. Society*, 35(1):57–64, 1984. [bk-pmmm-84] *Keywords:* facility location.

2130 K. P. Bogart, G. Isaak, L. Langley, and P. C. Fishburn. Proper and unit tolerance graphs. Technical Report 91-74, DIMACS, November 1991. [bilf-putg-91]

2131 P. Bogdanovich and H. Samet. The atree: A data structure to support very large scientific databases. Computer Science Department CS-TR-3455, University of Maryland, March 1995. [bs-adssv-95]

2132 A. Bogomolny. Digital geometry may not be discrete. *Comput. Vision Graph. Image Process.*, 43(2):205–220, 1988. [b-dgmnb-88] *Keywords:* digital geometry.

2133 D. J. Bogue. The structure of the metropolitan community. Report ??, Univ. Mich. Contributions Inst. Human Adjustment Social Sci., Ann Arbor, MI, 1949. [b-smc-49]

R. Bohacek. See also [6437].

2134 G. Bohlender. What do we need beyond IEEE-arithmetics? In *Computer Arithmetic and self-validating numerical methods*, pages 1–32. Academic Press, New York, NY, 1990. [b-wdwnb-90]

2135 G. Bohlender, L. B. Rall, C. Ullrich, and J. Wolff von Gudenberg. *PASCAL-CS - A Microcomputer Language for Scientific Computation*. Academic Press, New York, NY, 1986. [bruw-pcmls-86]

A. Böhm. See also [7788].

C. Böhm. See also [1663, 1664].

H. Böhm. See also [11475].

2136 J. Böhm. Addendum to the note "Some remarks on triangulating a d-cube". *Beitr. Algebra Geom.*, 30:167–168, 1990. [b-ansrt-90] *Keywords:* d-dimensional, hypercube, triangulation.

2137 J. Böhm. Some remarks on triangulating a d-cube. *Beitr. Algebra Geom.*, 29:195–218, 1989. [b-srtdc-89] *Keywords:* d-dimensional, hypercube, triangulation.

2138 K. Böhmer and H. J. Stetter. *Defect correction methods, theory and applications*. Springer-Verlag, 1984. [bs-dcmta-84]

W. J. Bohnhoff. See also [2061].

2139 K. Bohringer and F. Newbery Paulisch. Using constraints to achieve stability in automatic graph layout algorithms. In *Proc. ACM Conf. on Human Factors in Computing Systems*, pages 43–51, 1990. [bn-ucasa-90] *Keywords:* graph drawing.

2140 K.-F. Böhringer, V. Bhatt, and K. Y. Goldberg. Sensorless manipulation using transverse vibrations of a plate. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1989–1996, 1995. [bbg-smutv-95]

2141 K.-F. Böhringer, B. Donald, and D. Halperin. The area bisectors of a polygon and force equilibria in programmable vector fields. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 457–459, 1997. [bdh-abpfe-97] *Cites:* bbg-smutv-95, bdm-scsaa-96, bdm-ulbpv-96, do-hssp-90, e-acg-87, ZZZ.

2142 K.-F. Böhringer, B. R. Donald, and N. C. MacDonald. Single-crystal silicon actuator arrays for micro manipulation tasks. In *Proc. IEEE Workshop on Micro Electro Mechanical Systems*, February 1996. [bdm-scsaa-96]

2143 K.-F. Böhringer, B. R. Donald, and N. C. MacDonald. Upper and lower bounds for programmable vector fields with applications to MEMS and vibratory plate part feeders. In J.-P. Laumond and M. H. Overmars, editors, *Algorithms for Robotic Motion and Manipulation*, pages 255–276. A. K. Peters, Wellesley, MA, 1996. [bdm-ulbpv-96]

2144 Jean-Daniel Boissonnat. ?? *J. Mol Graphics*, 12:61–62, 1994. [b--94]

2145 Jean-Daniel Boissonnat. Automatic solid modeler for robotics applications. In *Robotics Research: Third International Symposium. MIT Press Series in Artificial Intelligence.*, pages 65–72, Cambridge, MA, 1986. MIT Press. [b-asmra-86] *Keywords:* Delaunay triangulation, geometric shape representation, geometric solid modeler. *Annote:* 3D DT. *Abstract:* This paper discusses several applications of the Delaunay triangulation for shape representation and manipulation, in the context of robotics. This structure appears to be a useful tool in order to deal with points scattered over surfaces of objects. Reconstruction, matching and intersection problems are considered. (Author abstract) 12 refs.

2146 Jean-Daniel Boissonnat. Geometric structures for three-dimensional shape representation. *ACM Trans. Graph.*, 3(4):266–286, 1984. [b-gstds-84] *Comments:* further experimental results of the algorithm described in this article can be found in N. Ayache, J. D. Boissonnat, L. Cohen, B. Geiger, J. Levy-Vehel, O. Monga, P. Sander–Steps toward the Automatic Interpretation of 3D Images. In 3D imaging in Medicine, vol F60 (1990).

2147 Jean-Daniel Boissonnat. Predicate arithmetic for geometric computing. In *Abstracts 14th European Workshop Comput. Geom.*, page 3. Universitat Polytènica de Catalunya, Barcelona, 1998. [b-pagc-98] *Cites:* ZZZ.

2148 Jean-Daniel Boissonnat. Reconstruction of solids. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 46–54, 1985. [b-rs-85] *Comments:* part of the results appeared in Geometric structures for 3D shape representation, ACM TOG, Vol 3, No. 4, Oct 84, pp266-286 and Shape Reconstruction for Planar Cross Sections, CGIP, Vol 44, pp 1-29 (1988) (good description on line). *Cites:* s-fssd-76, o-pma3d-81, fku-osrpc-77, r-pc-64, s-cg-78, k-cddvd-80, b-gstds-84, ph-chfsp-77, bwy-oetac-80, s-iggp-76, gs-cdtp-78, b-cdt-81, h-tadpe-82, m-hpppp-70, ZZZ.

2149 Jean-Daniel Boissonnat. Representing 2d and 3d shapes with the Delaunay triangulation. In *Proc. 7th IEEE Internat. Conf. Pattern Recogn.*, pages 745–748, New York, NY, 1984. IEEE. [b-r2d3d-84] *Keywords:* Delaunay triangulation, automatic modeling, 3d shapes, 2d shapes, computer vision. *Annote:* 3D DT. We eliminate tetras until all points are on boundary surface. *Abstract:* In order to represent and measure a 2-dimensional or a 3-dimensional shape defined by a finite number of points on its boundary, the author proposes to use the Delaunay triangulation. It is shown that a good polyhedral approximation of the shape can be obtained and that a number of applications become straightforward. The Delaunay triangulation appears to be a useful tool in discrete curve and surface analysis. 2 refs.

2150 Jean-Daniel Boissonnat. Shape reconstruction from planar cross-sections. Report 546, INRIA Sophia-Antipolis, Valbonne, France, 1986. [b-srpcs-86]

2151 Jean-Daniel Boissonnat. Shape reconstruction from planar cross-sections. *Comput. Vision Graph. Image Process.*, 44(1):1–29, October 1988. [b-srpcs-88] *Keywords:* shape reconstruction, planar cross sections, Delaunay triangulation, computational geometry. *Annote:* Computes the 3D DT between two contours (extra points are added to force the boundary—by repeatedly adding midpoints to edges not in DT) by merging DTs of each contour. Then tetras are eliminated so that each point is on the surface. *Abstract:* We propose a new solution to the problem of constructing a shape over a set of cross-sectional contours. We construct a volume whose boundary is a polyhedron with triangular faces intersecting the cutting planes along the given contours. This volume is obtained, slice by slice, by pruning the Delaunay triangulations formed between two adjacent cross sections. The Delaunay triangulation can be computed efficiently in this specific situation: an algorithm is presented that is optimal with respect to the input size and the output size and that only uses 2-dimensional operations. The shape reconstruction method extracts, from that triangulation, a maximum solid with no singularity. It can handle the case where the number of contours varies from one cross section to the other and thus, can handle contour-defined objects which are branched and have holes. This algorithm has been fully implemented and tested on various examples; results on medical images are presented. (Author abstract) 28 Refs.

2152 J.-D. Boissonnat and X.-N. Bui. Accessibility region for a car that only moves forwards along optimal paths. Research Report 2181, INRIA Sophia-Antipolis, 1994. [bb-arcto-94] *Abstract:* In [BSBL93], the synthesis problem has been solved for a non-holonomic car-like robot only allowed to move forwards in a plane. Here we complete the study of this mobile robot by computing the SP-accessibility regions which are the sets of points reached from the origin configuration with an optimal path of length less than or equal to a given value. For that, we consider the problem of optimising the paths starting from an oriented point and arriving at another point with free orientation. After characterising these optimal paths, we compute the partition of the plane w.r.t. the types of the optimal paths, and finally we find the shapes of the SP-accessibility regions.

2153 Jean-Daniel Boissonnat and Frédéric Cazals. Coarse-to-fine surface simplification with geometric guarantees. In A. Chalmers and T.-M. Rhyne, editors, *Eurographics'01*, Manchester, 2001. Blackwell. [bc-cfssg-01]

2154 Jean-Daniel Boissonnat and Frédéric Cazals. Natural coordinates of points on a surface. *Comput. Geom. Theory Appl.*, 19:155–173, 2001. [bc-ncps-01]

2155 J.-D. Boissonnat and F. Cazals. Natural neighbor coordinates of points on a surface. *Comput. Geom. Theory Appl.*, 19:155–173, 2001. [bc-nncps-01]

2156 Jean-Daniel Boissonnat and Frédéric Cazals. Smooth surface reconstruction via natural neighbour interpolation of distance functions. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 223–232, 2000. [bc-ssrnn-00]

2157 Jean-Daniel Boissonnat, Frédéric Cazals, Frank Da, Olivier Devillers, Sylvain Pion, François Rebufat, Monique Teillaud, and Mariette Yvinec. Programming with CGAL: The example of triangulations. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 421–423, 1999. [bcddprty-pcet-99] *URL:* http://www-sop.inria.fr/prisme/publis/bcddprty-pcet-99.ps.gz.

2158 Jean-Daniel Boissonnat, Frédéric Cazals, and Julia Flötotto. 2*d*-structure drawings of similar molecules. In Joe Marks, editor, *Graph Drawing: 8th international symposium*, volume 1984 of *Lecture Notes Comput. Sci.*, pages 115–126. Springer-Verlag, 2000. [bcf-2sdsm-00]

2159 Jean-Daniel Boissonnat, Frédéric Cazals, and Stéphane Nullans. Smooth shape reconstruction. In *Abstracts 15th European Workshop Comput. Geom.*, pages 63–68. INRIA Sophia-Antipolis, 1999. [bcn-ssr-99]

2160 Jean-Daniel Boissonnat, André Cérézo, Elena Degtiariora-Kostova, Vladimir Kostov, and Juliette Leblond. Shortest plane paths with bounded derivative of the curvature. *C. R. Acad. Sci.*, 329-I:613–618, 1999. [bcdkl-sppbd-99] *Succeeds:* bcl-nspps-94.

2161 Jean-Daniel Boissonnat, André Cérézo, Olivier Devillers, Jacqueline Duquesne, and Mariette Yvinec. An algorithm for constructing the convex hull of a set of spheres in dimension *d*. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 269–273, 1992. [bcddy-acchs-92] *Precedes:* bcddy-acchs-96. *Cites:* c-ochap-91, cs-arscg-89, bdsty-arsol-92, ms-cpubc-71, r-chada-92, ss-tddsp-90, ZZZ.

2162 Jean-Daniel Boissonnat, André Cérézo, Olivier Devillers, Jacqueline Duquesne, and Mariette Yvinec. An algorithm for constructing the convex hull of a set of spheres in dimension *d*. *Comput. Geom. Theory Appl.*, 6:123–130, 1996. [bcddy-acchs-96] *URL:* http://www-sop.inria.fr/prisme/publis/bcddy-acchs-96.ps.gz. *Succeeds:* bcddy-acchs-92. *Cites:* r-chada-92, ss-tddsp-90, m-mnfcp-70, c-ochap-91, cs-arscg-89, s-sdlpc-91, bdsty-arsol-92. *Abstract:* We present an algorithm which computes the convex hull of a set of n spheres i n dimension d in time $O(n^{\lceil \frac{d}{2} \rceil} + n \log n)$. It is worst-case optimal in three dimensions and in even dimensions. The same method can also be used to compute the convex hull of a set of n homo thetic convex objects of E^d. If the complexity of each object is constant, the time needed in the worst case is $O(n^{\lceil \frac{d}{2} \rceil} + n \log n)$.

2163 Jean-Daniel Boissonnat, André Cérézo, Olivier Devillers, and Monique Teillaud. Output-sensitive construction of the 3-d Delaunay triangulation of constrained sets of points. Research Report 1415, INRIA Sophia-Antipolis, Valbonne, France, April 1991. [bcdt-osc3d-91t] *URL:* http://www.inria.fr/RRRT/RR-1415. *Keywords:* Delaunay triangulation, Voronoi diagrams, output-sensitive algorithms, shape reconstructions, shelling, tomography. *Precedes:* bcdt-osc3d-91i, bcdt-oscdt-96.

2164 Jean-Daniel Boissonnat, André Cérézo, Olivier Devillers, and Monique Teillaud. Output-sensitive construction of the 3-d Delaunay triangulation of constrained sets of points. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 110–113, 1991. [bcdt-osc3d-91i] *Keywords:* Delaunay triangulation, Voronoi diagrams, output-sensitive algorithms, shape reconstructions, shelling, tomography. *Succeeds:* bcdt-osc3d-91t. *Precedes:* bcdt-oscdt-96. *Cites:* b-srpcs-88, bcdt-osc3d-91t, bdsty-olgag-91a, bm-sdcs-71, cs-arscg-89, e-acg-87, em-feptd-85, s-chdch-86, ZZZ.

2165 Jean-Daniel Boissonnat, André Cérézo, Olivier Devillers, and Monique Teillaud. Output-sensitive construction of the Delaunay triangulation of points lying in two planes. *Internat. J. Comput. Geom. Appl.*, 6(1):1–14, 1996. [bcdt-oscdt-96] *URL:* http://www-sop.inria.fr/prisme/publis/bcdt-oscdt-96.ps.gz. *Succeeds:* bcdt-osc3d-91t, bcdt-osc3d-91i. *Cites:* ps-cgi-85, e-acg-87, a-vdsfg-91, s-chdch-86, ms-loq-92, cs-arscg-89, bdsty-arsol-92, bcdt-osc3d-91i, bm-sdcs-71, bcdt-osc3d-94t, b-srpcs-88, a-pdpaa-87, c-ig-61, p-gcc-70, dmt-ssgtu-92i, gs-ccrs-87, eg-tsa-89, b-gdg-83. *Abstract:* In this paper, we propose an algorithm to compute the Delaunay triangulation of a set S of n points in 3-dimensional space when the points lie in 2 planes. The algorithm is output-sensitive and optimal with respect to the input and the output sizes. Its time complexity is $O(n \log n + t)$, where t is the size of the output, and the extra storage is $O(n)$.

2166 J. D. Boissonnat, A. Cérézo, and J. Duquesne. An algorithm for constructing the convex hull of a set of spheres in three dimensional space. In *Abstracts 8th European Workshop Comput. Geom.*, pages 51–53. Utrecht University, 1992. [bcd-acchs-92]

2167 Jean-Daniel Boissonnat, André Cérézo, and Juliette Leblond. A note on shortest paths in the plane subject to a constraint on the derivative of the curvature. Rapport de recherche 2160, INRIA, 1994. [bcl-nspps-94] *URL:* http://www-sop.inria.fr/RRRT/RR-2160.html. *Precedes:* bcdkl-sppbd-99.

2168 Jean-Daniel Boissonnat, André Cérézo, and Juliette Leblond. Shortest paths of bounded curvature in the plane. Report 1503, INRIA Sophia-Antipolis, Valbonne, France, July 1991. [bcl-spbcp-91] *Precedes:* bcl-spbcp-92.

2169 Jean-Daniel Boissonnat, André Cérézo, and Juliette Leblond. Shortest paths of bounded curvature in the plane. In *Proc. 9th IEEE Internat. Conf. Robot. Autom.*, 1992. [bcl-spbcp-92] *Succeeds:* bcl-spbcp-91. *Precedes:* bcl-spbcp-94.

2170 Jean-Daniel Boissonnat, André Cérézo, and Juliette Leblond. Shortest paths of bounded curvature in the plane. *Internat. J. Intell. Syst.*, 10:1–16, 1994. [bcl-spbcp-94]

2171 Jean-Daniel Boissonnat, Jurek Czyzowicz, Olivier Devillers, Jean-Marc Robert, and Mariette Yvinec. Convex tours of bounded curvature. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 254–265. Springer-Verlag, 1994. [bcdry-ctbc-94] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html. *Precedes:* bcdry-ctbc-99. *Abstract:* We consider the motion planning problem for a point constrained to move along a smooth (C1) closed (cycle) convex path of bounded curvature. The workspace of the moving point is bounded by a convex polygon with m vertices, containing an obstacle in a form of a simple polygon with n vertices. We present an O(m + n) time algorithm finding the path, going around the obstacle, whose curvature is the smallest possible.

2172 Jean-Daniel Boissonnat, Jurek Czyzowicz, Olivier Devillers, Jean-Marc Robert, and Mariette Yvinec. Convex tours of bounded curvature. *Comput. Geom. Theory Appl.*, 13:149–159, 1999. [bcdry-ctbc-99] *URL:* http://www-sop.inria.fr/prisme/biblio/. *Succeeds:* bcdry-ctbc-94. *Cites:* agss-ltacv-89, dxcr-kmp-93, d-cmlca-57, fw-pcm-91, jc-pspmr-89, kslo-prpph-96, k-osps-83, l-rmp-91, o-mpic-87, o-ramp-92, os-plamp-94, p-masp-77, rs-mppmo-94, ss-ampr-90, w-mpav-88. *Abstract:* We consider the motion planning problem for a point constrained to move along a smooth closed convex path of bounded curvature. The workspace of the moving point is bounded by a convex polygon with m vertices, containing an obstacle in a form of a simple polygon with n vertices. We present an $O(m + n)$ time algorithm finding the path, going around the obstacle, whose curvature is the smallest possible.

2173 Jean-Daniel Boissonnat, Jurek Czyzowicz, Olivier Devillers, Jorge Urrutia, and Mariette Yvinec. Computing largest circles separating two sets of segments. Research Report 2705, INRIA, BP93, 06902 Sophia-Antipolis, France, 1995. [bcduy-clcst-95] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=2705. *Abstract:* A circle C separates two planar sets if it encloses one of the sets and its open interior disk does not meet the other set. A separating circle is a largest one if it cannot be locally increased while still separating the two given sets. An $\Theta(n \log n)$ optimal algorithm is proposed to find all largest circles separating two given sets of line segments when line segments are allowed to meet only at their endpoints. This settles an open problem from a previous paper [2176]. In the general case, when line segments may intersect $\Omega(n^2)$ times, our algorithm can be adapted to work in $O(n\alpha(n) \log n)$ time and $O(n\alpha(n))$ space, where $\alpha(n)$ represents the extremely slowly growing inverse of Ackermann function.

2174 Jean-Daniel Boissonnat, Jurek Czyzowicz, Olivier Devillers, Jorge Urrutia, and Mariette Yvinec. Computing largest circles separating two sets of segments. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 173–178, 1996. [bcduy-clcst-96] *Precedes:* bcduy-clcst-00.

2175 Jean-Daniel Boissonnat, Jurek Czyzowicz, Olivier Devillers, Jorge Urrutia, and Mariette Yvinec. Computing largest circles separating two sets of segments. *Internat. J. Comput. Geom. Appl.*, 10:41–54, 2000. [bcduy-clcst-00] *URL:* http://www-sop.inria.fr/prisme/publis/bcduy-clcst.ps.gz. *Succeeds:* bcduy-clcst-96. *Cites:* abosy-fmcnp-89, b-cspps-88, bcdy-csp-95, bg-aoscf-95, cegss-cfals-93, dj-cmcnp-90, bds-lric-95, dk-ladsc-85, egs-cmcap-90, ep-mps-88, f-spcrd-86, ka-dd-84, k-eccs-79, k-osps-83, ld-gvdp-81, mt-cppna-85, m-lpltw-84, ms-sapo-95, m-idssp-92, okm-ccs-86. *Abstract:* A circle C separates two planar sets if it encloses one of the sets and its open interior disk does not meet the other set. A separating circle is a largest one if it cannot be locally increased while still separating the two given sets. An $\Theta(n \log n)$ optimal algorithm is proposed to find all largest circles separating two given sets of line segments when line segments are allowe d to meet only at their endpoints. In the general case, when line segments may intersect $\Omega(n^2)$ times, our algorithm can be adapted to work in $O(n\alpha(n) \log n)$ time and $O(n\alpha(n))$ space, where $\alpha(n)$ represents the extremely slowly growing inverse of the Ackermann function.

2176 Jean-Daniel Boissonnat, Jurek Czyzowicz, Olivier Devillers, and Mariette Yvinec. Circular separability of polygons. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 273–281, 1995. [bcdy-csp-95] *Keywords:* separation, containment, largest disk, Voronoi diagrams. *Precedes:* bcdy-csp-01. *Abstract:* Two planar sets are circularly separable if there exists a circle enclosing one of the set and whose open interior disk does not intersect the other set. This paper studies two problems related to circular separability. A linear-time algorithm is proposed to decide if two polygons are circularly separable. The algorithm outputs the smallest separating circle. The second problem asks for the largest circle included in a preprocessed, convex polygon, under some point and/or line constraints. The resulting circle must contain the query points and it must lie in the halfplanes delimited by the query lines.

2177 Jean-Daniel Boissonnat, Jurek Czyzowicz, Olivier Devillers, and Mariette Yvinec. Circular separability of polygons. *Algorithmica*, 30:67–82, 2001. [bcdy-csp-01] *URL:* http://link.springer.de/link/service/journals/00453/contents/00/10078/%paper/10078.pdf. *Succeeds:* bcdy-csp-95. *Cites:* abosy-fmcnp-89, agss-ltacv-89, bcdry-ctbc-94, bg-aoscf-95, b-cspps-88, c-bvdcp-86, dj-cmcnp-90, dk-ladsc-85, ep-mps-88, f-spcrd-86, ka-dd-84, k-osps-83, l-sss-71, l-fchsp-83, m-lpltw-84, m-idssp-92, ms-sapo-95, okm-ccs-86. *Abstract:* Two planar sets are circularly separable if there exists a circle enclosing one of the set and whose open interior disk does not intersect the other set. This paper studies two problems related to circular separability. A linear-time algorithm is proposed to decide if two polygons are circularly separable. The algorithm outputs the smallest separating circle. The second problem asks for the largest circle included in a preprocessed, convex polygon, under some point and/or line constraints. The resulting circle must contain the query points and it must lie in the halfplanes delimited by the query lines.

2178 Jean-Daniel Boissonnat, Olivier Devillers, LeonBattista Donati, and Franco P. Preparata. Motion planning for a spider robot. In *Proc. 9th IEEE Internat. Conf. Robot. Autom.*, pages 2321–2326, 1992. [bddp-mpsr-92] *Keywords:* motion planning, legged robot. *Precedes:* bddp-mplrs-95.

2179 Jean-Daniel Boissonnat, Olivier Devillers, LeonBattista Donati, and Franco P. Preparata. Motion planning of legged robots: the spider robot problem. *Internat. J. Comput. Geom. Appl.*, 5(1–2):3–20, 1995. [bddp-mplrs-95] *URL:* http://www-sop.inria.fr/prisme/publis/bddp-mplrs-95.ps.gz. *Succeeds:* bddp-mpsr-92,bddp-spsr-92. *Cites:* ps-cgi-85, l-knnvd-82, agss-ltacv-87, s-ksacs-91, hs-ompc-91, p-pplr-90, w-cvgnl-85, bdp-cu3ct-91. *Abstract:* We consider the problem of planning motions of a simple legged robot called the spider robot. The robot is modelled as a point where all its legs are attached, and the footholds where the robot can securely place its feet consist of a set of n points in the plane. We show that the space $\mathcal{F}$ of admissible and stable placements of such robots has size $\Theta(n^2)$ and can be constructed in $O(n^2 \log n)$ time and $O(n^2)$ space. Once $\mathcal{F}$ has been constructed, we can efficiently solve several problems related to motion planning.

2180 Jean-Daniel Boissonnat, Olivier Devillers, LeonBattista Donati, and Franco P. Preparata. Stable placements of spider robots. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 242–250, 1992. [bddp-spsr-92] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1767. *Keywords:* motion planning, legged robot. *Precedes:* bddp-mplrs-95. *Cites:* agss-ltacv-89, bddp-mpsr-92, bdp-cu3ct-91, hs-ompc-91, hk-gsftq-91, hnku-agcqw-84, l-knnvd-82, ps-cgi-85, -sill-84, -sill-90, s-ksacs-91, ZZZ.

2181 Jean-Daniel Boissonnat, Olivier Devillers, and Sylvain Lazard. From spider robots to half-disk robots. In *Abstracts 10th European Workshop Comput. Geom.*, pages 62–63. Universidad de Cantabria, Santander, 1994. [bdl-srhdr-94c] *Precedes:* bdl-mplr-00.

2182 Jean-Daniel Boissonnat, Olivier Devillers, and Sylvain Lazard. From spider robots to half disks robots. In *Proc. 11th IEEE Internat. Conf. Robot. Autom.*, pages 953–958, 1994. [bdl-srhdr-94] *Succeeds:* bdl-srhdr-94c. *Precedes:* bdl-mplr-00.

2183 Jean-Daniel Boissonnat, Olivier Devillers, and Sylvain Lazard. Motion planning of legged robots. In *Proc. 1st Workshop Algorithmic Found. Robot.* A. K. Peters, Boston, MA, 1994. [bdl-mplr-94] *Precedes:* bdl-mplr-00.

2184 Jean-Daniel Boissonnat, Olivier Devillers, and Sylvain Lazard. Motion planning of legged robots. *SIAM J. Comput.*, 30:218–246, 2000. [bdl-mplr-00] *URL:* http://www-sop.inria.fr/prisme/publis/bdl-mplr.ps.gz. *Succeeds:* bdl-mplr-94,bdl-srhdr-94,bdl-srhdr-94c. *Cites:* bddp-mplrs-95, dd-frspp-90, h-fuenl-89, ks-empac-90, kst-coksm-97, l-ptrmn-96, s-ksacs-91, ss-nempa-87, t-frnns-91. *Abstract:* We study the problem of computing the free space $\mathcal{F}$ of a simple legged robot called the spider robot. The body of this robot is a single point and the legs are attached to the body. The robot is subject to two constraints: each leg has a maximal extension R (accessibility constraint) and the body of the robot must lie above the convex hull of its feet (stability constraint). Moreover, the robot can only put its feet on some regions, called the foothold regions. The free space $\mathcal{F}$ is the set of positions of the body of the robot such that there exists a set of accessible footholds for which the robot is stable. We present an efficient algorithm that computes $\mathcal{F}$ in $O(n^2 \log n)$ time using $O(n^2\alpha(n))$ space for n discrete point footholds where $\alpha(n)$ is an extremely slowly growing function ($\alpha(n) \leq 3$ for any practical value of n). We also present an algorithm for computing $\mathcal{F}$ when the foothold regions are pairwise disjoint polygons with n edges in total. This algorithm computes $\mathcal{F}$ in $O(n^2\alpha_8(n) \log n)$ time using $O(n^2\alpha_8(n))$ space ($\alpha_8(n)$ is also an extremely slowly growing function). These results are close to optimal since $\Omega(n^2)$ is a lower bound for the size of $\mathcal{F}$.

2185 Jean-Daniel Boissonnat, Olivier Devillers, and Franco P. Preparata. Computing the union of 3-colored triangles. Technical Report 1293, INRIA, Sophia-Antipolis, France, October 1990. [bdp-cu3ct-90] *URL:* http://www.inria.fr/RRRT/RR-1293. *Precedes:* bdp-cu3ct-91.

2186 Jean-Daniel Boissonnat, Olivier Devillers, and Franco P. Preparata. Computing the union of 3-colored triangles. *Internat. J. Comput. Geom. Appl.*, 1(2):187–196, 1991. [bdp-cu3ct-91] *URL:* http://www-sop.inria.fr/prisme/publis/bdp-cu3ct-91.ps.gz. *Keywords:* convex hull, motion planning, legged robot. *Abstract:* Given is a set s of n points, each colored with one of $k \geq 3$ colours. We say that a triangle defined by three points of $\int$ is 3-colored if its vertices have distinct colours. We prove in this paper that the problem of constructing the boundary of the union $\sqcup\int$ of all such 3-colored triangles can be done in optimal $O(n \log n)$ time.

2187 Jean-Daniel Boissonnat, Olivier Devillers, René Schott, Monique Teillaud, and Mariette Yvinec. Applications of random sampling to on-line algorithms in computational geometry. Technical Report 1285, INRIA Sophia-Antipolis, Valbonne, France, 1990. [bdsty-arsol-90] *URL:* http://www.inria.fr/RRRT/RR-1285. *Succeeds:* bt-hrodt-86. *Precedes:* bdsty-olgag-91i.

2188 Jean-Daniel Boissonnat, Olivier Devillers, René Schott, Monique Teillaud, and Mariette Yvinec. Applications of random sampling to on-line algorithms in computational geometry. *Discrete Comput. Geom.*, 8:51–71, 1992. [bdsty-arsol-92] *URL:* http://www-sop.inria.fr/prisme/publis/bdsty-arsol-92.ps.gz. *Keywords:* randomized algorithms, Delaunay triangulation, semi-dynamic algorithms, arrangement of line-segments. *Succeeds:* bdsty-olgag-91i. *Abstract:* This paper presents a general framework for the design and randomized analysis of geometric algorithms. These algorithms are on-line and the framework provides general bounds for their expected space and time complexities when averaging over all permutations of the input data. The method is general and can be applied to various geometric problems. The power of the technique is illustrated by new efficient on-line algorithms for constructing convex hulls and Voronoi diagrams in any dimension, Voronoi diagrams of line segments in the plane, arrangements of curves in the plane and others.

2189 Jean-Daniel Boissonnat, Olivier Devillers, René Schott, Monique Teillaud, and Mariette Yvinec. On-line geometric algorithms with good expected behaviours. Technical Report INRIA 1285, August 1990. [bdsty-olgag-90t] *Precedes:* bdsty-olgag-91i, bdsty-olgag-91a.

2190 Jean-Daniel Boissonnat, Olivier Devillers, René Schott, Monique Teillaud, and Mariette Yvinec. On-line geometric algorithms with good expected behaviours. In *Proc. 13th World Congress on Computation and Applied Math.*, pages 137–139, 1991. [bdsty-olgag-91i] *Succeeds:* bdsty-arsol-90. *Precedes:* bdsty-arsol-92.

2191 Jean-Daniel Boissonnat, Olivier Devillers, René Schott, Monique Teillaud, and Mariette Yvinec. On-line geometric algorithms with good expected behaviours. *IMACS*, ??, 1991. [bdsty-olgag-91a] *Succeeds:* bdsty-olgag-90t.

2192 Jean-Daniel Boissonnat, Olivier Devillers, and Monique Teillaud. A dynamic construction of higher-order Voronoi diagrams and its randomized analysis. Technical Report 1207, INRIA Sophia-Antipolis, Valbonne, France, 1990. [bdt-dchov-90] *URL:* http://www.inria.fr/RRRT/RR-1207. *Keywords:* randomized algorithms, higher order Voronoi diagrams, dynamic algorithms. *Succeeds:* bdt-olcho-90, bt-hrodt-86. *Precedes:* bdt-schov-93.

2193 Jean-Daniel Boissonnat, Olivier Devillers, and Monique Teillaud. A semidynamic construction of higher-order Voronoi diagrams and its randomized analysis. *Algorithmica*, 9:329–356, 1993. [bdt-schov-93] *URL:* http://www-sop.inria.fr/prisme/publis/bdt-schov-93.ps.gz. *Keywords:* randomized algorithms, higher order Voronoi diagrams, dynamic algorithms. *Succeeds:* bdt-olcho-90. *Abstract:* The k-Delaunay tree extends the Delaunay tree introduced in [2221]. It is a hierarchical data structure that allows the semi-dynamic construction of the higher order Voronoi diagrams of a finite set of n points in any dimension. In this paper, we prove that a randomized construction of the k-Delaunay tree, and thus, of all the order $\leq k$ Voronoi diagrams, can be done in $O(n \log n + k^3 n)$ expected time and $O(k^2 n)$ expected storage in the plane, which is asymptotically optimal for fixed k. The algorithm is simple and experimental results are given.

2194 Jean-Daniel Boissonnat, Olivier Devillers, and Monique Teillaud. An on-line construction of higher-order Voronoi diagrams and its randomized analysis. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 278–281, 1990. [bdt-olcho-90] *Comments:* to appear in Algorithmica. *Precedes:* bdt-schov-93. *Cites:* agss-ltacv-89, bdsty-arsol-90, bdt-dchov-90, bt-hrodt-86, bt-rcdt-89, ce-iacko-85, c-narsc-87, cs-arscg-89, d-hdvdl-89, eos-calha-86, gks-ricdv-90, gs-cdtp-78, l-knnvd-82, mmo-cavd-90, m-lavd-91, m-orfv-89, sh-cpp-75, ZZZ.

2195 Jean-Daniel Boissonnat, Olivier Devillers, Monique Teillaud, and Mariette Yvinec. Triangulations in CGAL. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 11–18, 2000. [bdty-tcgal-00] *Cites:* bdh-qach-96, bd-asmbh-94, by-ag-98, b-rgsdd-93, bbp-iayed-98scg, cd-fsgr-00, boo-stswe-96, 9d-iirdt-98, dlpt-ccpps-98, fhhn-dipmc-99, gb-tdmae-97, g-ggmpa-96, gs-pmgsc-85, hkw-gapi2-99, k-ugpddsp-99, l-ndgcm-94, msz-frplw-96, m-rmstd-91, p-iaeia-99, ps-cgi-85, s-te2dq-96, s-rafpg-96, s-cgehdcd-98, v-gpccg-97. *Abstract:* This paper presents the main algorithmic and design choices that have been made to implement triangulations in the computational geometry algorithms library CGAL.

2196 Jean-Daniel Boissonnat and Katrin Dobrindt. On-line construction of the upper envelope of triangles and surface patches in three dimensions. *Comput. Geom. Theory Appl.*, 5:303–320, 1996. [bd-olcue-96]

2197 Jean-Daniel Boissonnat and Katrin Dobrindt. On-line randomized construction of the upper envelope of triangles and surface patches in R^3. Manuscript Tech. Rep. 1878, INRIA, Sophia-Antipolis, France, 1993. [bd-olrcu-93]

2198 Jean-Daniel Boissonnat and Katrin Dobrindt. Randomized construction of the upper envelope of triangles in R^3. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 311–315, 1992. [bd-rcuet-92] *Cites:* bdsty-arsol-92, cs-arscg-89, d-rysoa-92, e-ueplf-89, e-ueplf-89, m-eahsr-89, m-orfv-89, ps-ueplf-89, ss-tddsp-90, s-sfira-91, ZZZ.

2199 Jean-Daniel Boissonnat, Katrin Dobrindt, Bernhard Geiger, and Henri Michel. A global motion planner for a mobile robot on a terrain. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C20–C21, 1995. [bdgm-gmpmr-95] *Keywords: Cites:* bg-tdrcs-93, w-pdtpu-93, egs-ueplf-89, l-rmp-91, ZZZ.

2200 J.-D. Boissonnat and O. D. Faugeras. Triangulation of 3-d objects. In *Proc. 7th Internat. Joint Conf. Artif. Intell.*, pages 658–660, 1981. [bf-t3do-81]

2201 J. D. Boissonnat, O. D. Faugeras, and E. Le Bras-Mehlman. Representing stereo data with the Delaunay triangulation. Technical Report 788, INRIA, Domaine de Voluceau Rocquencourt, BP 105, 78153 Le Chesnay Cedex, France, February 1988. [bfl-rsddt-88t] *Precedes:* flb-rsddt-90, bfl-rsddt-88i.

2202 J. D. Boissonnat, O. D. Faugeras, and E. Le Bras-Mehlman. Representing stereo data with the Delaunay triangulation. In *Proc. 5th IEEE Internat. Conf. Robot. Autom.*, pages 24–29, 1988. [bfl-rsddt-88i] *Succeeds:* bfl-rsddt-88t. *Precedes:* flb-rsddt-90.

2203 Jean-Daniel Boissonnat and Julia Flötotto. A local coordinate system on a surface. In *Proc. 7th ACM Symposium on Solid Modeling and Applications*, 2002. [bf-lcss-02]

2204 Jean-Daniel Boissonnat and Bernhard Geiger. 3d simulation of delivery. In G. M. Nielson and D. Bergeron, editors, *Visualization 93*, pages 416–419, San Jose CA, 1993. IEEE Computer Society Press. [bg-3dsd-93]

2205 Jean-Daniel Boissonnat and Bernhard Geiger. Three-dimensional reconstruction of complex shapes based on the Delaunay triangulation. Report 1697, INRIA Sophia-Antipolis, Valbonne, France, April 1992. [bg-tdrcs-92] *URL:* http://www-sop.inria.fr/cgi-bin/wais_ra_sophia?question=1697. *Keywords:* shape reconstruction, medical images, Delaunay triangulation.

2206 Jean-Daniel Boissonnat and Bernhard Geiger. Three dimensional reconstruction of complex shapes based on the Delaunay triangulation. In R. S. Acharya and D. B. Goldgof, editors, *Biomedical Image Processing and Biomedical Visualization*, volume 1905, pages 964–975. SPIE, 1993. [bg-tdrcs-93] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1697. *Succeeds:* bg-tdrcs-92.

2207 J.-D. Boissonnat and P. Kofakis. Use of the Delaunay triangulation for the identification and the localization of objects. In *Proc. IEEE Internat. Conf. Comput. Vision Pattern. Recogn.*, pages 398–401, 1985. [bk-udtil-85] *Annote:* Uses skeleton of object foe rep. Computes approximation of the skeleton by connecting centres of adjacent triangles in DT.

2208 Jean-Daniel Boissonnat, Eelco de Lange, and Monique Teillaud. Minkowski operations for satellite antenna layout. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 67–76, 1997. [blt-mosal-97] *URL:* http://www-sop.inria.fr/prisme/publis/blt-mosal-97.ps.gz. *Precedes:* blt-smssa-98. *Cites:* ab-scsp-87, ab-pptr-89, abdpy-esdus-97, bdh-qach-93, dm-mtcae-95, gs-ccrs-87, lm-cancp-93, l-spcsa-83, ZZZ.

2209 Jean-Daniel Boissonnat, Eelco de Lange, and Monique Teillaud. Slicing Minkowski sums for satellite antenna layout. *Comput. Aided Design*, 30(4):255–265, 1998. Special Issue on Computational Geometry and Computer-Aided Design and Manufacturing. [blt-smssa-98] *Succeeds:* blt-mosal-97.

2210 J.-D. Boissonnat and J.-P. Laumond, editors. *Proc. of the Workshop on Geometry and Robotics*, volume 391 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1989. [bl-gr-89]

2211 Jean-Daniel Boissonnat and Sylvain Lazard. A polynomial-time algorithm for computing a shortest path of bounded curvature amidst moderate obstacles. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 242–251, 1996. [bl-ptacs-96] *Keywords:* Non-holonomic robot, motion planning, shortest paths, mobile robot, computational geometry. *Cites:* art-mpscr-95, bl-nmrom-89, bl-nmbmr-93, bbf-fmg-86, bb-arcto-94, bcl-spbcp-94, bsbl-spsdn-94, cs-arscg-89, ds-cgcw-90, d-cmlca-57, fw-pcm-88, jc-pspmr-89, jlt-empnm-91, klps-ujrcf-86, l-fppcl-91, l-rmp-91, l-fcfst-87, ljtm-mpnmr-94, lc-nmp-92, nm-nppa-89, rs-opctg-90, st-sprsc-91, wa-aaccs-96, w-mpav-88, w-spav-89, ZZZ. *Abstract:* In this paper, we consider the problem of computing a shortest path of bounded curvature amidst obstacles in the plane. More precisely, given prescribed initial and final configurations (i.e. positions and orientations) and a set of obstacles in the plane, we want to compute a shortest C1 path joining those two configurations, avoiding the obstacles, and with the further constraint that, on each C2 piece, the radius of curvature is at least 1. In this paper, we consider the case of moderate obstacles (as introduced by Agarwal et al.) and present a polynomial-time exact algorithm to solve this problem.

2212 Jean-Daniel Boissonnat and Sylvain Lazard. Convex hulls of bounded curvature. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 14–19, 1996. [bl-chbc-96]

2213 Jean-Daniel Boissonnat and Franco P. Preparata. Robust plane sweep for intersecting segments. Research Report 3270, INRIA, Sophia Antipolis, September 1997. [bp-rpsis-97]

2214 J.-D. Boissonnat and F. P. Preparata. Robust plane sweep for intersecting segments. *SIAM J. Comput.*, 29(5):1401–1421, 2000. [bp-rpsis-00]

2215 Jean-Daniel Boissonnat, Micha Sharir, Boaz Tagansky, and Mariette Yvinec. Voronoi diagrams in higher dimensions under certain polyhedral distance functions. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 79–88, 1995. [bsty-vdhdc-95] *Keywords: Precedes:* bsty-vdhdc-98. *Cites:* a-vdsfg-91, ckstw-vdl3s-95, cs-arscg-89, e-acg-87, es-vda-86, hs-nblet-94, klps-ujrcf-86, ls-ippvd-87, m-cgitr-93, o-cgc-94, ps-cgi-85, s-atubl-94, t-ntasa-95, ZZZ.

2216 Jean-Daniel Boissonnat, Micha Sharir, Boaz Tagansky, and Mariette Yvinec. Voronoi diagrams in higher dimensions under certain polyhedral distance functions. *Discrete Comput. Geom.*, 19(4):473–484, 1998. [bsty-vdhdc-98] *Succeeds:* bsty-vdhdc-95.

2217 J.-D. Boissonnat and J. Snoeyink. Efficient algorithms for line and curve segment intersection using restricted predicates. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 370–379, 1999. [bs-ealcs-99] *Precedes:* bs-ealcs-00.

2218 J.-D. Boissonnat and J. Snoeyink. Efficient algorithms for line and curve segment intersection using restricted predicates. *Comput. Geom. Theory Appl.*, 16(1):35–52, 2000. [bs-ealcs-00] *Succeeds:* bs-ealcs-99. *Annote:* Special Issue on the 1998 Workshop on Computational Geometry.

2219 Jean-Daniel Boissonnat and Monique Teillaud. A hierarchical representation of objects: The Delaunay tree. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 260–268, 1986. [bt-hrodt-86] *Precedes:* bt-rcdt-89, bdt-dchov-90, bdsty-arsol-90. *Cites:* b-asmra-86, aes-solac-85, aeiim-pubtc-85, b-sthrc-81, b-gstds-84, b-srpcs-88, b-cdt-81, cg-vippg-85, dk-fdpi-83, es-vda-85, f-sdpvd-83, g-rssc-62, gs-cdtp-78, gs-pmgsc-85, k-osps-83, k-cddvd-80, ls-tacdt-80, m-iaeln-53, m-hpppp-70, ob-dtdos-79, ps-cgi-85, r-pc-64, s-qrhds-84, t-prgc-80, ZZZ.

2220 Jean-Daniel Boissonnat and Monique Teillaud. On the randomized construction of the Delaunay tree. Technical Report 1140, INRIA Sophia-Antipolis, Valbonne, France, 1989. [bt-rcdt-89] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1140. *Keywords:* randomized algorithms, Delaunay triangulation, semi-dynamic algorithms. *Succeeds:* bt-hrodt-86. *Precedes:* bt-rcdt-93.

2221 Jean-Daniel Boissonnat and Monique Teillaud. On the randomized construction of the Delaunay tree. *Theoret. Comput. Sci.*, 112:339–354, 1993. [bt-rcdt-93] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1140. *Keywords:* randomized algorithms, Delaunay triangulation, semi-dynamic algorithms. *Succeeds:* bt-rcdt-89.

2222 Jean-Daniel Boissonnat and Antoine Vigneron. Elementary algorithms for reporting intersections of curve segments. Rapport de recherche 3825, INRIA, 1999. [bv-earic-99] *URL:* http://www.inria.fr/RRRT/RR-3825. *Cites:* b-oafsi-95, bo-arcgi-79, bs-ealcs-99, bp-rpsis-, c-stsar-94, ce-oails-92, cs-arscg-89, afl-rracg-98, k-ah-92, lpt-rpqid-99, p-iaeia-99, ps-cgi-90, s-ri-99, y-tegc-97, y-rgc-97. *Abstract:* We propose several algorithms to report the k intersecting pairs among a set of n curve segments. Apart from the intersection predicate, our algorithms only use two simple predicates: the predicate that compares the coordinates of two points and the predicate that says if a point is below, on, or above a segment. In particular, the predicates we use do not allow to count the number of intersection points nor to sort them, and the time complexity of our algorithms depends on the number of intersecting pairs, not on the number of intersection points (differently from the other non trivial algorithms). We present an algorithm for the red-blue variant of the problem where we have a set of blue segments and a set of red segments so that no two segments of the same set intersect. The time complexity is $O((n+k)\log n)$. This algorithm is then used to solve the general case in $O(n\sqrt{k}\log n)$ time. In the case of pseudo-segments (i.e. segments that intersect in at most one point) we propose a better algorithm whose time complexity is $O((k+n)\log n + n\sqrt{k})$. All our time complexity results are a log factor from optimal.

2223 Jean-Daniel Boissonnat and Antoine Vigneron. Elementary algorithms for reporting intersections of curve segments. *Comput. Geom. Theory Appl.*, 21:167–175, 2002. [bv-earic-02]

2224 Jean-Daniel Boissonnat and Mariette Yvinec. *Algorithmic Geometry*. Cambridge University Press, UK, 1998. Translated by Hervé Brönnimann. [by-ag-98] *URL:* http://www.cup.cam.ac.uk/Scripts/webbook.asp?isbn=0521563224. *Succeeds:* by-ga-95. *Annote:* translated from [2225] by Hervé Brönnimann.

2225 Jean-Daniel Boissonnat and Mariette Yvinec. *Géométrie Algorithmique*. Ediscience international, Paris, 1995. [by-ga-95] *URL:* http://www-sop.inria.fr/prisme/personnel/yvinec/livre.html. *Precedes:* by-ag-98.

2226 Jean-Daniel Boissonnat and Mariette Yvinec. Probing a scene of non-convex polyhedra. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 237–246, 1989. [by-psncp-89] *Precedes:* by-psncp-92. *Cites:* aby-ooacr-87, aby-pncp-89, b-dscns-86, cy-sp-87, dey-pcp-86, m-dsa-84, s-gp-88, ZZZ.

2227 Jean-Daniel Boissonnat and Mariette Yvinec. Probing a scene of non-convex polyhedra. *Algorithmica*, 8:321–342, 1992. [by-psncp-92] *Keywords:* geometric probing, polyhedral scenes. *Succeeds:* by-psncp-89.

Jean-Daniel Boissonnat. See also [477–481,483–485,1068,1180–1189,1198,2580,2581,5149,5150,8561,10833].

R. F. Boisvert. See also [11212].

2228 S. H. Bokhari. Finding maximum on an array processor with a global bus. *IEEE Trans. Comput.*, C-33(2):133–139, February 1984. [b-fmapg-84]

V. Bokka. See also [1919].

2229 J. Bokowski. A geometric realization without self-intersections does exist for Dyck's regular map. *Discrete Comput. Geom.*, 4:583–589, 1989. [b-grwsi-89]

2230 J. Bokowski. Aspects of computational synthetic geometry 2, Combinatorial complexes and their geometric realization, an algebraic approach. In *Comput. Aided Geom. Reasoning. Proc. INRIA Workshop*, volume 1, pages 87–125, 1987. [b-acsg2-87] *Keywords:* matroids.

2231 J. Bokowski. Oriented matroids. In Peter M. Gruber and J. M. Wills, editors, *Handbook of Convex Geometry*, volume A, chapter 2.5, pages 555–602. North-Holland, Amsterdam, Netherlands, 1993. [b-om-93] *Keywords:* survey paper.

2232 J. Bokowski. Oriented matroids and combinatorial convex geometry. Report ??, Tech. Hochschule Darmstadt, Darmstadt, West Germany, 1987. [b-omccg-87]

2233 J. Bokowski, J. Richter, and B. Sturmfels. Nonrealizability proofs in computational geometry. *Discrete Comput. Geom.*, 5:333–350, 1990. [brs-npcg-90]

2234 J. Bokowski and B. Sturmfels. On the coordination of oriented matroids. *Discrete Comput. Geom.*, 1:293–306, 1986. [bs-com-86]

2235 G. Bol. Zur kinematischen ordnung ebener Jorden-kurven. *Abh. Math. Sem. Univ. Hamburg*, 11:394–408, 1936. [b-koejk-36]

2236 R. Boland. Separating convex sets. Master's thesis, Carleton Univ., Ottawa, Ontario, Canada, 1992. [b-scs-92] *Keywords:* master thesis.

2237 R. Boland and J. Urrutia. Separating collections of points in Euclidean space. In preparation. [bu-scpes-]

2238 R. P. Boland and J. Urrutia. Separating families of points in Euclidean spaces. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 6–10, 1992. [bu-sfpes-92] *Cites:* akp-cddsl-89, a-ppss-85, a-npps-84, b-scs-92, b-dsudn-33, bu-scpes-, cruz-scsp-92, lms-hscr-92, m-ptlp-85, s-tt-79, t-sppcs-79, w-pr-82, ZZZ.

Ethan Bolker. See also [986].

Ethan D. Bolker. See also [987, 988].

R. C. Bolles. See also [5288].

2239 B. Bollobás. *Combinatorics*. Cambridge University Press, 1986. [b-c-86]

2240 B. Bollobás. *Extremal Graph Theory*. Academic Press, New York, 1978. [b-egt-78]

2241 B. Bollobás. *Graph Theory; An Introductory Course*. Springer-Verlag, 1979. [b-gtic-79]

2242 B. Bollobás. *Random Graphs*. Academic Press, New York, NY, 1985. [b-rg-85]

2243 B. Bollobás and G. Brightwell. Graphs whose every transitive orientation contains almost every relation. *Israel J. Math.*, 59:112–128, 1987. [bb-gweto-87]

2244 B. Bollobás, G. Das, D. Gunopulos, and H. Mannila. Time-series similarity problems and well-separated geometric sets. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 454–456, 1997. [bdgm-tsspw-97] *Cites:* afs-esssd-93, alss-fsspn-95, a-afps-90, b-c-86, c-chdc-93, cw-qorss-89, dgm-fsts-96, frm-fsmts-94, jmm-sbq-95, sz-aqrld-96, wj-assr-96, yo-smi-96, ZZZ.

2245 B. Bollobás and A. Meir. A traveling salesman problem in the k-dimensional unit-cube. *Oper. Res. Lett.*, ??, ?? To appear. [bm-tspkd-]

2246 A. Bolour. Optimal retrieval algorithms for small region queries. *SIAM J. Comput.*, 10:721–741, 1981. [b-orasr-81]

2247 A. Bolour. Optimality properties of multiple-key hashing functions. *J. ACM*, 26:196–210, 1979. [b-opmkh-79]

2248 V. Boltjansky and I. T. Gohberg. *Results and Problems in Combinatorial Geometry*. Cambridge University Press, New York, NY, 1985. [bg-rpcg-85]

V. G. Boltyanskii. See also [10838].

V. G. Bolyanski. See also [13734].

2249 E. Bombieri. Le grand crible. *Asterisque*, 18, 1974. [b-lgc-74]

2250 F. Bonafatti and L. Kavazza. SECT: An efficient coding technique for polygonal geographical data. *Comput. Graph.*, 22(3–4):503–513, 1988. [bk-sectp-88] *Keywords:* data structuring, polygons.

2251 C. R. Bonapace and C. Lo. An $O(n \log n)$ algorithm for VLSI design rule checking. In *Proc. 26th Design Autom. Conf.*, pages 503–507, 1989. [bl-oavdr-89]

2252 J. A. Bondy and U. S. R. Murty. *Graph Theory with Applications*. Macmillan, London, 1976. [bm-gta-76] *ISBN:* 0-333-17791-6. *Keywords:* graph drawing. *Comments:* Also attributed to North-Holland, New York, NY.

2253 J. Bonet and J. Peraire. An alternating digital tree (adt) algortihm for 3d geometric searching and intersection problems. *Internat. J. Numer. Methods Eng.*, 31:1–17, 1991. [bp-adtaa-91]

G. Bonmassar. See also [11843].

2254 T. Bonnesen and W. Fenchel. *Theorie der konvexen Körper*. J. Springer, Berlin, Germany, 1934. Reprinted Chelsea, New York, 1948. [bf-tdkk-34]

2255 W. Bonnice and V. L. Klee. The generation of convex hulls. *Math. Ann.*, 152:1–29, 1963. [bk-gch-63] *Keywords:* convex hull.

2256 A. Bookstein, S. T. Klein, and T. Raita. Detecting content-bearing words by serial clustering. In *Proc. 16th Annu. Internat. ACM SIGIR Conf. Research and Develop. in Inform. Retrieval*, pages 319–327, 1995. [bkr-dcbws-95]

2257 F. L. Bookstein. *Morphometric Tools for Landmark Data*. Cambridge University Press, Cambridge, 1991. [b-mtld-91]

2258 F. L. Bookstein. The line skeleton. *Comput. Graph. Image Process.*, 11(2):123–137, October 1979. [b-ls-79] *Keywords:* algorithm; computer graphics; computer programming Subroutines; methodology, techniques, modeling, representation, graphic, algorithmic aspects, polygon.

2259 F. L. Bookstein. *The Measurement of Biological Shape and Shape Change*, volume 24 of *Lecture Notes in Biomathematics*. Springer-Verlag, Berlin, West Germany, 1978. [b-mbssc-78]

2260 C. de Boor. *A practical guide to splines*. Springer-Verlag, New York, NY, 1978. [b-pgs-78]

2261 C. de Boor. On calculating with B-splines. *J. Approx. Theory*, 6:50–62, 1972. [b-cbs-72]

C. de Boor. See also [3512].

H. Booth. See also [275, 276, 10393, 10394, 10418, 10419].

2262 K. Booth and G. Lueker. Testing for the consecutive ones property interval graphs and graph planarity using PQ-tree algorithms. *J. Comput. Syst. Sci.*, 13:335–379, 1976. [bl-tcopi-76] *Keywords:* graph drawing.

K. Booth. See also [9076].

2263 R. S. Booth. Analytic formulas for full Steiner trees. *Discrete Comput. Geom.*, 6:69–82, 1991. [b-affst-91]

2264 R. S. Booth. The Steiner ratio for five points. *Ann. Oper. Res.*, 33(1–4):419–436, 1991. [b-srfp-91] *Keywords:* Steiner tree.

Barry Boots. See also [5860, 10259].

2265 B. N. Boots. Edge length properties of random Voronoi polygons. *Metallography*, 20(2):231–236, May 1987. [b-elprv-87] *Keywords:* edge length properties, random Voronoi polygons. *Abstract:* The author has previously suggested that the equations derived by Aboav for m//n, the average number of sides of cells contiguous to an n-sided cell in a planar tessellation, did not hold for a tessellation formed by random Voronoi polygons (i. e. , cells created by Dirichlet domains defined about a set of points located at random in the plane). The suggestion was supported by results derived either analytically or by Monte Carlo simulation relating to a random Voronoi polygon tessellation. These results included an estimate derived by Crain from a Monte Carlo simulation of 46,000 polygons of E(l**2). This paper presents evidence which supports Aboav's speculation concerning Crain's results. However, the new result also indicates that a RVP tessellation is inconsistent with an equation. In addition, further information is presented which suggests that other estimates provided by Crain are inaccurate. 13 refs.

2266 B. N. Boots. Modifying Thiessen polygons. *The Canadian Geographer*, 31(2):160–169, 1987. [b-mtp-87] *Annote:* Surveys use of VD for geographical analysis, and discusses weighted diagrams, and other metrics.

2267 B. N. Boots. *Voronoi (Thiessen) Polygons*. Geo Books, Norwich, England, 1989. [b-vtp-89]

2268 B. N. Boots. Weighting Thiessen polygons. *Econom. Geogr.*, 55:248–259, 1979. [b-wtp-79]

2269 B. N. Boots and D. J. Murdoch. The spatial arrangement of random Voronoi polygons. *Comput. Geosci.*, 9(3):351–365, 1983. [bm-sarvp-83] *Annote:* Measures various quantities for random VD. Algorithm—incremental for each polygon—points in order of increasing distance.

B. Borchardt. See also [10761].

2270 J. Boreddy. An incremental computation of a convex hull of planar line intersections. *Pattern Recogn. Lett.*, 11(8):541–543, 1990. erratic. [b-icchp-90] *Keywords:* convex hull, intersection, lines.

2271 J. Boreddy and R. N. Mukherjee. An algorithm to find polygon similarity. *Inform. Process. Lett.*, 33(4):205–206, 1989. erratic. [bm-afps-89] *Keywords:* polygons, similarity.

2272 C. Borgers. Generalized Delaunay triangulations of nonconvex domains. *Comput. Math. Appl.*, 20(7):45–49, 1990. [b-gdtnd-90] *Annote:* Proof of switching construction for CDT. Algorithm triangulates constraint polygon (by $O(n^3)$ algorithm via search for triangle standing on boundary edge). Then compute DT in each triangle and finally do switchings until we converge on the CDT.

2273 K. H. Borgwardt. *The Simplex Method. A Probabilistic Analysis*, volume 1 of *Algorithms and Combinatorics*. Springer-Verlag, Berlin Heidelberg, 1987. [b-smpa-87]

2274 K. H. Borgwardt, N. Gaffke, M. Junger, and G. Reinelt. Computing the convex hull in the Euclidean plane in linear expected time. In P. Gritzman and B. Sturmfels, editors, *Applied Geometry and Discrete Mathematics: The Victor Klee Festschrift*, volume 4 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 91–107. AMS Press, 1991. [bgjr-cchep-91] *Keywords:* convex hull, expected-case analysis.

2275 A. Borning. *Thinglab: A constraint-oriented simulation laboratory*. PhD thesis, Dept. Comput. Sci., Stanford Univ., Stanford, CA, July 1979. Available as Technical Report STAN-CS-79-746. [b-tcosl-79] *Keywords:* doctoral thesis.

2276 A. Borodin and J. E. Hopcroft. Routing, merging, and sorting on parallel models of computation. *J. Comput. Syst. Sci.*, 30(1):130–145, 1985. [bh-rmspm-85]

2277 A. Borodin, R. Ostrovsky, and Y. Rabani. Lower bounds for high dimensional nearest neighbor search and related problems. In *Proc. 31st Annu. ACM Sympos. Theory Comput.*, pages 312–321, 1999. [bor-lbhdn-99]

2278 A. Borodin, R. Ostrovsky, and Y. Rabani. Subquadratic approximation algorithms for clustering problems in high dimensional spaces. In *Proc. 31st Annu. ACM Sympos. Theory Comput.*, pages 435–444, 1999. [bor-saacp-99]

A. Borodin. See also [1598].

2279 E. Boros and Z. Füredi. The number of triangles covering the center of an n-set. *Geom. Dedicata*, 17:69–77, 1984. [bf-ntccn-84]

2280 E. Boros, Z. Füredi, and L. M. Kelly. On representing Sylvester-Gallai designs. *Discrete Comput. Geom.*, 4:345–348, 1989. [bfk-rsgd-89]

2281 E. Boros and P. L. Hammer. On clustering problems with connected optima in Euclidean spaces. Technical Report, RUTCOR, Ruters University, New Brunswick, New Jersey, March 1988. [bh-cpcoe-88]

2282 E. Boros and P. L. Hammer. On clustering problems with connected optima in Euclidean spaces. *Discrete Math.*, 75:81–88, 1989. [bh-cpcoe-89]

2283 Houman Borouchaki, Pascal J. Frey, and Paul Louis George. Unstructured triangular-quadrilateral mesh generation application to surface meshing. In *Proc. 5th International Meshing Roundtable*, pages 229–242, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [bfg-utqmg-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

2284 H. Borouchaki, F. Hecht, E. Saltel, and P. L. George. Reasonably efficient Delaunay based mesh generator in 3 dimensions. In *Proc. 4th International Meshing Roundtable*, pages 3–14, Albuquerque, NM, 1995. Sandia National Laboratories. [bhsg-redbm-95]

Houman Borouchaki. See also [5594, 5851].

A. Boroujerdi. See also [3100].

2285 Ali R. Boroujerdi and Bernard M. E. Moret. Persistence in computational geometry. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 241–246, 1995. [bm-pcg-95]

2286 J. Borowski, J. Richter-Gebert, and W. Schindler. On the distribution of order types. *Comput. Geom. Theory Appl.*, 1(3):127–142, 1992. [brs-dot-92] *Keywords:* chiritope, grassmanian, order type, oriented matroid, Monte-Carlo methods.

2287 P. Borrel and D. Bechmann. Deformation of n-dimensional objects. *Internat. J. Comput. Geom. Appl.*, 1(4):427–453, 1991. [bb-dndo-91]

P. Borrel. See also [11408].

2288 K. Borsuk. Drei Sätze über die n-dimensionale euklidische Sphäre. *Fundam. Math.*, 20, 1933. [b-dsudn-33]

2289 K. Borsuk. *Multidimensional Analytic Geometry*. Polish Scientific Publishers, Warsaw, Poland, 1969. [b-mag-69]

2290 P. Borwein and W. O. J. Moser. A survey of Sylvester's problem and its generalizations. *Aequationes Math.*, 40(2–3):111–135, 1990. [bm-sspig-90] *Keywords:* survey.

2291 J. M. Bosart and L. Huguet. Shortest trees and Steiner trees with rectilinear distances (paper in Catalan language). *Questiio*, 12(2):159–174, 1988. [bh-ststr-88] *Keywords:* Steiner tree, minimal spanning tree, L_1-metric.

J. Bose. See also [1686].

2292 P. Bose. *Geometric and Computational Aspects of Manufacturing Processes*. PhD thesis, Dept. Comput. Sci., Univ. British Columbia, Vancouver, BC, 1995. UBC Tech. Rep 95-02. [b-gcamp-95] *Keywords:* doctoral thesis.

2293 Prosenjit Bose. On embedding an outer-planar graph in a point set. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 25–36. Springer-Verlag, 1997. [b-eopgp-97] *Keywords:* graph drawing.

2294 P. Bose, D. Bremner, and M. van Kreveld. Determining the castability of simple polyhedra. Technical Report SOCS 93.12, School Comput. Sci., McGill Univ., Montreal, PQ, 1993. [bbk-dcsp-93]

2295 P. Bose, D. Bremner, and M. van Kreveld. Determining the castability of simple polyhedra. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 123–131, 1994. [bbk-dcsp-94] *Cites:* am-rsps-92, as-anps-91, abbgotwz-fds-93, bbk-dcsp-93, bkt-fpm-93, bt-gcaim-93, csw-qoubs-90, dk-ladsc-85, e-acg-87, e-cit-88, fm-gaim-93, h-cgpm-91, m-ept-91, m-rsehc-92, ms-tdctd-93, m-ltalp-83, ps-cgi-85, p-mrisf-87, rr-mcp-92, r-dcikc-88a, wo-ich-81, w-imm-84, ZZZ.

2296 P. Bose, D. Bremner, and M. van Kreveld. Determining the castability of simple polyhedra. *Algorithmica*, 19(1–2):84–113, September 1997. [bbk-dcsp-97]

2297 P. Bose, D. Bremner, and G. Toussaint. All convex polyhedra can be clamped with parallel jaw grippers. Technical report, School of Computer Science, McGill University. to appear. [bbt-acpcb-] *Succeeds:* bbt-acpcb-94, bbt-acpcb-96.

2298 P. Bose, D. Bremner, and G. Toussaint. All convex polyhedra can be clamped with parallel jaw grippers. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 344–349, 1994. [bbt-acpcb-94] *Precedes:* bbt-acpcb-96, bbt-acpcb-. *Cites:* aho-srcp-90, abbgotwz-fds-93, bfg-spmfh-85, bbt-acpcb-, c-cpo-93, csu-isp-91, gs-ccrs-87, ht-cws-88, mss-esmpg-87, mu-ifp-91, ps-cgi-85, s-dcah-84, sv-cp-89t, tm-ragum-94, b-gtfga-80, ZZZ.

2299 P. Bose, D. Bremner, and G. Toussaint. All convex polyhedra can be clamped with parallel jaw grippers. *Comput. Geom. Theory Appl.*, 6:291–302, 1996. [bbt-acpcb-96] *Succeeds:* bbt-acpcb-94. *Precedes:* bbt-acpcb-.

2300 P. Bose, J. Czyzowicz, E. Kranakis, and A. Maheshwari. Algorithms for packing two circles in a convex polygon. In *Proc. Japan Conf. Discrete Comput. Geom.*, volume 1763 of *Lecture Notes Comput. Sci.*, pages 93–103. Springer-Verlag, 2000. [bckm-aptcc-00]

2301 P. Bose, A. Dean, J. Hutchinson, and T. Shermer. On rectangle visibility graphs I: k-trees and caterpillar forests. Technical report, DIMACS and Simon Fraser University, May 1996. [bdhs-rvg1k-96] *Keywords:* visibility graphs.

2302 P. Bose and L. Devroye. Intersections with random geometric objects. Technical report, School of Computer Science, McGill University, 1995. Manuscript. [bd-irgo-95]

2303 Prosenjit Bose and Luc Devroye. Intersections with random geometric objects. *Comput. Geom. Theory Appl.*, 10:139–154, 1998. [bd-irgo-98] *Succeeds:* bd-irgo-95.

2304 P. Bose, L. Devroye, and W. Evans. Diamonds are not a minimum weight triangulation's best friend. Technical Report 96-01, Dept. Comput. Sci., Univ. British Comumbia, January 1996. [bde-danmw-96t]

2305 P. Bose, L. Devroye, and W. Evans. Diamonds are not a minimum weight triangulation's best friend. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 68–73, 1996. [bde-danmw-96]

2306 P. Bose, G. Di Battista, W. Lenhart, and G. Liotta. Proximity constraints and representable trees. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 340–351. Springer-Verlag, 1995. [bdll-pcrt-95] *Keywords:* graph drawing, proximity, trees.

2307 P. Bose, G. Di Battista, W. Lenhart, and G. Liotta. Proximity constraints and representable trees. Technical Report RT-INF-9-96, Dip. Discipline Scientifiche, Sez. Informatica, Univ. Roma III, 1996. [bdll-pcrt-96] *URL:* http://www.cs.brown.edu/cgc/papers/bdll-pcrt-96.ps.gz. *Keywords:* graph drawing, proximity, CGC, Brown.

2308 P. Bose, W. Evans, D. Kirkpatrick, M. McAllister, and J . Snoeyink. Approximating shortest paths in arrangements of lines. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 143–148. Carleton University Press, Ottawa, Canada, 1996. [bekms-aspal-96] *Annote:* 2-approximation in $O(n \log n)$ time.

2309 P. Bose, H. Everett, Sándor P. Fekete, A. Lubiw, H. Meijer, K. Romanik, T. Shermer, and S. Whitesides. On a visibility representation for graphs in three dimensions. In D. Avis and P. Bose, editors, *Snapshots in Computational and Discrete Geometry, Volume III*, pages 2–25. McGill University, July 1994. McGill technical report SOCS-94.50. [beflmrsw-ovrg3d-94] *Keywords:* graph drawing, visibility. *Precedes:* behflmrrswz-vrg3d-98.

2310 P. Bose, H. Everett, Michael E. Houle, Sándor P. Fekete, A. Lubiw, H. Meijer, K. Romanik, Günter Rote, T. Shermer, S. Whitesides, and Christian Zelle. A visibility representation for graphs in three dimensions. *J. Graph Algorithms Appl.*, 2(3):1–16, 1998. [behflmrrswz-vrg3d-98] *Keywords:* graph drawing, visibility. *Succeeds:* beflmrsw-ovrg3d-94, fhw-nrvrg-96. *Abstract:* We propose a 3-dimensional visibility representation of graphs in which vertices are mapped to horizontal axis-parallel rectangles floating in 3-space, with edges represented by vertical lines of sight. We apply an extension of the Erdős-Szekeres Theorem in a geometric setting to obtain an upper bound of 56 for size of the largest complete graph which is representable. On the other hand, we construct a representation of the complete graph with 22 vertices. These are the best existing bounds.

2311 P. Bose, H. Everett, and S. K. Wismath. Properties of arragement graphs. In *Abstracts 14th European Workshop Comput. Geom.*, pages 45–47. Universitat Polytènica de Catalunya, Barcelona, 1998. [bew-pag-98]

2312 Prosenjit Bose, Francisco Gomez, Pedro Ramos, and Godfried T. Toussaint. Drawing nice projections of objects in space. In *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 52–63. Springer-Verlag, 1996. [bgrt-dnpos-96]

2313 P. Bose, Leonidas J. Guibas, A. Lubiw, M. Overmars, D. Souvaine, and J. Urrutia. The floodlight problem. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 399–404, 1993. [bglosu-fp-93] *Precedes:* bglosu-fp-97. *Cites:* cru-glmvg-89, cru-irtp-93, e-acg-87, o-agta-87, ps-cgi-85, bfprt-tbs-73, ZZZ.

2314 P. Bose, Leonidas J. Guibas, A. Lubiw, M. Overmars, D. Souvaine, and J. Urrutia. The floodlight problem. *Internat. J. Comput. Geom. Appl.*, 7:153–163, 1997. [bglosu-fp-97] *Succeeds:* bglosu-fp-93.

2315 P. Bose, M. E. Houle, and G. Toussaint. Every set of disjoint line segments admits a binary tree. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, page ?? Springer-Verlag, 1994. [bht-esdls-94]

2316 P. Bose, M. E. Houle, and G. T. Toussaint. Every set of disjoint line segments admits a binary tree. *Discrete Comput. Geom.*, 26:387–410, 2001. [bht-esdls-01]

2317 Prosenjit Bose, Ferran Hurtado-Diaz, Elsa Omaña-Pulido, and Godfried Toussaint. Aperture angle optimization problems. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 73–78, 1995. [bhot-aaop-95]

2318 P. Bose, F. Hurtado, E. Omañña, and G. T. Toussaint. Optimización del àngulo de apertura. *Actas del IV Encuentro Espanñol de Geometría Computacional*, ??, 1993. [bhot-oaa-93]

2319 P. Bose, A. Josefczyk, J. Miller, and J. O'Rourke. K_{42} is a box visibility graph. In *Snapshots of Computational and Discrete Geometry*, volume 3, pages 88–91. School Comput. Sci., McGill Univ., Montreal, PQ, July 1994. Technical Report SOCS-94.50. [bjmo-kibvg-94] *Keywords:* visibility graphs. *Comments:* Also Technical Report 035, Dept. Comput. Sci., Smith College.

2320 P. Bose, D. Kirkpatrick, and Z. Li. Efficient algorithms for guarding or illuminating the surface of a polyhedral terrain. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 217–222, 1996. [bkl-eagis-96]

2321 Prosenjit Bose, Marc van Kreveld, and Godfried Toussaint. Filling polyhedral molds. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 210–221. Springer-Verlag, 1993. [bkt-fpm-93]

2322 P. Bose, M. van Kreveld, and G. Toussaint. Filling polyhedral molds. *Comput. Aided Design*, 30(4):245–254, April 1998. [bkt-fpm-98]

2323 P. Bose, W. Lenhart, and G. Liotta. Characterizing proximity trees. Technical Report SOCS 93.9, School of Computer Science, McGill University, Montréal, Quebec, 1993. [bll-cpt-93t] *Precedes:* bll-cpt-93, bll-cpt-96.

2324 P. Bose, W. Lenhart, and G. Liotta. Characterizing proximity trees. In *Graph Drawing (Proc. GD '93)*, 1993. [bll-cpt-93] *Succeeds:* bll-cpt-93t.

2325 P. Bose, W. Lenhart, and G. Liotta. Characterizing proximity trees. *Algorithmica*, 16:83–110, 1996. (special issue on Graph Drawing, edited by G. Di Battista and R. Tamassia). [bll-cpt-96] *Keywords:* graph drawing, proximity. *Succeeds:* bll-cpt-93t.

2326 P. Bose, A. Lubiw, and J. I. Munro. Efficient visibility queries in simple polygons. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 23–28, 1992. [blm-evqsp-92] *Cites:* bm-gta-76, b-vsp-91, gmr-rlptd-92, k-osps-83, lp-lppsi-77, o-agta-87, p-nappl-81, ps-cgi-85, st-pplup-86, ZZZ.

2327 Prosenjit Bose, Anil Maheshwari, Pat Morin, and Jason Morrison. The grid placement problem. In *Abstracts 17th European Workshop Comput. Geom.*, pages 74–77. Freie Universität Berlin, 2001. [bmmm-gpp-01]

2328 P. Bose and P. Morin. Online routing in triangulations. In *Proc. 10th Annu. Internat. Sympos. Algorithms Comput.*, volume 1741 of *Lecture Notes Comput. Sci.*, pages 113–122. Springer-Verlag, 1999. [bm-ort-99]

2329 Prosenjit Bose, Suneeta Ramaswami, Godfried Toussaint, and Alain Turki. Experimental comparison of quadrangulation algorithms for sets of points. In *Abstracts 12th European Workshop Comput. Geom.*, pages 39–40. Universität Münster, 1996. [brtt-ecqas-96]

2330 P. Bose, T. Shermer, G. Toussaint, and B. Zhu. Guarding polyhedral terrains. Technical Report SOCS-92.20, McGill University, 1992. [bstz-gpt-92] *Precedes:* bstz-gpt-97.

2331 P. Bose, T. Shermer, G. Toussaint, and B. Zhu. Guarding polyhedral terrains. *Comput. Geom. Theory Appl.*, 7:173–185, 1997. [bstz-gpt-97] *Succeeds:* bstz-gpt-92.

2332 Prosenjit Bose and Godfried Toussaint. Characterizing and efficiently computing quadrangulations of planar point sets. *Comput. Aided Geom. Design*, 14:763–785, 1997. [bt-cecqp-97] *Comments:* See also [781], where some similar facts are shown. *Succeeds:* bt-nqieo-95.

2333 P. Bose and G. Toussaint. Geometric and computational aspects of injection molding. Technical Report SOCS 92.16, School of Computer Science, McGill University, Canada, 1992. [bt-gcaim-92] *Precedes:* bt-gcaim-93.

2334 P. Bose and G. Toussaint. Geometric and computational aspects of injection molding. In *Proc. 3rd. Internat. Conf. CAD Comput. Graph.*, pages 237–242, 1993. [bt-gcaim-93] *Succeeds:* bt-gcaim-92.

2335 P. Bose and G. Toussaint. Geometric and computational aspects of manufacturing processes. *Comput. & Graphics*, 18:487–497, 1994. [bt-gcamp-94]

2336 Prosenjit Bose and Godfried Toussaint. Growing a tree from its branches. In *Proc. First Pacific Conf. Computer Graphics Appl., Seoul, Korea, vol. 1*, volume 1, pages 90–99. World Scientific Publishing Co., 1993. [bt-gtfb-93] *Keywords:* segments, points, minimal spanning tree, lower bounds. *Annote:* Non-crossing spanning tree for ends of disjoint plane segments, that includes these segments as its edges, in $\Omega(n \log n)$.

2337 Prosenjit Bose and Godfried Toussaint. No quadrangulation is extremely odd. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 372–381. Springer-Verlag, 1995. [bt-nqieo-95] *Precedes:* bt-cecqp-97.

P. Bose. See also [335, 983, 984, 1141, 1586, 1687, 1688].

2338 Prosenjit K. Bose. Visibility in simple polygons. Master's thesis, Department of Computer Science, University of Waterloo, 1991. [b-vsp-91] *Keywords:* master thesis.

2339 Frank J. Bossen and Paul S. Heckbert. A pliant method for anisotropic mesh generation. In *Proc. 5th International Meshing Roundtable*, pages 63–74, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [bh-pmamg-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

A. Bosworth. See also [6247].

2340 R. A. Botafogo. Cluster analysis for hypertext systems. In *Proc. 16th Annu. Internat. ACM SIGIR Conf. Research and Develop. in Inform. Retrieval*, pages 116–125, 1993. [b-cahs-93] *Keywords:* Aggregation, Clustering, Structural analysis, Hypertext, Graph theory.

2341 R. Bott and L. W. Tu. *Differentiable forms in algebraic topology*. Springer-Verlag, New York, NY, 1982. [bt-dfat-82]

2342 O. Bottema and G. R. Veldkamp. On the lines in space with equal distances to n given points. *Geom. Dedicata*, 6:121–129, 1977. [bv-lsedn-77]

2343 A. Boucher. It's hard to color antirectangles. *SIAM J. Algebraic Discrete Methods*, 5(2):162–163, 1984. [b-ihca-84] *Keywords:* isothetic.

Farinaz D. Boudreau. See also [3987].

2344 W. Bouma, I. Fudos, C. Hoffmann, J. Cai, and R. Paige. A geometric constraint solver. Technical Report CSD-TR-93-054, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1993. [bfhcp-gcs-93]

2345 W. Bouma and G. Vaněček Jr. Velocity-based collision detection. In A. Paeth, editor, *Graphics Gems V*. Academic Press, 1995. [bv-vbcd-95]

2346 W. J. Bouma and G. Vaněček Jr. Collision detection and analysis in a physically based simulation. In *Second Eurographics Workshop on Animation and Simulation*, 1991. [bv-cdapb-91]

W. J. Bouma. See also [1285].

2347 N. Bourbaki. *Groupes et algèbres de Lie*, chapter 4, 5, 6. Hermann, Paris, France, 1968. [b-geadl-68]

2348 N. G. Bourbakis and I. N. Savvides. Geometric transformations for optimal VLSI layout placement. *Microproc. and Microprogr.*, 25(1–4):163–170, 1989. [bs-gtovl-89] *Keywords:* VLSI design, placement.

2349 J. Bourgain and Joram Lindenstrauss. Approximating the ball by a Minkowski sum of segments with equal length. *Discrete Comput. Geom.*, 9:131–144, 1993. [bl-abmss-93]

D. A. Bourne. See also [6482].

2350 M. Bousset and P. Rosenstiehl. Twist. Technical Report P.073, CAMS, 1991. [br-t-91] *Keywords:* graph drawing.

2351 S. W. Bova and G. F. Carey. Mesh generation/refinement using fractal concepts and iterated function systems. *Internat. J. Numer. Methods Eng.*, 33:287–305, 1992. [bc-mgrfc-92]

2352 A. Bowyer. Computing Dirichlet tesselations. *Comput. J.*, 24:162–166, 1981. [b-cdt-81]

2353 A. Bowyer. Matching patterns using a modified procrustean algorithm. Report ??, School Engrg., Univ. Bath, Bath, England, 1985. [b-mpump-85]

2354 A. Bowyer and J. R. Woodwork. *A programmer's geometry*. Butterworths, 1983. [bw-pg-83]

A. Bowyer. See also [8536, 13692, 13873].

K. Bowyer. See also [4826].

2355 K. W. Bowyer and C. R. Dyer. Aspect graphs: An introduction and survey of recent results. *Int. J. of Imaging Systems and Technology*, 2:315–328, 1990. [bd-agisr-90]

2356 L. Boxer and R. Miller. A parallel circle-cover minimization algorithm. *Inform. Process. Lett.*, 32(2):57–60, 1989. [bm-pccma-89] *Keywords:* parallel computations, circles, covering, optimization.

2357 L. Boxer and R. Miller. Common intersection of polygons. *Inform. Process. Lett.*, 33(5):249–254, 1990. [bm-cip-90] *Keywords:* convex polygons, intersection, parallel computations.

2358 L. Boxer and R. Miller. Corrigenda "Common intersections of polygons, Inf.Proc.Lett. 33(1990) 249-254". *Inform. Process. Lett.*, 35(1):53, 1990. [bm-ccipi-90] *Keywords:* convex polygons, intersection, parallel computations.

2359 L. Boxer and R. Miller. Dynamic computational geometry on meshes and hypercubes. In *Proc. Internat. Conf. Parallel Process.*, volume 1, pages 323–330, 1988. [bm-dcgmh-88] *Keywords:* parallel computation, proximity, intersection, convex hull, diameter, containment.

2360 L. Boxer and R. Miller. Dynamic computational geometry on parallel computers. In *Proc. Conf. Hypercube Concurr. Comput. Appl., Pasadena*, pages 1212–1219. ACM Press, 1988. [bm-dcgpc-88] *Keywords:* parallel computation.

2361 L. Boxer and R. Miller. Parallel dynamic computational geometry. Report 87-11, Dept. Comput. Sci., SUNY-Buffalo, 1987. [bm-pdcg-87]

2362 L. Boxer and R. Miller. Parallel dynamic computational geometry. *J. New Generation Comput. Syst.*, 2(3):227–246, 1989. [bm-pdcg-89] *Keywords:* parallel computation.

I. J. Boxma. See also [6536].

2363 J. E. Boyce, D. P. Dobkin, R. L. Drysdale, III, and Leonidas J. Guibas. Finding extremal polygons. In *Proc. 14th Annu. ACM Sympos. Theory Comput.*, pages 282–289, 1982. [bddg-fep-82] *Keywords:* polygons, maximum, dynamic programming. *Precedes:* bddg-fep-85.

2364 J. E. Boyce, D. P. Dobkin, R. L. Drysdale, III, and Leonidas J. Guibas. Finding extremal polygons. *SIAM J. Comput.*, 14:134–147, 1985. [bddg-fep-85] *Keywords:* polygons, maximum, dynamic programming. *Succeeds:* bddg-fep-82.

2365 W. M. Boyce. An improved program for the full Steiner tree problem. *ACM Trans. Math. Softw.*, 3:359–385, 1977. [b-ipfst-77]

2366 W. M. Boyce and J. E. Seery. STEINER 72: An improved version of Cockayne and Schiller's program STEINER for the minimal network problem. Report 35, Comput. Sci. Center, Bell Lab., Murray Hill, NJ, 1973. [bs-s72iv-73]

D. Boyd. See also [1323].

2367 D. B. Boyd. Aspects of molecular modeling. In K. Lipkowitz and D. B. Boyd, editors, *Reviews in Computational Chemistry*, volume 1, pages 321–351. VCH Publishers, 1990. [b-amm-90]

2368 Edmond Boyer and Sylvain Petitjean. Regular interpolants. In *Abstracts 17th European Workshop Comput. Geom.*, pages 125–128. Freie Universität Berlin, 2001. [bp-ri-01]

E. Boyer. See also [10745].

2369 M. Boyer and L. Paquette. An algorithm to decide if the intersection of convex polyhedral cones has a non empty interior. *BIT*, 16:459–461, 1976. [bp-adiic-76]

2370 M. Boyer and N. F. Stewart. Imperfect-form tolerancing on manifold objects: a metric approach. *Internat. J. Robot. Res.*, 11(5):482–490, 1992. [bs-iftmo-92]

2371 M. Boyer and N. F. Stewart. Modeling spaces for toleranced objects. *Internat. J. Robot. Res.*, 10(5):570–582, 1991. [bs-msto-91]

2372 W. Boyes, editor. *Handbook of Jig and Fixture Design.* Society of Manufacturing Engineers, 2nd edition, 1989. [b-hjfd-89]

2373 J. W. Boyse. Interference detection among solids and surfaces. *Commun. ACM*, 22:3–9, 1979. [b-idss-79]

2374 J. W. Boyse and J. E. Gilchrist. Gmsolid interactive modeling for hull algorithms. *BYTE*, ??:2–13, 1984. [bg-gimha-84]

2375 P. Bozanis, N. Ktsios, C. Makris, and A. Tsakalidis. New results on intersection query problems. unpublished manuscript, 1996. [bkmt-nriqp-96]

2376 P. Bozanis, N. Ktsios, C. Makris, and A. Tsakalidis. New upper bounds for generalized intersection searching problems. In *Proc. 22nd Inter. Colloq. Auto. Lang. and Program.*, volume 944 of *Lecture Notes Comput. Sci.*, pages 464–475, 1995. [bkmt-nubgi-95]

2377 František Brabec and Hanan Samet. Visualizing and animating search operations on quadtrees on the worldwide web. In *Abstracts 16th European Workshop Comput. Geom.*, pages 70–76. Ben-Gurion University of the Negev, 2000. [bs-vasoq-00]

František Brabec. See also [4261].

D. V. Brackle. See also [11005].

2378 P. G. Bradford and V. Capoyleas. Weak ϵ-nets for points on a hypersphere. Report MPI-I-95-1-029, Max-Planck-Institut Inform., Saarbrücken, Germany, 1995. [bc-wenph-95] *Precedes:* bc-wenph-97.

2379 P. G. Bradford and V. Capoyleas. Weak ϵ-nets for points on a hypersphere. *Discrete Comput. Geom.*, 18:83–91, 1997. [bc-wenph-97] *Succeeds:* bc-wenph-95.

2380 P. G. Bradford, R. Fleischer, and M. Smid. A polylog-time and $o(n\sqrt{\lg n})$-work parallel algorithm for finding the row minima in totally monotone matrices. Report MPI-I-95-1-006, Max-Planck-Institut Inform., Saarbrücken, Germany, 1995. [bfs-ptowp-95] *Precedes:* bfs-meptm-97.

2381 P. G. Bradford, R. Fleischer, and M. Smid. More efficient parallel totally monotone matrix searching. *J. Algorithms*, 23:386–400, 1997. [bfs-meptm-97] *Succeeds:* bfs-ptowp-95.

2382 M. Brady, editor. *Robot Motion: Planning and Control.* MIT Press, Cambridge, MA, 1982. [b-rmpc-82]

2383 M. L. Brady and D. J. Brown. Vlsi routing: Four layers suffice. In Franco P. Preparata, editor, *VLSI Theory*, volume 2 of *Adv. Comput. Res.*, pages 245–257. JAI Press, Greenwich, Conn., 1984. [bb-vrfls-84]

2384 H. R. Brahana. Systems of circuits on two-dimensional manifolds. *Annals of Math.*, 23:144–168, 1922. [b-sctdm-22]

2385 I. C. Braid. Notes on a geometric modeller. CAD Group Document 101, Comput. Lab., Cambridge Univ., Cambridge, England, 1979. [b-ngm-79]

2386 I. C. Braid. The synthesis of solids bounded by many faces. *Commun. ACM*, 18(4):209–216, 1975. [b-ssbmf-75]

2387 I. C. Braid, R. C. Hillyard, and I. A. Stroud. Step-wise construction of polyhedra in geometric modeling. In K. W. Brodlie, editor, *Mathematical Methods in Computer Graphics and Design*, pages 123–141. Academic Press, London, England, 1980. [bhs-swcpg-80] *Keywords:* polyhedra, geometric modeling.

R. Brand. See also [11829].

2388 F. J. Brandenburg. Designing graph drawings by layout graph grammars. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 416–427. Springer-Verlag, 1995. [b-dgdlg-95] *Keywords:* graph drawing, grammar.

2389 F. J. Brandenburg. Graph clustering I: Cycles of cliques. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 158–168. Springer-Verlag, 1997. [b-gc1cc-97] *Keywords:* graph drawing.

2390 F. J. Brandenburg, editor. *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1996. [b-gd-96] *Keywords:* graph drawing.

2391 F. J. Brandenburg. Nice drawings of graphs and trees are computationally hard. Technical Report MIP-8820, Fakultat fur Mathematik und Informatik, Univ. Passau, 1988. [b-ndgta-88] *Keywords:* graph drawing.

2392 Franz J. Brandenburg, M. Himsolt, and Christoph Rohrer. An experimental comparison of force-directed and randomized graph drawing algorithms. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 76–87. Springer-Verlag, 1996. [bhr-ecfdr-96] *Keywords:* graph drawing, experiments, straight-line.

2393 U. Brandes and D. Handke. NP-completeness results for minimum planar spanners. Technical Report 16, Fakultät für Mathematik und Informatik, Universität Konstanz, Konstanz, Germany, 1996. [bh-ncrmp-96]

2394 Ulrik Brandes and Dorothea Wagner. A bayesian paradigm for dynamic graph layout. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 236–247. Springer-Verlag, 1997. [bw-bpdgl-97] *Keywords:* graph drawing.

2395 A. Brandstadt. The jump number problem for biconvex graphs and rectangle covers of rectangular regions. In *??*, volume 380 of *Lecture Notes Comput. Sci.*, pages 68–77. 1989. [b-jnpbg-89] *Keywords:* isothetic, covering, rectangles.

2396 A. Brandstädt, V. D. Chepoi, and F. F. Dragan. The algorithmic use of hypertree structure and maximum neighbourhood orderings. In *Proc. 20th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 903 of *Lecture Notes Comput. Sci.*, pages 65–80. Springer-Verlag, 1995. [bcd-auhsm-95]

A. Brandstädt. See also [4405].

2397 J. W. Brandt. Convergence and continuity criteria for discrete approximations of the continuous planar skeletons. *CVGIP: Image Understanding*, 59(1):116–124, 1994. [b-cccda-94]

2398 Jonathan W. Brandt and V. Ralph Algazi. Computing a stable, connected skeleton from discrete data. In *Proceedings of the 1991 IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, pages 666–667, IEEE Service Center, Piscataway, NJ, USA (IEEE cat n 91CH2983-5), 1991. IEEE. [ba-cscsd-91] *Keywords:* Voronoi diagram. *Abstract:* The relationship between the skeleton and the Voronoi diagram for the case of morphologically regular sets is described. Using the discrete-point Voronoi diagram, a practical algorithm is developed to compute an approximate skeleton of a continuous shape from sampled data. The analysis also yields a sampling criterion under which the approximation is stable. The algorithm is applied to a simple test image. 4 Refs.

2399 J. W. Brandt and V. R. Algazi. Continuous skeleton computation by Voronoi diagram. *CVGIP: Image Understanding*, 55(3):329–338, 1992. [ba-cscvd-92]

2400 Peter Braß. Another lower bound for Hopcroft's problem. In *Abstracts 17th European Workshop Comput. Geom.*, pages 70–73. Freie Universität Berlin, 2001. [b-albhp-01]

2401 P. Brass. Erdős distance problems in normed spaces. *Comput. Geom. Theory Appl.*, 6:195–214, 1996. [b-edpns-96]

2402 Peter Brass. On the approximation of polygons by subpolygons. In *Abstracts 16th European Workshop Comput. Geom.*, pages 59–61. Ben-Gurion University of the Negev, 2000. [b-aps-00]

2403 Peter Braß and Christian Knauer. Testing the congruence of d-dimensional point sets. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 310–314, 2000. [bk-tcddp-00a]

2404 Peter Braß and Christian Knauer. Testing the congruence of d-dimensional point sets. In *Abstracts 16th European Workshop Comput. Geom.*, pages 104–107. Ben-Gurion University of the Negev, 2000. [bk-tcddp-00e]

2405 G. Brassard and P. Bratley. *Algorithmics: Theory and Practice.* Prentice Hall, Englewood Cliffs, NJ, 1988. [bb-atp-88]

2406 K. E. Brassel and R. Fegeas. An algorithm for shading of regions on vector display devices. *Comput. Graph.*, 13(2):126–133, 1979. Proc. SIGGRAPH '79. [bf-asrvd-79]

2407 K. E. Brassel and D. Reif. A procedure to generate Thiessen polygons. *Geogr. Anal.*, 11:289–303, 1979. [br-pgtp-79]

2408 K. E. Brassel and R. Weibel. A review and framework of automated map generalization. *Intl. J. Geographic. Info. Systems*, 2(3):229–244, 1988. [bw-arfam-88]

P. Bratley. See also [2405].

2409 J. Braun and M. Sambridge. A numerical method for solving partial differential equations on highly irregular evolving grids. *Nature*, 376:655–660, 1995. [bs-nmpde-95] *Keywords:* Delaunay remeshing, finite element, natural neighbours. *Annote:* Lagrangian PDE solver using Delaunay remeshing and natural neighbour interpolation. Able to solve problems mixing fluids and solids on dynamically evolving grids without remeshing.

2410 J. Braun and M. S. Sambridge. Dynamical Lagrangian remeshing (dlr): A new algorithm for solving large strain deformation problems and its application to fault-propagation folding. *Earth and Planet. Sci. Lett.*, 124:211–220, 1994. [bs-dlrna-94] *Keywords:* Delaunay remeshing, finite element.

J. Braun. See also [11556].

A. Brazma. See also [7916].

2411 M. Breen. Clear visibility and the dimension of kernels of starshaped sets. *Proc. Amer. Math. Soc.*, 85:414–418, 1982. [b-cvdks-82]

2412 M. Breen. Illumination for unions of boxes in R^d. *Proc. Amer. Math. Soc.*, 116(1):197–202, 1992. [b-iubr-92] *Keywords:* illumination, visibility, Helly.

2413 M. Breen. k-partitions and a characterization for compact unions of k starshaped sets. *Proc. Amer. Math. Soc.*, 102(3):677–680, 1988. [b-kpccu-88] *Keywords:* starshaped.

2414 M. Breen and D. C. Kay. General decomposition theorems for m-convex sets in the plane. *Israel J. Math.*, 24:217–233, 1976. [bk-gdtmc-76]

2415 U. Brehm and W. Kühnel. Smooth approximation of polyhedral surfaces regarding curvatures. *Geom. Dedicata*, 12:435–461, 1982. [bk-sapsr-82]

2416 U. Brehm and E. Schulte. Polyhedral maps. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 18, pages 345–360. CRC Press LLC, Boca Raton, FL, 1997. [bs-pm-97]

2417 U. Brehm and J. M. Wills. Polyhedral manifolds. In P. M. Gruber and J. M. Wills, editors, *Handbook of Convex Geometry*. North-Holland, 1993. [bw-pm-93]

U. Brehm. See also [611, 1593].

2418 L. Breiman, J. Friedman, R. Olshen, and C. Stone. *Classification and Regression Trees.* Wadsworth International Group, 1984. [bfos-crt-84]

2419 David Bremmer and Thomas Shermer. Properties and applications of restricted-orientation point visibility graphs. manuscript, School of Computing Science, Simon Fraser University, 1992. [bs-parpv-92]

2420 D. Bremner. Link-2-convex one-fillable polygons are starshaped. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 363–368, 1994. [b-l2cof-94] *Cites:* bt-gcaim-92, b-pvgro-93, bs-pvgro-93, cr-occop-89a, k-mchco-86, mrs-pgocc-89, r-erog-87, rw-rocs-91, mrs-copsp-89, ZZZ.

2421 David Bremner. Point visibility graphs and restricted-orientation polygon covering. M.Sc. thesis, School of Computing Science, Simon Fraser University, Burnaby, BC, April 1993. [b-pvgro-93] *Keywords:* master thesis.

2422 D. Bremner, K. Fukuda, and M. Marzetta. Primal-dual methods for vertex and facet enumeration. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 49–56, 1997. [bfm-pdmvf-97] *Cites:* af-pachv-92, b-icp-83, bmfn-psbzi-, ck-acp-70, c-lp-83, c-mosga-94, d-cvem-83, e-dum-91, flm-abalv-97, gk-csbpc-94, ic-lp-94, m-mnfcp-70, m-mdscg-84, s-ossac-86, s-fchff-85, ZZZ.

2423 D. Bremner, J. O'Rourke, and T. Shermer. Motion planning amidst movable square blocks is PSPACE complete. Draft, June, 1994. [bos-mpams-94]

2424 David Bremner and Thomas Shermer. Point visibility graphs and restricted-oriention convex cover. Technical Report CMPT TR 93-07, School of Computing Science, Simon Fraser University, 1993. [bs-pvgro-93]

D. Bremner. See also [378, 1142, 1143, 1686, 1687, 2294–2299].

2425 R. Brent. *Algorithms for finding zeros and extrema of functions without calculating derivatives.* PhD thesis, Stanford University, Stanford, CA, 1971. [b-afzef-71] *Keywords:* doctoral thesis.

2426 R. P. Brent. Fast multiple-precision evaluation of elementary functions. *J. ACM*, 23:242–251, 1976. [b-fmpee-76]

2427 R. P. Brent. The parallel evaluation of general arithmetic expressions. *J. ACM*, 21(2):201–206, 1974. [b-pegae-74]

2428 R. P. Brent and H. T. Kung. On the area of binary tree layouts. *Inform. Process. Lett.*, 11:521–534, 1980. [bk-abtl-80] *Keywords:* graph drawing.

2429 J. E. Bresenham. A linear algorithm for incremental digital display of circular arcs. *Commun. ACM*, 20:100–106, 1977. [b-laidd-77]

2430 J. E. Bresenham. Algorithm for computer control of digital plotter. *IBM Syst. J.*, 4:25–30, 1965. [b-accdp-65]

2431 J. E. Bresenham. Ambiguities in incremental line rastering. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 329–358. Springer-Verlag, Berlin, West Germany, 1988. [b-ailr-88]

2432 H. Breu, J. Gil, D. Kirkpatrick, and M. Werman. Linear time Euclidean distance transform and Voronoi diagram algorithms. *IEEE Trans. Pattern Anal. Mach. Intell.*, 17:529–533, 1995. [bgdw-ltedt-95]

2433 H. Breu and D. G. Kirkpatrick. Unit disk graph recognition is NP-hard. *Comput. Geom. Theory Appl.*, 9(1–2):3–24, 1998. (special issue on Geometric Representations of Graphs, edited by G. Di Battista and R. Tamassia). [bk-udgrn-98] *Keywords:* graph drawing, proximity, NP-hardness.

H. Breu. See also [9186].

J. A. Brewer III. See also [3569].

M. D. Brice. See also [1845].

J. Brickmann. See also [6778].

2434 Stina Bridgeman, Giuseppe Di Battista, Walter Didimo, Guiseppe Liotta, Roberto Tamassia, and Luca Vismara. Turn-regularity and optimal drawings of orthogonal representations. In *Abstracts 15th European Workshop Comput. Geom.*, pages 161–164. INRIA Sophia-Antipolis, 1999. [bbdltv-trodo-99]

2435 Stina Bridgeman, Giuseppe Di Battista, Walter Didimo, Giuseppe Liotta, Roberto Tamassia, and Luca Vismara. Optimal compaction of orthogonal representations. In *CGC Workshop on Geometric Computing*, 1998. [bbdltv-ocor-98] *URL:* http://www.cs.brown.edu/cgc/cgc98/. *Keywords:* graph drawing, planar, orthogonal.

2436 Stina Bridgeman, Ashim Garg, and Roberto Tamassia. A graph drawing and translation service on the World Wide Web. *Internat. J. Comput. Geom. Appl.*, 9(4–5):419–446, 1999. [bgt-gdtsw-99] *Keywords:* graph drawing, system. *Succeeds:* bgt-gdtsw-97.

2437 S. Bridgeman, A. Garg, and R. Tamassia. A graph drawing and translation service on the WWW. In S. C. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 45–52. Springer-Verlag, 1997. [bgt-gdtsw-97] *URL:* http://www.cs.brown.edu/cgc/papers/bgt-gdtsw-97.ps.gz. *Keywords:* graph drawing, system, WWW, orthogonal, planarization, CGC, Brown.

2438 S. Bridgeman and R. Tamassia. Difference metrics for interactive orthogonal graph drawing algorithms. In *Proc. Graph Drawing '98*. Springer-Verlag. to appear. [bt-dmiog-98] *Keywords:* graph drawing, interactive, dynamic, system.

2439 S. S. Bridgeman, G. Di Battista, W. Didimo, G. Liotta, R. Tamassia, and L. Vismara. Turn-regularity and optimal area drawings of orthogonal representations. *Comput. Geom. Theory Appl.*, 16(1):53–93, 2000. [bddltv-troad-00] *Succeeds:* bddltv-ocor-98, bbdltv-trodo-99, bddltv-trpod-99. *Annote:* Special Issue on the 1998 Workshop on Computational Geometry.

2440 S. S. Bridgeman, G. Di Battista, W. Didimo, G. Liotta, R. Tamassia, and L. Vismara. Turn-regularity and planar orthogonal drawings. In J. Kratochvíl, editor, *Graph Drawing*, volume 1731 of *Lecture Notes Comput. Sci.*, pages 8–26. Springer-Verlag, 1999. [bddltv-trpod-99] *Precedes:* bddltv-troad-99.

2441 Stina S. Bridgeman, Jody Fanto, Ashim Garg, Roberto Tamassia, and Luca Vismara. InteractiveGiotto: An algorithm for interactive orthogonal graph drawing. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 303–308. Springer-Verlag, 1997. [bfgtv-iaiog-97] *Keywords:* graph drawing.

Stina S. Bridgeman. See also [1400, 1401].

D. Bridges. See also [2041].

S. J. Bridgett. See also [807, 4345].

A. Briggs. See also [1402, 1403].

2442 A. J. Briggs. An efficient algorithm for one-step planar compliant motion planning with uncertainty. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 187–196, 1989. [b-eaosp-89] *Keywords:* motion planning, compliant motion, uncertainty. *Cites:* aaghi-vdp-86, c-cfmp-89, cr-nlbtr-87, d-cpcmp-88, d-edrr-89, e-acg-87, e-mpu-84, e-ubfmp-86, lmt-asfms-84, l-spcsa-83, m-mgpo-82, m-apfmc-84, n-moo-86, np-psaig-82, w-ffcmf-77, ZZZ.

J. Bright. See also [6169, 6170].

2443 G. Brightwell and W. T. Trotter. The order dimension of convex polytopes. *SIAM J. Discrete Math.*, 6(2):230–245, 1993. [bt-odcp-93]

2444 G. Brightwell and W. T. Trotter. The order dimension of planar maps. Technical Report LSE–MPS–37, Dept. of Statistical and Mathematical Sciences, London School of Economics, 1992. [bt-odpm-92]

G. Brightwell. See also [2243].

2445 G. R. Brightwell, S. Felsner, and W. T. Trotter. Balancing pairs and the cross product conjecture. *Order*, 12:327–349, 1995. [bft-bpcpc-95]

2446 G. R. Brightwell and E. R. Scheinerman. Representations of planar graphs. *SIAM J. Discrete Math.*, 6(2):214–229, 1993. [bs-rpg-93] *Keywords:* graph drawing, planar, straight-line, disk packing, coin graph.

2447 Graham R. Brightwell and William T. Trotter. The order dimension of planar maps. *SIAM J. Discrete Math.*, 10(4):515–528, 1997. [bt-odpm-97]

A. Brini. See also [1424].

2448 T. Brinkhoff and H.-P. Kriegel. The impact of global clusterings on spatial database systems. In *Proceedings of the International Conference on Very Large Databases*, pages 168–179. Morgan Kauffman, September 1994. [bk-igcsd-94]

2449 T. Brinkhoff, H.-P. Kriegel, and B. Seeger. Efficient processing of spatial joins using R-trees. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 237–246, 1993. [bks-epsju-93]

T. Brinkhoff. See also [8346].

2450 A. Brinkman, T. Graf, and K. Hinrichs. The colored quadrant priority search tree with an application to the all-nearest-foreign-neighbors problem. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 63–68, 1994. [bgh-cqpst-94] *Cites:* aert-otbsp-92, gh-appcp-93, gs-dfbt-78, hns-arsa2-92, iko-pstsm-88, k-racrn-88, lw-vdllm-80, m-pst-85, o-ncbbs-82, ow-ubtcl-89, ow-ad-93, ps-cgi-85, sh-cpp-75, t-dsna-83, v-oaann-89, clr-ia-90, ZZZ.

2451 M. Brion. Points entires dans les polyèdres convexes. *Annales Sci. Éc. Norm. Sup., Ser IV*, 21(4):653–663, 1988. [b-pedlp-88]

2452 E. Brisson. Representing geometric structures in d dimensions: Topology and order. Technical Report 88-11-07, Dept. of Computer Science, Univ. of Washington, 1988. [b-rgsdt-88]

2453 E. Brisson. Representing geometric structures in d dimensions: Topology and order. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 218–227, 1989. [b-rgsdd-89] *Cites:* b-rgsdt-88, dl-pmtds-87, gs-pmgsc-85, lw-tcc-69, m-eat-84, m-tfc-75, ph-chfsp-77, ZZZ.

2454 E. Brisson. Representing geometric structures in d dimensions: Topology and order. *Discrete Comput. Geom.*, 9:387–426, 1993. [b-rgsdd-93] *Succeeds:* b-rgsdd-89.

E. Brisson. See also [660, 661, 12119].

2455 D. Broch. Enhancing the dexterity of a robot hand using controlled slip. Technical Report MIT AI-TR-992, Artif. Intell. Lab., Massachusetts Inst. Tech., Cambridge, MA, 1987. [b-edrhu-87]

2456 J. Brock. Finding the largest empty rectangle on a grated surface. In *??*, volume 247 of *Lecture Notes Comput. Sci.*, pages 66–75. 1987. [b-flerg-87] *Keywords:* isothetic, empty rectangle.

J. Brock. See also [500].

2457 Christoph Bröcker and Alejandro López-Ortiz. Position-independent street searching. In *Proc. 6th Workshop Algorithms Data Struct.*, volume 1663 of *Lecture Notes Comput. Sci.*, pages 241–252. Springer-Verlag, 1999. [bl-piss-99]

2458 Christoph Bröcker and Sven Schuierer. Searching rectilinear streets completely. In *Proc. 6th Workshop Algorithms Data Struct.*, volume 1663 of *Lecture Notes Comput. Sci.*, pages 98–109. Springer-Verlag, 1999. [bs-srsc-99]

R. Brockett. See also [1228, 4361].

G. Brodal. See also [130].

2459 Gerth Stølting Brodal and Riko Jacob. Dynamic planar convex hull with optimal query time and $o(\log n \cdot \log\log n)$ update time. In *Proc. 7th Scand. Workshop Algorithm Theory*, volume 1851 of *Lecture Notes Comput. Sci.*, pages 57–70. Springer-Verlag, 2000. [bj-dpcho-00]

2460 A. Z. Broder, M. E. Dyer, A. M. Frieze, P. Raghavan, and E. Upfal. The worst-case running time of the random simplex algorithm is exponential in the height. *Inform. Proc. Letters*, 56(2):79–81, 1995. [bdfru-wcrtr-95]

M. Brodie. See also [11139].

D. C. Brogan. See also [6989].

2461 M. Brokowski, M. A. Peskin, and K. Goldberg. Curved fences for part alignment. In *Proc. IEEE Internat. Conf. Robot. Autom.*, volume 3, pages 467–473, 1993. [bpg-cfpa-93]

M. Brokowski. See also [13561].

2462 C. Bron and J. Kerbosch. Finding all cliques of an undirected subgraph. *Commun. ACM*, 16:575–577, 1973. [bk-facus-73]

2463 Hervé Brönnimann, editor. *Abstracts 15th European Workshop Comput. Geom.* INRIA Sophia-Antipolis, 1999. [b-ewcg-99] *ISBN:* 2-7261-1139-4.

2464 Hervé Brönnimann. Almost optimal polyhedral separators. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 393–394, 1994. [b-aops-94] *Keywords:* video review. *Cites:* bg-aoscf-94, d-ascg-90, dt-gascg-94, ms-saps-92, ZZZ.

2465 Hervé Brönnimann. An implementation of MIN HITTING SET heuristics. Manuscript, ??, 1994. [b-imhsh-94]

2466 Hervé Brönnimann. Degenerate convex hulls on-line in any fixed dimension. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 249–258, 1998. [b-dchol-98]

2467 Hervé Brönnimann. *Derandomization of Geometric Algorithms.* Ph.D. thesis, Dept. Comput. Sci., Princeton University, Princeton, NJ, May 1995. [b-dga-95] *Keywords:* doctoral thesis.

2468 Hervé Brönnimann, Christoph Burnikel, and Sylvain Pion. Interval arithmetic yields efficient arithmetic filters for computational geometry. In *Abstracts 14th European Workshop Comput. Geom.*, pages 49–54. Universitat Polytènica de Catalunya, Barcelona, 1998. [bbp-iayea-98cg]

2469 Hervé Brönnimann, Christoph Burnikel, and Sylvain Pion. Interval arithmetic yields efficient dynamic filters for computational geometry. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 165–174, 1998. [bbp-iayed-98scg]

2470 Hervé Brönnimann and Bernard Chazelle. How hard is halfspace range searching? In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 271–275, 1992. [bc-hhihr-92] *Cites:* as-anps-91, bfk-ictor-81, c-lbcpr-89, c-lbors1-90, c-lbors2-90, cr-ccpso-91, cr-lbcsr-92, csw-qoubs-90, cw-qorss-89, cs-arscg-89, cy-grp-84, ew-hrsls-86, elr-dlsrd-70, f-lbcor-81, f-lbcso-81, hw-ensrq-87, m-tnhl-52, m-rph-91, m-rsehc-91, m-dsa-84, s-iggp-76, w-pr-82, y-cmps-85, y-3spia-83, yy-gaddg-85, ZZZ.

2471 Hervé Brönnimann and Bernard Chazelle. Optimal slope selection via cuttings. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 99–103, 1994. [bc-ossc-94] *Precedes:* bc-ossc-98. *Cites:* aks-scps-83, bcm-prsss-93, c-chdc-93 , cegs-dwclp-92, cm-ltdao-93, csss-otass-89, dmn-rass-92, ks-osse-93, m-aogdc-91, m-roass-91, m-apcad-83, ZZZ.

2472 Hervé Brönnimann and Bernard Chazelle. Optimal slope selection via cuttings. *Comput. Geom. Theory Appl.*, 10(1):23–29, 1998. [bc-ossc-98] *Succeeds:* bc-ossc-94.

2473 Hervé Brönnimann, Bernard Chazelle, and Jiří Matoušek. Product range spaces, sensitive sampling, and derandomization. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 400–409, 1993. [bcm-prsss-93] *Keywords:* approximations, epsilon-nets, derandomization, diameter computation, method of conditional probabilities, parametric search.

2474 H. Brönnimann, B. Chazelle, and J. Matoušek. Product range spaces, sensitive sampling, and derandomization. *SIAM J. Comput.*, 28:1552–1575, 1999. [bcm-prsss-99]

2475 H. Brönnimann, Bernard Chazelle, and J. Pach. How hard is halfspace range searching. *Discrete Comput. Geom.*, 10:143–155, 1993. [bcp-hhihr-93] *Succeeds:* bc-hhihr-92.

2476 Hervé Brönnimann and Olivier Devillers. The union of unit balls has quadratic complexity, even if they all contain the origin. Rapport de recherche 3758, INRIA, 1999. [bd-uubhq-99] *URL:* http://www.inria.fr/RRRT/RR-3758. *Cites:* h-bevv-56, bcddy-acchs-96. *Abstract:* We provide a lower bound construction showing that the union of unit balls in R^3 has quadratic complexity, even if they all contain the origin. This settles a conjecture of Sharir.

2477 Hervé Brönnimann, Ioannis Emiris, Victor Pan, and Sylvain Pion. Computing exact geometric predicates using modular arithmetic with single precision. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 174–182, 1997. [bepp-cegpu-97] *Precedes:* bepp-sdrns-99. *Cites:* ahu-daca-74, abdpy-enmcs-95, bp-fa-94, by-eeesd-97i, bcl-casac-82, bkmnsu-egcl-95, c-sede-92, clr-ia-90, em-sstcd-90, e-cicgd-98, ec-gard-95, f-nsa2d-92, fv-eeacg-93, fv-sayee-96, gkz-drmd-94, gl-mc-83, h-pargc-88, h-hsism-96, hhk-rsops-89, hp-asdmr-94, kkm-ebrgl-96, k-sa-81, l-chi-82, lmc-ecdde-94, pys-antcm-97, p-pcpgs-96, r-cpagt-95, s-rafpg-96, si-rtoia-94, wrg-csdsp-92, y-tegc-97, y-ecgtm-95, yd-ecp-95, ZZZ.

2478 Hervé Brönnimann, Ioannis Emiris, Victor Pan, and Sylvain Pion. Sign determination in Residue Number Systems. *Theoret. Comput. Sci.*, 210(1):173–197, 1999. Special Issue on Real Numbers and Computers. [bepp-sdrns-99] *URL:* http://www-sop.inria.fr/prisme/personnel/pion/publis/TCS.ps.gz. *Succeeds:* bepp-cegpu-97.

2479 H. Brönnimann and M. T. Goodrich. Almost optimal set covers in finite VC-dimension. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 293–302, 1994. [bg-aoscf-94] *Cites:* ammrs-dtgm-93, a-ded-83, b-luhs-90, bglr-epcpa-93, brs-enasc-89, br-t3nnn-88, behw-clgcv-89, b-imhsh-94, bcm-prsss-93, c-ochan-91, c-chdc-93, ceggs-ibwen-93, cf-dvrsi-90, cm-ltdao-93, cw-qorss-89, c-ghscp-79, c-lvalp-88, cs-arscg-89, c-apca-93, clr-ia-90, d-ascg-90, gj-cigtn-79, g-gpmee-93, hw-ensrq-87, h-aascv-82, hm-ascpp-85, j-aacp-74, k-racpc-72, kpw-atben-92, l-lqwia-87, l-roifc-75, ly-hamp-93, m-cen-90, m-aogdc-91, m-cha-91, m-rsehc-92, m-rph-92, msw-hnlls-90, mww-deabv-91, m-ept-92, ms-saps-92, s-dfs-72, vc-ucrfe-71, w-pttco-88, ZZZ.

2480 H. Brönnimann and M. T. Goodrich. Almost optimal set covers in finite VC-dimension. *Discrete Comput. Geom.*, 14:263–279, 1995. [bg-aoscf-95]

2481 Hervé Brönnimann, John Iacono, Jryki Katajainen, Pat Morin, and Jason Morrison. Optimal in-place planar convex hull algorithms. 11th Annual Fall Workshop on Computational Geometry, 2001. http://geometry.poly.edu/cgwpapers/. [bikmm-oipcha-01] *URL:* http://geometry.poly.edu/cgwpapers/hbr_inplace.ps.

2482 Hervé Brönnimann and Sylvain Pion. Exact rounding for geometric constructions. In *GAMM/IMACS International Symposium on Scientific Computing, Computer Arithmetic and Validated Numerics*, 1997. [bp-ergc-97] *URL:* http://www-sop.inria.fr/prisme/publis/bp-ergc-97.ps.gz.

2483 Hervé Brönnimann and Mariette Yvinec. A complete analysis of Clarkson's algorithm for safe determinant evaluation. Research Report 3051, INRIA, 1996. [by-cacas-96] *URL:* http://www.inria.fr/rapports/sophia/RR-3051.html. *Abstract:* In this paper, we give a complete and self-contained analysis of Clarkson's algorithm that performs safe and efficient determinant evaluation of an $n \times n$ matrix with integer coefficients that can be expressed with b bits. Clarkson's original paper is generally felt difficult to read. We complete the gaps in his exposition, simplifying the analysis where we can. The number of extra bits needed by this analysis is roughly equivalent to the number of bits needed by Clarkson's analysis. We show that the algorithm performs sign evaluation correctly if $b + O(n)$ bits are available. We give a table of the maximum numbers b of bits available for the entries as a function of n, when the arithmetic is performed using a floating point processor complying with the IEEE 754 standard for double precision arithmetic (with 53 bits available for the mantissa). We also gain some insight into the practical behavior of the algorithm by experimenting. In particular, we provide experimental evidence that the algorithm evaluates correctly the sign of determinants of order up to 15 with 48-bit coefficients.

2484 Hervé Brönnimann and Mariette Yvinec. Efficient exact evaluation of signs of determinants. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 166–173, 1997. [by-eeesd-97i] *Precedes:* by-eeesd-00. *Cites:* abdpy-esdus-94, abdpy-enmcs-95, bkmnsu-egcl-95, c-accgc-96, c-sede-92, dp-papaf-96, fm-cslas-67, f-nsa2d-92, fv-eeacg-93, hhk-tirgc-88, h-gsm-89, kln-edtur-91, lm-cschu-90, m-dpggt-89, s-rafpg-96, si-smsft-89, si-rtoia-94, y-tegc-93, yd-ecp-95, ZZZ.

2485 Hervé Brönnimann and Mariette Yvinec. Efficient exact evaluation of signs of determinants. *Algorithmica*, 27:21–56, 2000. [by-eeesd-00] *Keywords:* determinant, robustness, Clarkson, safe, lattice, exact arithmetic, precision. *Succeeds:* by-eeesd-97i. *Cites:* abdpy-esdus-94, abdpy-enmcs-95, bkmnsu-egcl-95, c-accgc-96, c-sede-92, dp-papaf-96, fm-cslas-67, f-nsa2d-92, fv-eeacg-93, hhk-tirgc-88, h-gsm-89, kln-edtur-91, lm-cschu-90, m-dpggt-89, s-rafpg-96, si-smsft-89, si-rtoia-94, y-tegc-93, yd-ecp-95, ZZZ.

2486 Hervé. Brönnimann and Mariette Yvinec. Efficient exact evaluation of signs of determinants. Research Report 3140, INRIA, 1997. [by-eeesd-97t] *URL:* http://www.inria.fr/rapports/sophia/RR-3140.html. *Abstract:* This paper presents a theoretical and experimental study on two different methods to evaluate the sign of a determinant with integer entries. The first one is a method based on the Gram-Schmidt orthogonalisation process which has been proposed by Clarkson. We review the analysis of Clarkson and propose a variant of his method. The second method is an extension to $n \times n$ determinants of the ABDPY method which works only for 2×2 and 3×3 determinants. Both methods compute the signs of a $n \times n$ determinant whose entries are integers on b bits, by using an exact arithmetic on only $b + O(n)$ bits. Furthermore, both methods are adaptive, dealing quickly with easy cases and resorting to the full-length computation only for null determinants.

2487 A. Brönsted. *An Introduction to Convex Polytopes.* Springer-Verlag, New York, NY, 1983. [b-icp-83]

2488 I. N. Bronstein, K. A. Semendjajew, G. Musiol, and H. Mühlig. *Taschenbuch der Mathematik.* Harri Deutsch, Frankfurt am Main, 1993. [bsmm-tdm-93]

F. P. Brooks, Jr. See also [385, 3414, 13189–13193].

2489 R. Brooks and T. Lozano-Pérez. A subdivision algorithm in configuration space for findpath with rotation. In *Proc. 8th Internat. Joint Conf. Artif. Intell.*, August 1983. [bl-sacsf-83]

2490 R. A. Brooks. Find-path for a PUMA-class robot. Manuscript, Artif. Intell. Lab., Massachusetts Inst. Tech., Cambridge, MA, 1982. [b-fppcr-82]

2491 R. A. Brooks. Planning collision-free motions for pick-and-place operations. *Internat. J. Robot. Res.*, 4:19–44, 1983. [b-pcfmp-83]

2492 R. A. Brooks. Solving the find-path problem by good representation of free space. *IEEE Trans. Syst. Man Cybern.*, 13(3):190–197, 1983. [b-sfppg-83]

2493 R. A. Brooks and T. Lozano-Pérez. A subdivision algorithm in configuration space for findpath with rotation. Report 684, Artif. Intell. Lab., Massachusetts Inst. Tech., Cambridge, MA, 1982. [bl-sacsf-82] *Precedes:* bl-sacsf-85.

2494 R. A. Brooks and T. Lozano-Pérez. A subdivision algorithm in configuration space for findpath with rotation. *IEEE Trans. Syst. Man Cybern.*, 15(2):224–233, 1985. [bl-sacsf-85] *Keywords:* motion planning. *Succeeds:* bl-sacsf-82.

R. A. Brooks. See also [8389].

2495 R. Brost. *Analysis and planning of planar manipulation tasks.* PhD thesis, Carnegie Mellon University, 1991. Report CMU-CS-91-149. [b-appmt-91] *Keywords:* doctoral thesis.

2496 R. Brost. Automatic grasp planning in the presence of uncertainty. In *Proc. IEEE Internat. Conf. Robot. Autom.*, April 1986. [b-agppu-86]

2497 R. C. Brost and K. Y. Goldberg. A complete algorithm for synthesizing modular fixtures for polygonal parts. In *Proc. 11th IEEE Internat. Conf. Robot. Autom.*, May 1994. [bg-casmf-94]

2498 R. C. Brost and M. T. Mason. Graphical analysis of planar rigid body dynamics with multiple frictional contacts. In *Proc. 5th Intl. Symp. on Robotics Research*, pages 367–374, 1989. [bm-gaprb-89]

2499 W. Brostow, J. P. Dussault, and B. L. Fox. Construction of Voronoi polyhedra. *J. Comput. Phys.*, 29:81–92, 1978. [bdf-cvp-78]

2500 P. Brou. Finding objects in depth maps. *Internat. J. Robot. Res.*, ??, 1984. [b-fodm-84]

2501 U. A. Brousseau. A mathematician's progress. *Math. Teacher*, 59:722–727, 1966. [b-mp-66]

2502 A. E. Brouwer, A. M. Cohen, and A. Neumaier. *Distance-regular graphs.* Springer-Verlag, 1989. [bcn-drg-89]

H. A. M. de Brouwer. See also [9501].

2503 C. M. Brown and H. B. Voelcker. The PADL-2 project. In *Proc. 7th NSF Grantees' Conf. Product. Res. Tech.*, page ??, 1979. [bv-p2p-79]

C. M. Brown. See also [1330].

D. J. Brown. See also [1300, 2383].

G. Brown. See also [11139–11141].

2504 G. S. Brown. Point density in stems per acre. *New Zealand Forestry Service Research Notes*, 38:1–11, 1965. [b-pdsa-65]

J. H. Brown. See also [1434].

2505 J. L. Brown. Systems of coordinates associated with points scattered in the plane. *Comput. Aided Design*, 14:547–559, 1997. [b-scaps-97]

2506 J. L. Brown. Vertex based data dependent triangulations. *Comput. Aided Geom. Design*, 8:239–251, 1991. [b-vbddt-91] *Annote:* Cost of triangulation is sum of costs of nodes (node cost depends on the triangulation). Local optimizations to improve the cost. Reports good results using square of sums of angles between each adjacent facet and average normal at vertex.

2507 K. Q. Brown. Comments on "Algorithms for reporting and counting geometric intersections". *IEEE Trans. Comput.*, C-30:147–148, 1981. [b-carcg-81] *Succeeds:* b-arcgi-79.

2508 K. Q. Brown. Fast intersection of half spaces. Report CMU-CS-78-129, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1978. [b-fihs-78]

2509 K. Q. Brown. *Geometric transforms for fast geometric algorithms.* Ph.D. thesis, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1980. Report CMU-CS-80-101. [b-gtfga-80] *Keywords:* doctoral thesis, geometric transformations. *Comments:* UMI DA80-12772, 154 pp.

2510 K. Q. Brown. Voronoi diagrams from convex hulls. *Inform. Process. Lett.*, 9(5):223–228, 1979. [b-vdch-79]

2511 M. Brown. Locally flat imbeddings of topological manifolds. *Ann. Math.*, 75:331–341, 1962. [b-lfitm-62]

2512 M. H. Brown. *Algorithm Animation.* ACM Distinguished Dissertations Series. MIT Press, Cambridge, MA, 1987. [b-aa-87]

2513 M. H. Brown. Exploring algorithms using balsa-II. *Computer*, 21(5):14–36, May 1988. [b-eaub-88]

2514 M. H. Brown. The 1992 SRC animation festival. In *Proc. IEEE Sympos. on Visual Languages*, pages 116–123, August 1993. [b-1saf-93]

2515 M. H. Brown. Zeus: A system for algorithm animation and multi-view editing. Technical Report 75, Digital Systems Research Center, Palo Alto, CA, February 1992. [b-zsaam-92]

2516 M. H. Brown. Zeus: A system for algorithm animation and multi-view editing. *Comput. Graph.*, 18(3):177–186, 1992. [b-zsaam-92a]

2517 M. H. Brown. Zeus: A system for algorithms animation. In *Proc. IEEE Workshop on Visual Languages*, 1991. [b-zsaa-91]

2518 M. H. Brown and J. Hershberger. Color and sound in algorithms animation. *IEEE Comput.*, 25(12):52–63, 1992. [bh-csaa-92]

2519 M. H. Brown and M. A. Najork. Collaborative active textbooks. In *IEEE Symp. on Visual Languages*, 1996. [bn-cat-96]

2520 M. H. Brown and M. A. Najork. Collaborative active textbooks: A web-based algorithm animation system for an electronic classroom. Research Report 142, SRC, May 1996. [bn-catwb-96]

2521 M. H. Brown and R. Sedgewick. Techniques for algorithm animation. *IEEE Softw.*, 2(1):28–39, January 1985. [bs-taa-85]

Marc H. Brown. See also [10028,11650, 11651].

2522 M. R. Brown and R. E. Tarjan. Design and analysis of a data structure for representing sorted lists. *SIAM J. Comput.*, 9:594–614, 1980. [bt-dadsr-80]

2523 P. Brown and T. Gargiulo. An object oriented layout for directed graphs. In *Proc. IEEE Symposium on Assessment of Quality Software Development Tools*, page ??, May 1992. [bg-ooldg-92] *Keywords:* graph drawing.

2524 D. Brownawell. Bounds for the degrees in the Nullstellensatz. *Annals of Math. Second Series*, 126(3):577–591, 1987. [b-bdn-87]

2525 D. R. K. Brownrigg. Lattice partitions with a straight line. *Canad. Math. Bull.*, 29:287–294, 1986. [b-lpsl-86] *Keywords:* discrete geometry.

2526 A. Browyer, J. Davenport, P. Milne, J. Padget, and A. Wallis. A geometric algebra system. Draft, Schools of Mechanical Engineering and Mathematical Sciences, Univ. Bath, Bath, UK, 1987. [bdmpw-gas-87]

2527 J. W. Bruce and P. J. Giblin. *Curves and Singularities (2nd edition)*. Cambridge University Press, New York, 1992. [bg-cs2e-92]

J. Bruck. See also [6962, 11458, 11459].

2528 M. W. Brucker. Approximation of a set of points by points of a grid. *Computer*, 38(4):341–345, 1987. [b-aspg-87] *Keywords:* discrete geometry, approximation, fitting.

2529 P. Brucker. On the complexity of clustering problems. In R. Henn, B. Korte, and W. Oletti, editors, *Optimizing and Operations Research*. Springer-Verlag, Berlin, West Germany, 1977. [b-ccp-77]

2530 P. Brucker and W. Meyer. Scheduling two irregular polygons. *Discrete Appl. Math.*, 20(2):91–100, 1988. [bm-stip-88] *Keywords:* polygon, proximity, optimization.

2531 A. Bruckstein, L. O'Gorman, and A. Orlitsky. Design of shapes for precise image registration. Technical report, AT&T, 1991. [boo-dspir-91]

A. Bruckstein. See also [8834].

2532 A. M. Bruckstein and A. N. Netravali. On differential invariants of planar curves and recognizing partially occluded planar shapes. *Ann. Math. Artif. Intell.*, 13:227–250, 1995. [bn-dipcr-95] *Keywords:* matching, shape recognition, vision.

A. M. Bruckstein. See also [8055–8058, 8100, 8101, 8835–8838, 11648].

2533 B. Brüderlin. Automatizing geometric proofs and constructions. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 232–252. Springer-Verlag, 1988. [b-agpc-88] *Annote:* 4th Intern. Workshop Comput. Geom.

2534 Beat Brüderlin. Robustness of computational geometry algorithms. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 9. Universität Siegen, 1990. [b-rcga-90]

Beat Brüderlin. See also [5127].

B. D. Brüderlin. See also [12364].

2535 B. Bruenning. Air force vulnerability analyses from BRL-CAD models. In *Proc. BRL-CAD Symposium '91*, pages 1–13, Aberdeen Proving Ground, MD, 1991. American Defense Preparadness Assoc. [b-afvab-91]

2536 A. Bruggemann-Klein and D. Wood. Drawing trees nicely with TEX, 1987. [bw-dtnt-87] *Keywords:* graph drawing.

2537 H. Bruggesser and P. Mani. Shellable decompositions of cells and spheres. *Math. Scand.*, 29:197–205, 1971. [bm-sdcs-71]

2538 G. Brügner. Three-triangle-tangram. *BIT*, 24:380–382, 1984. [b-ttt-84]

2539 N. G. de Bruijn. *Nieuw Archief voor Wiskunde*, volume 2. ??, 1954. [b-navw-54]

2540 N. G. de Bruijn. Problems 17 and 18. answers. In *Opgaven met de oplossingen*, volume 20, pages 19–20. ??, 1955. [b-p11a-55]

2541 N. G. de Bruin and P. Erdős. On a combinatorial problem. *Proc. Konink. Nederl. Akad. Wetensch. Ser. A*, 51:1277–1279, 1948. Indagationes Math. 10, 421-423. [be-cp-48]

2542 A. M. Brukstein. Self-similarity properties of digitized straight lines. In *Vision Geom.: Proc. AMS Spec. Sess. Hoboken, NJ 1989*, pages 1–20. AMS Press, 1991. [b-sspds-91] *Keywords:* digital geometry.

B. Brunet. See also [13250].

2543 P. Brunet and I. Navazo. Solid representations using extended octrees. *ACM Trans. Graph.*, 9:170–197, 1990. [bn-srueo-90]

P. Brunet. See also [1200, 7632, 11643].

P. Brunetti. See also [1508].

2544 A. Brüngger, A. Marzetta, K. Fukuda, and J. Nievergelt. The parallel search bench ZRAM and its applications. *Ann. Oper. Res.*, ??, ?? To appear. [bmfn-psbzi-]

A. Brüngger. See also [10146, 10147].

J. Bruno. See also [4404].

2545 D. Bruschi, D. Joseph, and P. Young. A structural overview of NP optimization problems. *Algorithms Rev.*, 2(1):1–26, 1991. [bjy-sonop-91]

2546 I. Bruß and A. Frick. Fast interactive 3-D graph visualization. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 99–110. Springer-Verlag, 1996. [bf-fi3dg-96] *Keywords:* graph drawing, 3D, straight-line.

V. Bruyère. See also [11441, 11442].

2547 Elisabetta Bruzzone and Leila De Floriani. Two data structures for building tetrahedralizations. *Visual Comput.*, 6(5):266–283, November 1990. [bd-tdsbt-90] *Keywords:* solid modeling, decomposition models, tetrahedralization, Delaunay triangulation, data structures.

2548 Elisabetta Bruzzone, Leila De Floriani, and Enrico Puppo. Manipulating three-dimensional triangulations. In W. Litwin and H. Scheck, editors, *Foundations of Data Organization and Algorithms: 3rd International Conference, FODO 1989*, Berlin, West Germany, 1989. Springer-Verlag. [bdp-mtdt-89] *Annote:* Describes data structure for representing 3D triangulations. Relationships VE, EV, EF, FE, FT, TF are explicitly represented and the others can be deduced from these in time proportional to the size of the output.

E. Bruzzone. See also [1869].

2549 R. Bryant and D. Singerman. Foundations of the theory of maps on surfaces with boundaries. *Quart. J. Math. Oxford*, 2(36):17–41, 1985. [bs-ftmsb-85]

S. H. Bryant. See also [67].

2550 V. W. Bryant. Straight line representations of planar graphs. *Elem. Math.*, 44(3):64–66, 1989. [b-slrpg-89] *Keywords:* geometric graphs.

2551 T. H. Brylawski and G. M. Ziegler. Topological representation of dual pairs of oriented matroids. *Discrete Comput. Geom.*, 10:237–240, 1993. [bz-trdpo-93]

2552 O. Bryngdahl. Optical map transformations. *Optics Commun.*, 10(2):164–168, 1974. [b-omt-74]

2553 O. Bryngdahl. Geometrical transformations in optics. *J. Optical Soc. Amer.*, 64(8):1092–1099, 1974. [b-gto-74]

2554 Nader Bshouty, Sally A. Goldman, H. David Mathias, Subhash Suri, and Hisao Tamaki. Noise-tolerant distribution-free learning of general geometric concepts. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 151–160, May 1996. [bgmst-ntdfl-96]

2555 N. H. Bshouty. Lower bounds for algebraic computation trees of functions with finite domains. In *??*, volume 497 of *Lecture Notes Comput. Sci.*, pages 55–65. 1991. [b-lbact-91] *Keywords:* lower bounds.

I. Buchanan. See also [1469].

2556 B. Buchberger. Algebraic methods for non-linear computational geometry. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 81–82, 1988. [b-amnlc-88] *Cites:* abarag-88, acm-cad1b-84, b-eakfd-70, b-gbamp-85, b-agbnc-88, bck-amgr-88, c-qercf-75, e-acg-87, pscgi-85, r-da-50, w-bpmtp-84, ZZZ.

2557 B. Buchberger. Applications of Gröbner bases in nonlinear computational geometry. In *??*, volume 296 of *Lecture Notes Comput. Sci.*, pages 52–80. 1988. [b-agbnc-88] *Keywords:* algebraic geometry, motion planning.

2558 Bruno Buchberger. Ein algorithmisches Kriterium für die Lösbarkeit eines algebraischen Gleichungssystems. *Aequationes Mathematicae*, 4(3):374–383, 1970. [b-aklag-70]

2559 B. Buchberger. Ein algorithmisches Kriterium für die Lösbarkeit eines algebraischen Gleichungssystems. *Aequationes Math.*, 4(3):374–383, 1970. [b-eakfd-70]

2560 B. Buchberger. Gröbner bases: An algorithmic method in polynomial ideal theory. In N. Bose, editor, *Multidimensional Systems Theory*, chapter 6. Reidel Publishing, 1985. [b-gbamp-85]

2561 B. Buchberger. History and basic features of the critical-pair/completion procedure. *J. Symbolic Comput.*, 3:3–38, 1987. [b-hbfcp-87]

2562 B. Buchberger. What can Gröbner bases do for computational geometry and robotics? In D. Kapur and J. L. Mundy, editors, *Geometric Reasoning*, pages 415–447. MIT Press, 1989. [b-wcgbd-89]

2563 B. Buchberger, G. Collins, and R. Loos, editors. *Computer Algebra: Symbolic and Algebraic Computation*, volume 4 of *Computing Supplementum*. Springer-Verlag, New York, NY, 1st edition, 1982. [bcl-casac-82]

2564 B. Buchberger, G. E. Collins, and B. Kutzler. Algebraic methods for geometric reasoning. *Annu. Rev. Comput. Sci.*, 3:85–119, 1988. [bck-amgr-88]

2565 B. Buchberger, G. E. Collins, R. Loos, and R. Albrecht, editors. *Computer Algebra: Symbolic and Algebraic Computation*. Springer-Verlag, 2nd edition, 1983. [bcla-casac-83]

2566 B. Buchberger and R. Loos. Algebraic simplification. In B. Buchberger, G. E. Collins, R. Loos, and R. Albrecht, editors, *Computer Algebra: Symbolic and Algebraic Computation*, pages 11–43. Springer-Verlag, 1983. [bl-as-83]

2567 Bruno Buchberger and Sabine Stifter, editors. *Abstracts 11th European Workshop Comput. Geom.* Universität Linz, 1995. [bs-ewcg-95]

B. Buchberger. See also [819].

2568 W. Bucher and H. Edelsbrunner. On expected- and worst-case segment trees. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 109–125. JAI Press, Greenwich, Conn., 1983. [be-ewcst-83] *Keywords:* data structuring, searching, segment trees, worst-case analysis, expected-case analysis, intervals.

2569 Edwin Buchman and F. A. Valentine. External visibility. *Pacific J. Math.*, 64(2):333–340, 1976. [bv-ev-76]

2570 C. Buchta. On a conjecture of R. E. Miles about the convex hull of random points. *Monatsch. Math.*, 102:91–102, 1986. [b-crach-86] *Keywords:* convex hull, probabilistic geometry.

2571 C. Buchta. On nonnegative solutions of random systems of linear inequalities. *Discrete Comput. Geom.*, 2:85–95, 1987. [b-nsrsl-87]

2572 C. Buchta. On the average number of maxima in a set of vectors. *Inform. Process. Lett.*, 33(2):63–66, 1989. [b-anmsv-89] *Keywords:* probabilistic geometry.

2573 R. C. Buck. Partition of space. *Amer. Math. Monthly*, 50(9):541–544, 1943. [b-ps-43] *Keywords:* arrangements, d-dimensional, partition.

J. Buckingham. See also [5976].

2574 C. E. Buckley. A divide-and-conquer algorithm for computing 4-dimensional convex hulls. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 113–135. Springer-Verlag, 1988. [b-dcac4-88] *Annote:* 4th Intern. Workshop Comput. Geom.

2575 C. E. Buckley and l. J. Leifer. A proximity metric for continuum pah planning. In *Proc. 9th Internat. Conf. Artificial Intell.*, pages 1096–1102, 1985. [bl-pmcpp-85]

2576 S. J. Buckley. *Planning and teaching compliant motion strategies.* PhD thesis, Department of Electrical Engineering and Computer Science, MIT, 1987. [b-ptcms-87] *Keywords:* doctoral thesis.

2577 B. Büeler, A. Enge, K. Fukuda, and H.-J. Lüthi. Exact volume computations for polytopes: a practical study. In *Abstracts 12th European Workshop Comput. Geom.*, pages 57–64. Universität Münster, 1996. [befl-evcpp-96]

2578 T. D. Bui and V. N. Hanh. Automatic mesh generation for finite-element analysis. *Computing*, 44(4):305–329, 1990. [bh-amgfe-90] *Annote:* Your basic selection algorithm for triangulation.

2579 X.-N. Bui. *Planification de trajectoire pour un robot polygonal non-holonome dans un environnement polygonal.* Thèse de doctorat en sciences, École Nationale Supérieure des Mines de Paris, France, 1994. [b-ptrpn-94] *Keywords:* doctoral thesis.

2580 X.-N. Bui, P. Souères, J.-D. Boissonnat, and J.-P. Laumond. Shortest path synthesis for Dubins nonholonomic robot. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 2–7, 1994. [bsbl-spsdn-94]

2581 Xuan-Nam Bui, Philippe Soueres, Jean-Daniel Boissonnat, and Jean-Paul Laumond. The shortest path synthesis for nonholonomic robots moving forwards. Research Report 2153, INRIA, December 1993. [bsbl-spsnr-93] *Abstract:* We calculate the partition of the configuration space $I\!R^2 x S^1$ of a car-like robot, only moving forwards, with respect to the type of the length optimal paths. This kind of robot is subject to kinematic constraints on its path curvature and its orientation. Starting from the results on shortest paths by [Dub57] and [BCL92], we give new optimality conditions on these paths, and compute the partition for any horizontal plane of the configuration space.

X.-N. Bui. See also [2152].

2582 R. Bulirsch and J. Stoer. Asymptotic upper and lower bounds for results of extrapolation methods. *Numer. Math.*, 8:93–104, 1966. [bs-aulbr-66]

2583 R. Bulirsch and J. Stoer. Numerical quadrature by extrapolation. *Numer. Math.*, 9:271–278, 1967. [bs-nqe-67]

R. Bullirsch. See also [12532].

2584 R. K. Bullough. On homometric sets, 1. *Acta Crystallogr.*, 14:257–268, 1961. [b-hs1-61] *Keywords:* reconstruction, points.

2585 R. K. Bullough. On homometric sets, 2. *Acta Crystallogr.*, 17:295–308, 1964. [b-hs2-64] *Keywords:* reconstruction, points.

2586 A. Bülow-Olsen, N. R. Sakevile Hamilton, and M. J. Hutchings. A study of growth form in genets of Trifolium repens L. as affected by intra- and interplant contacts. *Oecologia*, ??, 1984. [bsh-sgfgt-84]

2587 R. J. Bumcrot. *Modern Projective Geometry*. Holt, Rinehart & Winston, New York, NY, 1969. [b-mpg-69]

J. R. Bunch. See also [4378].

Horst Bunke. See also [7539, 7540].

2588 Y. D. Burago and V. A. Zalgaller. *Geometric Inequalities*. Springer-Verlag, 1988. Translated from the Russian. [bz-gi-88]

2589 C. A. Burdet. Generating all faces of a polyhedron. *SIAM J. Appl. Math.*, 26:479–489, 1974. [b-gafp-74]

Joel W. Burdick. See also [5903, 5904].

M. Bures. See also [9215].

M. G. Bures. See also [9216].

2590 Peter Bürgisser, Michael Clausen, and M. Amin Shokrollahi. *Algebraic Complexity Theory*, volume 315 of *Grundlehren der mathematischen Wissenschaften*. Springer-Verlag, Berlin, 1996. [bcs-act-96] *ISBN:* 0-387-60582-7.

2591 R. E. Burkard. Optimal schedules for periodically recurring events. *Discrete Appl. Math.*, 15:167–180, 1986. [b-ospre-86] *Keywords:* scheduling, convex polygons, regular polygons. *Abstract:* Place two regular polygons in a circle so as to minimize the maximum separation between two vertices along the circle.

2592 Rainer E. Burkard, Vladimir G. Deineko, René van Dal, Jack A. A. van der Veen, and Gerhard J. Woeginger. Well-solvable special cases of the traveling salesman problem: A survey. *SIAM Rev.*, 40(3):496 – 546, 1998. [bddvw-wsctsps-98] *Keywords:* survey paper, traveling salesman problem, combinatorial optimization, polynomial time algorithm, computational complexity. *Abstract:* The traveling salesman problem (TSP) belongs to the most basic, most important, and most investigated problems in combinatorial optimization. Although it is an $\mathcal{NP}$-hard problem, many of its special cases can be solved efficiently in polynomial time. We survey these special cases with emphasis on the results that have been obtained during the decade 1985–1995. This survey complements an earlier survey from 1985 compiled by Gilmore, Lawler, and Shmoys [The Traveling Salesman Problem—A Guided Tour of Combinatorial Optimization, Wiley, Chichester, pp. 87–143].

2593 R. E. Burkard, H. W. Hamacher, and Günter Rote. Sandwich approximation of univariate convex functions with an application to separable convex programming. *Naval Res. Logistics*, 38:911–924, 1991. [bhr-saucf-91] *Comments:* final (modified) version of the techreport bhr-acfam-87. *Cites:* r-crsaa-90.

2594 Rainer E. Burkard, Bettina Klinz, and Rüdiger Rudolf. Perspectives of Monge properties in optimization. Technical Report 2, Spezialforschungsbereich F 003, Karl-Franzens-Universität Graz and Technische Universität Graz, August 1995. [bkr-pmpo-95] *URL:* ftp://ftp.tu-graz.ac.at/pub/papers/math/sfb2.ps.gz.

2595 Rainer E. Burkard, Günter Rote, En-Yu Yao, and Zhong-Liang Yu. Shortest polygonal paths in space. *Computing*, 45:51–68, 1990. [bryy-spps-90] *Annote:* For a given polygonal chain, find the shortest (open or closed) path that visits every segment of the chain in the given order.

R. E. Burkard. See also [5629].

2596 W. A. Burkhard. Associative access and inversion and partial-match file designs. Report TR-4, UCSD Comput. Sci. Division, Univ. California, San Diego, La Jolla, CA, 1975. [b-aaipm-75]

2597 W. A. Burkhard. Associative retrieval trie hash-coding. In *Proc. 8th Annu. ACM Sympos. Theory Comput.*, pages 211–219, 1976. [b-arthc-76] *Precedes:* b-arthc-77.

2598 W. A. Burkhard. Associative retrieval trie hash-coding. *J. Comput. Syst. Sci.*, 15:280–299, 1977. [b-arthc-77] *Succeeds:* b-arthc-76.

2599 W. A. Burkhard. File designs for partial-match retrieval. In *Proc. Conf. Inform. Sci. Systems*, pages 351–353. Johns Hopkins Univ., 1975. [b-fdpmr-75]

2600 W. A. Burkhard. Hashing and trie algorithms for partial-match retrieval. *ACM Trans. Database Syst.*, 1:175–187, 1976. [b-htapm-76]

2601 W. A. Burkhard. Non-uniform partial-match file designs. *Theoret. Comput. Sci.*, 5:1–23, 1977. [b-nupmf-77]

2602 W. A. Burkhard. Partial-match hash coding: benefits and redundancy. *ACM Trans. Database Syst.*, 4:228–239, 1979. [b-pmhcb-79]

2603 W. A. Burkhard. Partial-match queries and file designs. In *Proc. Internat. Conf. Very Large Databases*, pages 523–525, 1975. [b-pmqfd-75]

2604 W. A. Burkhard. Partial-match retrieval. *BIT*, 16:13–31, 1976. [b-pmr-76]

2605 W. A. Burkhard. Partial match retrieval: performance bounds. Report TR-3, UCSD Comput. Sci. Division, Univ. California, San Diego, La Jolla, CA, 1975. [b-pmrpb-75]

2606 W. A. Burkhard, M. L. Fredman, and D. J. Kleitman. Inherent complexity trade-offs for range query problems. *Theoret. Comput. Sci.*, 16:279–290, 1981. [bfk-ictor-81]

2607 W. A. Burkhard and R. M. Keller. Some approaches to best match file searching. *Commun. ACM*, 16:230–236, 1973. [bk-sabmf-73]

W. A. Burkhard. See also [1636].

M. M. Burnett. See also [1070].

2608 C. Burnikel. *Exact Computation of Voronoi Diagrams and Line Segment Intersections*. Ph.D thesis, Universität des Saarlandes, March 1996. [b-ecvdl-96] *Keywords:* doctoral thesis.

2609 C. Burnikel, R. Fleischer, K. Mehlhorn, and S. Schirra. A strong and easily computable separation bound for arithmetic expressions involving radicals. *Algorithmica*, 27(1):87–99, 2000. [bfms-secsb-00]

2610 C. Burnikel, R. Fleischer, K. Mehlhorn, and S. Schirra. A strong and easily computable separation bound for arithmetic expressions involving square roots. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 702–709, 1997. [bfms-secsb-97]

2611 C. Burnikel, R. Fleischer, K. Mehlhorn, and S. Schirra. Efficient exact geometric computation made easy. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 341–350, 1999. [bfms-eegcm-99]

2612 C. Burnikel, S. Funke, and M. Seel. Exact geometric computation using cascading. *Internat. J. Comput. Geom. Appl.*, 11:245–266, 2001. [bfs-egcc-01]

2613 C. Burnikel, S. Funke, and M. Seel. Exact geometric predicates using cascaded computation. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 175–183, 1998. [bfs-egpuc-98]

2614 Christoph Burnikel, Jochen Könnemann, Kurt Mehlhorn, Stefan Näher, Stefan Schirra, and Christian Uhrig. Exact geometric computation in LEDA. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C18–C19, 1995. [bkmnsu-egcl-95] *URL:* http://www.mpi-sb.mpg.de/guide/staff/uhrig/leda.html. *Keywords:* *Cites:* bjmm-lsicg-93, bms-hcvdl-94, fv-eeacg-93, mn-lpcgc-95, m-mca-92, yd-ecp-95, ZZZ.

2615 C. Burnikel, K. Mehlhorn, and S. Schirra. How to compute the Voronoi diagram of line segments: Theoretical and experimental results. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 227–239. Springer-Verlag, 1994. [bms-hcvdl-94]

2616 C. Burnikel, K. Mehlhorn, and S. Schirra. On degeneracy in geometric computations. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 16–23, 1994. [bms-dgc-94]

2617 C. Burnikel, K. Mehlhorn, and S. Schirra. The LEDA class real number. Technical Report MPI-I-96-1-001, Max-Planck Institut Inform., Saarbrücken, Germany, January 1996. [bms-lcrn-96] *URL:* http://data.mpi-sb.mpg.de/internet/reports.nsf/NumberView/1996-1-001.

Christoph Burnikel. See also [2468, 2469].

2618 S. A. Burr. Generalized Ramsey theory for graphs: a survey. In R. Bari and F. Haray, editors, *Graphs Combin.*, volume 406 of *Lecture Notes Math.*, pages 52–75. Springer-Verlag, Berlin, Germany, 1974. [b-grtgs-74]

2619 S. A. Burr, P. Erdős, and J. H. Spencer. Ramsey theorems for multiple copies of graphs. *Trans. Amer. Math. Soc.*, 209:87–99, 1975. [bes-rtmcg-75]

2620 S. A. Burr, B. Grünbaum, and N. J. A. Sloane. The orchard problem. *Geometriae Dedicatia*, 2:397–424, 1974. [bgs-op-74]

2621 R. Burridge, V. T. Rajan, and J. T. Schwartz. The peg-in-hole problem: Statistics and dynamics of nearly rigid bodies in frictional contact. In *Proc. IEEE Internat. Conf. Robot. Autom.*, 1987. [brs-phpsd-87]

2622 P. A. Burrough. *Principles of Geographical Information Systems for Land Resourses Assessment*. Oxford University Press, New York, 1986. [b-pgisl-86]

2623 F. W. Burton, V. J. Kollias, and J. G. Kollias. Consistency in point-in-polygon tests. *Comput. J.*, 27(4):375–376, 1984. [bkk-cppt-84]

2624 G. R. Burton and G. B. Purdy. The directions determined by n points in the plane. *J. London Math. Soc.*, 20(2):109–114, 1979. [bp-ddnpp-79]

R. Burton. See also [3383].

2625 R. P. Burton and D. R. Smith. A hidden-line algorithm for hyperspace. *SIAM J. Comput.*, 11:71–80, 1982. [bs-hlah-82]

R. P. Burton. See also [3654, 3655].

2626 W. Burton. Representation of many-sided polygons and polygonal lines for rapid processing. *Commun. ACM*, 20:166–171, 1977. [b-rmspp-77]

2627 H. Buseman. *Convex Surfaces*. Interscience Publishers, New York, NY, 1958. [b-cs-58]

2628 H. Busemann. *Spaces with distinguished Geodesics*. M. Dekker, New York, 1987. [b-sdg-87]

2629 H. Busemann. *The Geometry of Geodesics*. Academic Press Inc., New York, 1955. [b-gog-55]

2630 N. P. Buslenko, D. I. Golenko, I. M. Sobol, V. G. Sragovič, and J. A. Šreider. *The Monte Carlo Method*. Pergamon Press, Oxford, UK, 1966. [bgsss-mcm-66]

2631 S. Buss and P. Yianilos. Linear and $O(n \log n)$ time minimum-cost matching algorithms for quasi-convex tours. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 65–76, 1994. [by-lotmc-94]

2632 S. R. Buss and P. N. Yianilos. Linear and $O(n \log n)$ time minimum-cost matching algorithms for quasi-convex tours. *SIAM J. Comput.*, 27:170–201, 1998. [by-lotmc-98]

2633 L. Buti, G. Di Battista, G. Liotta, E. Tassinari, F. Vargiu, and L. Vismara. GD-Workbench: A system for prototyping and testing graph drawing algorithms. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 111–122. Springer-Verlag, 1996. [bdltvv-gwspt-96] *Keywords:* graph drawing, system.

2634 Geoffrey Butlin, Mark Gammon, Maritin Jones, and John Rawlinson. Cad data repair. In *Proc. 5th International Meshing Roundtable*, pages 7–12, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [bgjr-cdr-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

Geoffrey Butlin. See also [7601, 10909].

2635 B. Buttenfield. Treatment of the cartographic line. *Cartographica*, 22:1–26, 1985. [b-tcl-85]

A. Buzo. See also [8833].

A. B. By. See also [919].

J. W. Byers. See also [103].

2636 A. Bykat. Automatic generation of triangular grid: I — subdivision of a general polygon into convex subregions; II — triangulation of convex polygons. *Internat. J. Numer. Methods Eng.*, 10:1329–1342, 1976. [b-agtg1-76]

2637 A. Bykat. Convex hull of a finite set of points in two dimensions. *Inform. Process. Lett.*, 7:296–298, 1978. [b-chfsp-78]

2638 A. Bykat. On polygon similarity. *Inform. Process. Lett.*, 9:23–25, 1979. [b-ps-79]

Roy J. Byrd. See also [13061].

2639 José Cáceres, Clara I. Grima, Alberto Márquez, and Auxiliadora Moreno-González. Dilation free graphs in L_1-metric. In *Abstracts 17th European Workshop Comput. Geom.*, pages 178–182. Freie Universität Berlin, 2001. [cgmm-dfglm-01]

2640 José Cáceres and Alberto Márquez. An aperiodic tiles machine. In *Abstracts 15th European Workshop Comput. Geom.*, pages 55–57. INRIA Sophia-Antipolis, 1999. [cm-atm-99]

E. M. Cagley. See also [10753].

J. Cahill. See also [4096].

2641 Jiazhen Cai. Counting embeddings of planar graphs using DFS trees. *SIAM J. Discrete Math.*, 6:335–352, 1993. [c-cepgu-93] *Keywords:* graph drawing, DFS tree, planarization.

2642 J. Cai, X. Han, and R. E. Tarjan. An $O(m \log n)$-time algorithm for the maximal subgraph problem. *SIAM J. Comput.*, 22:1142–1162, 1993. [cht-otams-93] *Keywords:* graph drawing, planarization.

2643 J. Cai and M. D. Hirsch. Rotation distance, triangulations of planar surfaces and hyperbolic geometry. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 172–180. Springer-Verlag, 1994. [ch-rdtps-94]

J. Cai. See also [2344].

2644 L. Cai. Algorithms on polygonal embeddings of graphs. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 300–305, 1996. [c-apeg-96]

2645 L. Cai. Tree 2-spanners, 1991. manuscript, Simon Fraser University. [c-t2s-91]

2646 Leizhen Cai and Hazel Everett. Visibility graphs of polygonal rings. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 157–161, 1995. [ce-vgpr-95]

2647 L. Cai and J. M. Keil. Computing visibility information in an inaccurate simple polygon. *Internat. J. Comput. Geom. Appl.*, 7:515–538, 1997. [ck-cviis-97]

2648 L. Cai, Y. Xu, and B. Zhu. Computing the optimal bridge between two convex polygons. *Inform. Process. Lett.*, 69:127–130, 1999. [cxz-cobtcp-99]

Rich A. Cairncross. See also [8942].

2649 L. Calabi and W. E. Hartnett. Shape recognition, prairie fires, convex deficiencies and skeletons. *Amer. Math. Monthly*, 75:335–342, 1968. [ch-srpfc-68]

2650 Tiziana Calamoneri and Annalisa Massini. On three-dimensional layout of interconnection networks. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 64–75. Springer-Verlag, 1997. [cm-tdlin-97] *Keywords:* graph drawing, 3D.

2651 T. Calamoneri and A. Sterbini. Drawing 2-, 3- and 4-colorable graphs in $o(n^2)$ volume. report, Dept. of Computer Sci., Univ of Rome "La Sapienza", 1996. [cs-d234cg-96] *Keywords:* graph drawing, straight-line, 3D. *Precedes:* cs-d234c-97.

2652 T. Calamoneri and A. Sterbini. Drawing 2-, 3-, and 4-colorable graphs in $o(n^2)$ volume. In S. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 53–62. Springer-Verlag, 1997. [cs-d234c-97] *Keywords:* graph drawing, straight-line, 3D. *Succeeds:* cs-d234cg-96.

2653 A. Calatayud, J. García, and F. Gómez. Optimal illumination of points with a restricted flood-light. In *Abstracts 15th European Workshop Comput. Geom.*, pages 87–90. INRIA Sophia-Antipolis, 1999. [cgg-oiprf-99]

H. W. Calkins. See also [12944].

2654 Paul Callahan, Michael T. Goodrich, and Kumar Ramaiyer. Topology B-trees and their applications. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 381–392. Springer-Verlag, 1995. [cgr-tbtta-95]

P. Callahan. See also [1012, 1013].

2655 P. B. Callahan. *Dealing with higher dimensions: the well-separated pair decomposition and its applications.* Ph.D. thesis, Dept. Comput. Sci., Johns Hopkins University, Baltimore, Maryland, 1995. [c-dwhdt-95] *Keywords:* doctoral thesis.

2656 Paul B. Callahan. Optimal parallel all-nearest-neighbors using the well-seated pair decomposition. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 332–340, 1993. [c-opann-93]

2657 P. B. Callahan and S. R. Kosaraju. A decomposition of multi-dimensional point-sets with applications to k-nearest-neighbors and n-body potential fields. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 546–556, 1992. [ck-dmdps-92] *Keywords:* well-separated pair decomposition.

2658 P. B. Callahan and S. R. Kosaraju. A decomposition of multidimensional point sets with applications to k-nearest-neighbors and n-body potential fields. *J. ACM*, 42:67–90, 1995. [ck-dmpsa-95]

2659 Paul B. Callahan and S. Rao Kosaraju. Algorithms for dynamic closest-pair and n-body potential fields. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 263–272, 1995. [ck-adcpn-95] *Keywords:* dynamic algorithms, closest pair, all nearest neighbors, fast multipole method.

2660 P. B. Callahan and S. R. Kosaraju. Faster algorithms for some geometric graph problems in higher dimensions. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 291–300, 1993. [ck-fasgg-93] *Keywords:* optimization, minimum spanning trees, spanner, well-separated pair decomposition. *Cites:* ck-dmdps-92.

T. Callahan. See also [7338].

2661 K. Cameron and H. Sachs. Monotone path systems in simple regions. Technical Report 86429, Management Science Dept., University of Waterloo, 1986. [cs-mpssr-86]

2662 P. J. Cameron. Automorphism groups of graphs. In B. Wilson, editor, *Selected Topics in Graph Theory*. Academic Press, 1983. [c-agg-83]

2663 S. Cameron. An efficient algorithm for computing the translational configuration space obstacle of two convex polyhedra. Report ??, McDonnell Douglas Res. Lab., ?? [c-eactc-??]

2664 S. Cameron. Collision detection by four-dimensional intersection testing. *IEEE Trans. Robot. Autom.*, 6(3):291–302, 1990. [c-cdfdi-90]

2665 S. Cameron. Efficient bounds in constructive solid geometry. *IEEE Comput. Graph. Appl.*, 11(3):68–74, 1991. [c-ebcsg-91] *Keywords:* data structuring, geometric modeling, constructive solid geometry.

2666 S. Cameron and C.-K. Yap. Refinement methods for geometric bounds in constructive solid geometry. *ACM Trans. Graph.*, 11:12–39, 1992. [cy-rmgbc-92] *Keywords:* constituents, boolean algebra, simplification.

2667 S. A. Cameron and R. K. Culley. Determining the minimum translational distance between two convex polyhedra. In *Proc. of IEEE Inter. Conf. on Robotics and Automation*, pages 591–596, 1986. [cc-dmtdb-86] *Keywords:* GEOMOD OBSTACLE-AVOID COMPUTATIONAL-GEOMETRY 3D PROXIMITY INTERSECTION CONVEX. *Annote:* An algorithm is described to determine the Minimal Translation Distance (MTD) between two polyhedra. One way in which this algorithm differs from others is that it will return a value other than zero if the two objects intersect. This value is the penetration distance and has a negative sign. -WCF.

2668 S. Campagna, L. Kobbelt, and H.-P. Seidel. Directed edges — a scalable representation for triangle meshes. *J. Graphics Tools*, 3(4):1–12, 1999. [cks-desrt-99]

S. Campagna. See also [8228].

2669 A. T. Campbell. *Modeling Global Diffuse Illumination for Image Synthesis.* PhD thesis, Dept. Comput. Sci., Univ. Texas Austin, Austin, TX, 1991. [c-mgdii-91] *Keywords:* doctoral thesis.

2670 D. Campbell. The Cornell robot system design report. Technical Report 85-697, Cornell Univ., Ithaca, NY, 1985. [c-crsdr-85]

2671 D. Campbell and J. Higgins. Minimal visibility graphs. *Inform. Process. Lett.*, 37(1):49–53, 1991. [ch-mvg-91] *Keywords:* visibility, geometric graphs, segments.

D. Campbell. See also [4365].

D. M. Campbell. See also [3654, 3655].

2672 A. T. Campbell III and D. S. Fussell. Adaptive mesh generation for global diffuse illumination. *Comput. Graph.*, 24:155–164, August 1990. [cf-amggdi-90]

2673 A. T. Campbell III and D. S. Fussell. An analytic approach to illumination with area light sources. Report TR–91–25, Department of Computer Sciences, University of Texas at Austin, Austin, Texas, August 1991. [cf-aaial-91]

R. H. Campbell. See also [1878].

S. Campbell. See also [6357].

2674 F. Can. Incremental clustering for dynamic information retrieval. *ACM Trans. Inform. Syst.*, 11:143–164, 1993. [c-icdir-93]

2675 L. Canaglia, A. Galligo, and J. Heintz. Some new effectivity bounds in computational geometry. In *??*, volume 357 of *Lecture Notes Comput. Sci.*, pages 131–151. 1989. [cgh-snebc-89] *Keywords:* algebraic geometry, motion planning, parallel computation.

E. R. Candfield. See also [1608].

2676 R. Canham. A theorem on arrangements of lines in the plane. *Israel J. Math.*, 7:393–397, 1969. [c-talp-69] *Keywords:* arrangements, complexity of faces.

2677 L. Caniglia, A. Galligo, and J. Heintz. Some new efficient bounds in computational geometry. Technical report, Instituto Argentino de Mathemática, Buenos Aires, Argentina, 1988. Preliminary version. [cgh-snebc-88]

2678 J. J. Cannon. Computers in group theory: A survey. *Commun. ACM*, 12:3–12, 1969. [c-cgts-69]

2679 J. Canny. A new algebraic method for robot motion planning and real geometry. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 39–48, 1987. [c-namrm-87]

2680 J. Canny. A Voronoi method for the piano-movers problem. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 530–535, 1985. [c-vmpmp-85]

2681 J. Canny. An efficient method for skeletonizing the connected components of a semi-algebraic set. In *4th Computational Geometry Day*. New York Univ., March 1987. Presented Talk. [c-emscc-87]

2682 J. Canny. Collision detection for moving polyhedra. A. I. Memo 806, Massachusetts Inst. Tech., Cambridge, MA, 1984. [c-cdmp-84]

2683 John Canny. Collision detection for moving polyhedra. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-8(2):200–209, 1986. [c-cdmp-86]

2684 J. Canny. Computing roadmaps in general semialgebraic sets. *Comput. J.*, 36:409–418, 1993. [c-crgss-93]

2685 J. Canny. Computing roadmaps of semi-algebraic sets. In *Proc. 9th AAECC*, 1991. [c-crsas-91]

2686 J. Canny. Constructing roadmaps of semi-algebraic sets. In *International Workshop on Geometric Reasoning*, 1986. [c-crsas-86] *Precedes:* c-crsas-88.

2687 J. Canny. Constructing roadmaps of semi-algebraic sets 1: Completeness. *Artif. Intell.*, 37:203–222, 1988. [c-crsas-88] *Keywords:* motion planning, algebraic geometry. *Succeeds:* c-crsas-86.

2688 J. Canny. Generalized characteristic poynomials. In *Proc. ACM Sympos. Symbolic and Algebraic Computation*, 1988. [c-gcp-88]

2689 J. Canny. Improved algorithms for sign determination and existential quantifier elimination. *Comput. J.*, 36:504–514, 1993. [c-iasde-93]

2690 J. Canny. On detecting collision between polyhedra. In *Proc. ECAI*, pages 533–542, 1984. [c-dcbp-84]

2691 J. Canny. Some algebraic and geometric computations in PSPACE. In *Proc. 20th Annu. ACM Sympos. Theory Comput.*, pages 460–467, 1988. [c-sagcp-88]

2692 J. Canny. *The Complexity of Robot Motion Planning.* ACM – MIT Press Doctoral Dissertation Award Series. MIT Press, Cambridge, MA, 1987. [c-crmp-87] *ISBN:* 0-262-03136-1. *Keywords:* doctoral thesis. *Comments:* revised version of author's Ph.D. thesis, Electrical Engineering and Computer Science Dept., Massachusetts Inst. Tech. 1987.

2693 J. Canny and B. R. Donald. Simplified Voronoi diagrams. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 153–161, 1987. [cd-svd-87] *Precedes:* cd-svd-88. *Cites:* c-cdmp-86, c-vmpmp-85, c-crsas-86, d-mpsdf-84, ld-gvdp-81, l-spcsa-83, lw-apcfp-79, osy-gvdl1-84, osy-gvdl2-84, oy-rmpmd-85, ss-pmp2g-82, sy-agar-87, w-esrav-57, y-cmsd-84, ZZZ.

2694 J. Canny and B. R. Donald. Simplified Voronoi diagrams. *Discrete Comput. Geom.*, 3:219–236, 1988. [cd-svd-88] *Succeeds:* cd-svd-87.

2695 J. Canny, B. R. Donald, J. Reif, and P. Xavier. On the complexity of kinodynamic planning. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 306–316, 1988. [cdrx-ckp-88] *Precedes:* dxcr-kmp-93.

2696 J. Canny, B. R. Donald, and E. K. Ressler. A rational rotation method for robust geometric algorithms. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 251–260, 1992. [cdr-rrmrg-92] *Succeeds:* cdr-rrmrg-91. *Cites:* ahu-daca-74, b-eaosp-89, bm-gaprb-89, c-cfmp-89, d-edrr-89, d-cpcmp-90, dp-mccrb-90, e-ubfmp-86, afw-fsgvd-88, hhk-tirgc-88, l-spcsa-83, l-rmp-91, lm-cschu-90, mn-fccrp-90i, ps-cgi-85, r-lent-64, s-bag-77, si-smsft-89, ZZZ.

2697 J. Canny, B. R. Donald, and G. Ressler. A rational rotation method for robust geometric algorithms. Technical Report TR 91-1247, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, December 1991. [cdr-rrmrg-91] *Keywords:* robustness. *Comments:* extended abstract. *Precedes:* cdr-rrmrg-92.

2698 J. Canny, A. Rege, and J. Reif. An exact algorithm for kinodynamic planning in the plane. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 271–280, 1990. [crr-eakpp-90] *Precedes:* crr-eakpp-91. *Cites:* bdg-ocrma-83, cdrx-ckp-88, cr-nlbtr-87, fw-pcm-88, h-dsmt-83, jc-pspmr-89, jhcp-pgnto-89, o-mpic-87, rt-akpul-89, r-ccgfo-89, sh-pmttr-84, s-obbtr-87, sd-gtomr-88, sm-mtcrm-85, ZZZ.

2699 J. Canny, A. Rege, and J. Reif. An exact algorithm for kinodynamic planning in the plane. *Discrete Comput. Geom.*, 6:461–484, 1991. [crr-eakpp-91] *Succeeds:* crr-eakpp-90.

2700 J. Canny and J. H. Reif. New lower bound techniques for robot motion planning problems. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 49–60, 1987. [cr-nlbtr-87]

J. Canny. See also [1254, 4371, 4900–4902, 5941, 7445–7448, 8825, 9673–9676, 11097, 11098, 13333].

2701 J. F. Canny. An improved sign determination algorithm. In *Proc. 9th AAECC*, 1991. [c-isda-91]

2702 J. F. Canny. On the computability of fine-motion plans. In *Proc. IEEE Internat. Conf. Robot. Autom.*, Scottsdale, Arizona, 1989. IEEE Computer Society Press. [c-cfmp-89]

2703 J. F. Canny and K. Y. Goldberg. Risc for industrial robotics: Recent results and open problems. In *Proc. IEEE Internat. Conf. Robot. Autom.*, May 1994. [cg-rirrr-94]

2704 John F. Canny, Dima Grigorév, and Nicolai Vorobjov. Finding connected components of a semi-algebraic set in subexponential time. *Appl. Algebra Emg. Commun. Comput.*, 2:217–238, 1992. [cgv-fccsa-92]

2705 J. F. Canny, E. Kaltofen, and Y. Lakshman. Solving systems of polynomial equations faster. Technical Report 89-14, Dept. Comput. Sci., Rensselaer Polytech. Inst., Troy, NY, 1989. [ckl-sspef-89]

J. F. Canny. See also [4904, 8790, 8822, 9169, 13334].

2706 J. Cantarella and H. Johnston. Nontrivial embeddings of polygonal intervals and unknots in 3-space. *J. Knot Theory Ramifications*, 7:1027–1039, 1998. [cj-nepiu-98]

2707 A. Cantoni. Optimal curve fitting with piecewise linear functions. *IEEE Trans. Comput.*, C-20:59–67, 1971. [c-ocfpl-71]

B. Cantrill. See also [12743].

2708 F. Cao, J. R. Gilbert, and S. H. Teng. Partitioning unstructured meshes with lines and planes. In *9th Internat. Conf. Domain Decomposition*, 1996. submitted. [cgt-pumlp-96]

Y. Cao. See also [13224].

Z. Cao. See also [7173].

Z. L. Cao. See also [7174].

2709 M. Capobianco and J. C. Molluzzo. *Examples and Counterexamples in Graph Theory*. North-Holland, 1978. [cm-ecgt-78]

2710 V. Capoyleas. Clamping of polygonal objects. *Pattern Recogn. Lett.*, 14:704–714, 1993. [c-cpo-93]

2711 V. Capoyleas. On the area of the intersection of disks in the plane. *Comput. Geom. Theory Appl.*, 6:393–396, 1996. [c-aidp-96]

2712 V. Capoyleas, X. Chen, and C. M. Hoffmann. Generic naming in generative, constraint-based design. *Comput. Aided Design*, 28(1):17–26, 1996. [cch-gngcb-96]

2713 V. Capoyleas and J. Pach. A Turán-type theorem on chords of a convex polygon. Technical Report 90-30, DIMACS, 1990. [cp-tttcc-90]

2714 V. Capoyleas and J. Pach. On the perimeter of a point set in the plane. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 54–57, 1991. [cp-ppsp-91]

2715 V. Capoyleas, G. Rote, and G. Woeginger. Geometric clusterings. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 28–31, 1990. [crw-gc-90] *Succeeds:* rw-gc-89. *Precedes:* crw-gc-91. *Cites:* abky-cabmm-88, a-pdpaa-87, bh-cpcoe-89, b-ak-74, crw-gc-91, d-pcpho-84, e-acg-87, ers-ccsno-90, e-anccp-82, hs-ftp-89, hs-ftp-91, iim-vdlgi-85, j-nccog-82, ms-cscgl-84, ms-ppgmm-91, s-tcg-81, ZZZ.

2716 V. Capoyleas, Günter Rote, and G. Woeginger. Geometric clusterings. *J. Algorithms*, 12:341–356, 1991. [crw-gc-91] *Keywords:* cluster analysis. *Succeeds:* crw-gc-90, rw-gc-89. *Abstract:* A k-clustering of a given set of points in the plane is a partition of the points into k subsets (clusters). For any fixed k, we can find a k-clustering which minimizes any monotone function of the diameters or the radii of the clusters in polynomial time. The algorithm is based on the fact that any two clusters in an optimal solution can be separated by a line.

V. Capoyleas. See also [2378, 2379].

2717 S. E. Cappell, J. E. Goodman, J. Pach, R. Pollack, Micha Sharir, and R. Wenger. Common tangents and common transversals. *Adv. Math.*, 106:198–215, 1994. [cgppsw-ctct-94] *Succeeds:* cgppsw-ccht-90.

2718 S. E. Cappell, J. E. Goodman, J. Pach, R. Pollack, Micha Sharir, and R. Wenger. The combinatorial complexity of hyperplane transversals. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 83–91, 1990. (A revised version, entitled "Common tangents and common transversals," *Advance in Math.* 106 (1994), 198–215.). [cgppsw-ccht-90] *Precedes:* cgppsw-ctct-94. *Cites:* ab-eact-87, a-pdpaa-87, ad-ahdsp-90, blwsz-om-93, bf-tdkk-34, c-npbct-71, e-ftssg-85, e-acg-87, egs-ueplf-89, es-mnwsn-87, ew-spdtl-89, gp-ms-83, gp-htthd-88, hiir-wolla-89, klz-gpcs-85, ks-sbtat-77, m-tom-82, w-ubgpc-90, w-gpcc-90, ZZZ.

2719 V. Cappellini et al. From multiple views to object recognition. *IEEE Trans. Circuits Syst.*, 34:1344–1350, 1987. [c-mvor-87]

2720 C. Carathéodory. Über den Variabilitätsbereich der Fourierschen Konstanten von positiven harmonischen Funktionen. *Rendiconto del Circolo Matematico di Palermo*, 32:193–217, 1911. [c-ud5df-11]

A. Carbajal. See also [5321].

S. K. Card. See also [11305].

2721 G. Carey, M. Sharna, and K. Wang. A class of data structures for 2-d and 3-d adaptive mesh refinements. *Internat. J. Numer. Methods Eng.*, 26:2607–2622, 1988. [csw-cds2d-88]

G. C. Carey. See also [809].

G. F. Carey. See also [2351, 10789].

2722 I. Carlbom and I. Chakravaty. A hierarchical data structure for representing the spatial decomposition of 3-d objects. Manuscript, ??, ?? [cc-hdsrs-??]

2723 I. Carlbom and J. Paciorek. Geometric projection and viewing transformations. *ACM Comput. Surv.*, 10:465–502, 1978. [cp-gpvt-78]

2724 B. Carlisle, K. Y. Goldberg, A. S. Rao, and J. Wiegley. A pivoting gripper for feeding industrial parts. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1650–1655, May 1994. [cgrw-pgfip-94]

2725 E. C. Carlson and R. A. Rutenbar. A scanline data structure processor for VLSI geometry checking. *IEEE Trans. Comput.-Aided. Design Integr. Circuits Syst.*, 5(5):780–794, 1987. [cr-sdspv-87] *Keywords:* data structuring, VLSI design, parallel computation.

2726 Svante Carlsson. The deap: a double-ended heap to implement double-ended priority queries. *Inform. Process. Lett.*, 26(1):33–36, 1987. [c-ddehi-87] *Keywords:* data structuring.

2727 Svante Carlsson, Jingsen Chen, and Thomas Strothotte. A note on the construction of the data structure "deap". *Inform. Process. Lett.*, 31:315–317, 1989. [ccs-ncdsd-89] *Keywords:* data structuring.

2728 Svante Carlsson and Hakan Jonsson. Computing a shortest watchman path in a simple polygon in polynomial time. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 122–134. Springer-Verlag, 1995. [cj-cswps-95]

2729 Svante Carlsson and Hakan Jonsson. Guarding a treasury. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 85–90, 1993. [cj-gt-93] *Cites:* b-vsp-91, ce-oails-92, dj-tag-92, ea-lacvp-81, h-ovgat-89, ll-cvpe-86, gmr-rlptd-92, o-agta-87, ps-cgi-85, c-ctpg-75, s-rrag-92, ZZZ.

2730 Svante Carlsson, Hakan Jonsson, and Bengt J. Nilsson. Finding the shortest watchman route in a simple polygon. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 58–67. Springer-Verlag, 1993. [cjn-fswrs-93]

2731 S. Carlsson, H. Jonsson, and B. J. Nilsson. Finding the shortest watchman route in a simple polygon. *Discrete Comput. Geom.*, 22(3):377–402, 1999. [cjn-fswrs-99]

2732 S. Carlsson and B. J. Nilsson. Computing vision points in polygons. *Algorithmica*, 24:50–75, 1999. [cn-cvpp-99]

2733 Svante Carlsson, Bengt J. Nilsson, and Simeon Ntafos. Optimum guard covers and m-watchmen routes for restricted polygons. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 367–378. Springer-Verlag, 1991. [cnn-ogcmw-91] *Keywords:* polygons, visibility. *Precedes:* cnn-ogcmw-93.

2734 Svante Carlsson, Bengt J. Nilsson, and Simeon Ntafos. Optimum guard covers and m-watchmen routes for restricted polygons. *Internat. J. Comput. Geom. Appl.*, 3:85–105, 1993. [cnn-ogcmw-93] *Keywords:* Visibility, art gallery, watchman route, dynamic programming. *Succeeds:* cnn-ogcmw-91.

S. Carlsson. See also [1751].

2735 Paz Carmi and Matthew J. Katz. Minimizing the convex hull via local transfers. In *Abstracts 17th European Workshop Comput. Geom.*, pages 105–108. Freie Universität Berlin, 2001. [ck-mchlt-01]

2736 M. de Carmo. *Differential Geometry of Curves and Surfaces*. Prentice Hall, Englewood Cliffs, NJ, 1976. [c-dgcs-76]

2737 H. Carnal. Die konvexe Hülle von n rotationssymmetrisch verteilten Punkten. *Z. Wahrsch. Verw. Gebiete*, 15:168–176, 1970. [c-dkhvn-70]

2738 Y. Caro. On the generalized Erdős-Szekeres conjecture. *Discrete Math.*, 160:229–233, 1996. [c-gesc96]

2739 M. J. Carpano. Automatic display of hierarchized graphs for computer aided decision analysis. *IEEE Trans. Syst. Man Cybern.*, SMC-10(11):705–715, 1980. [c-adhgc-80] *Keywords:* graph drawing.

2740 M. J. Carpano and M. Delarche. Apport des techniques graphiques interactives a l'analyse structurale de systemes. II-exemples de realization et d'application. *RAIRO Sept. Anal. Cont. June*, ??, 1980. [cd-adtgi-80] *Keywords:* graph drawing.

L. Carpenter. See also [3518, 5432].

L. C. Carpenter. See also [8473].

2741 Hamish Carr, Torsten Möller, and Jack Snoeyink. Simplicial subdivisions and sampling artifacts. In *Proceedings IEEE Visualization 2001*, pages 99–106, 2001. [cms-sssa-01]

W. Carruthers. See also [1637].

2742 L. Carstensen. A comparison of simple mathematical approaches to spot symbols. *Cartographica*, 24(3):46–63, 1987. [c-csma-87]

L. Carter. See also [554, 12896].

2743 P. C. P. Carvalho and P. R. Cavalcanti. Point in polyhedron testing using spherical polygons. In A. W. Paeth, editor, *Graphics Gems V*, pages 42–54. Academic Press, Boston, MA, 1995. [cc-pptus-95]

2744 M. Casale. Evaluating geometric sensitivities at singular and non-singular points of variational CAD models for design optimization. *Internat. J. Comput. Geom. Appl.*, 6:443–460, 1996. [c-egssn-96]

M. A. Casanova. See also [9403].

G. Caskey. See also [10761].

E. Caspary. See also [11698].

2745 J. Cassels. *An Introduction to the Geometry of Numbers*. Springer-Verlag, 1959. [c-ign-59]

2746 T. Cassen, K. R. Subramanian, and Z. Michalewicz. Near-optimal construction of partitioning trees by evolutionary techniques. In *Proc. of Graphics Interface '95*, pages 263–271, 1995. [csm-nocpt-95]

2747 N. Castaneda and J. Urrutia. Straight line embeddings of planar graphs on point sets. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 312–318, 1996. [cu-slepg-96]

2748 M. J. Castro-Diaz, F. Hecht, and B. Mohammadi. New progress in anisotropic grid adaptation for inviscid and viscid flows simulations. In *Proc. 4th International Meshing Roundtable*, pages 73–86, Albuquerque, NM, 1995. Sandia National Laboratories. [chm-npaga-95]

2749 Natalia de Castro, Francisco Javier Cobos, Juan Carlos Dana, and Alberto Márquez. Rectangular duals and box-representation in the cylinder. In *Abstracts 15th European Workshop Comput. Geom.*, pages 145–147. INRIA Sophia-Antipolis, 1999. [ccdm-rdbrc-99]

2750 T. Catarci. The assignment heuristic for crossing reduction. *IEEE Trans. Syst. Man Cybern.*, 25(3):515–521, 1995. [c-ahcr-95] *Succeeds:* c-ahcrb-88.

2751 T. Catarci. The assignment heuristic for crossing reduction in bipartite graphs. In *Proc. 26th Allerton Conf. Commun. Control Comput.*, 1988. [c-ahcrb-88] *Keywords:* graph drawing.

2752 E. Catmull. A subdivision algorithm for computer display of curved surfaces. Technical Report UTEC-CSC-74-133, Dept. Comput. Sci., Univ. Utah, Salt Lake City, 1974. [c-sacdc-74]

2753 E. Catmull and J. Clark. Recursively generated B-spline surfaces on arbitrary topological meshes. *Comput. Aided Design*, 10:350–365, 1978. [cc-rgbss-78]

C. Cattani. See also [10578].

M. Cattoën. See also [1295].

2754 Augustin L. Cauchy. Sur les polygones et les polyèdres, seconde mémoire. *J. École Polytechnique*, XVIe Cahier, Tome IX:113–148, 1813. OEuvres Complètes, IIe Sèrie, Vol. 1, Paris, 1905, 26–38. [c-spp-1813]

2755 H. J. Caulfield and M. A. G. Abushagur. Hybrid analog-digital linear algebra processors. In *Proc. of SPIE*, volume 634, pages 86–95, 1986. [ca-hadla-86]

P. R. Cavalcanti. See also [2743].

T. Cavalier. See also [6291].

T. M. Cavalier. See also [6292, 7330].

2756 J. C. Cavendish. Automatic triangulation of arbitrary planar domains for the finite element method. *Internat. J. Numer. Methods Eng.*, 8:679–696, 1974. [c-atapd-74]

2757 J. C. Cavendish, D. A. Field, and W. H. Frey. An approach to automatic three-dimensional finite element mesh generation. *Internat. J. Numer. Methods Eng.*, 21:329–347, 1985. [cff-aatdf-85]

2758 J. C. Cavendish, W. H. Frey, and S. P. Marin. Feature-based design and finite element mesh generation for functional surfaces. *Advances in Engineering Software and Workstations*, 13(5–6):226–237, September 1991. [cfm-fbdfe-91] *Keywords:* feature based design, finite element mesh generation, functional surfaces, Delaunay surface triangulation, surface modeling systems, downstream mesh generation. *Annote:* Watson's alg for tri. Constraint edges are forced by ensuring that no generated points falls in their circumcircles. *Abstract:* This paper describes an approach to feature-based design and feature-based mesh generation for multi-featured functional surfaces. Unlike standard free-form parametric surface representation where the parametric surface patch plays the key role in both surface design and finite element mesh generation, we propose an approach to these two tasks which proceeds from the level of a complete feature (for example, a pocket or channel). The result is a more direct method for modeling functional surface characteristics and a more efficient feature-based implementation of Delaunay surface triangulation. (Author abstract) 10 Refs.

2759 A. Cayley. On the theory of elimination. *Cambridge and Dublin Math. J.*, 3:116–120, 1948. [c-te-48]

2760 A. Cayley. The theory of groups graphical representation. *Math. Papers*, 10:26–28, 1895. [c-tggr-95]

2761 F. Cazals. Combinatorial properties of one-dimensional arrangements. *Experimental Math.*, 6(1), 1997. [c-cpoda-97]

2762 F. Cazals. Effective nearest neighbors searching on the hyper-cube, with a pplications to molecular clustering. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 222–230, 1998. [c-ennsh-98]

2763 F. Cazals, G. Drettakis, and C. Puech. Filtering, clustering and hierarchy construction: a new solution for ray-tracing complex scenes. In *EG'95*, 1995. [cdp-fchcn-95]

2764 F. Cazals and C. Puech. Bucket-like space partitioning data structures with applications to ray tracing. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 11–20, 1997. [cp-blspd-97] *Cites:* a-fcagi-94, aeiim-pubtc-85, c-cpoda-97, cdp-fchcn-95, cs-sigte-97, bkos-cge-95, d-lnba-86, d-mddtd-88, glm-othsr-96, jl-rrt-92, ks-frtua-97, bwy-oetac-80, mms-qsrs-94, nhs-gfasm-84, o-cgc-94, ps-cgi-85, s-iggp-76, s-igbmf-93, sd-fbcve-95, sd-csdta-95, w-ltsbv-92, ZZZ.

2765 F. Cazals and M. Sbert. Some integral geometry tools to estimate the complexity of 3d scenes. In preparation, 1997. [cs-sigte-97]

Frédéric Cazals. See also [2153–2159].

2766 D. Cazier and J.-F. Dufourd. A formal specification of geometric refinements. *Visual Comput.*, 2000. [cd-fsgr-00]

2767 David Cazier and Jean-François Dufourd. A rewrite system to build planar subdivisions. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 235–240, 1995. [cd-rsbps-95]

2768 G. Ceder, G. Garbulsky, D. Avis, and K. Fukuda. Ground states of a ternany lattice model with nearest and next-nearest neighbor interactions. *Physical Review B*, 49:1–7, 1994. [cgaf-gstlm-94]

I. Cederbaum. See also [8696, 13629, 13630].

J. N. Cederquist. See also [12579].

2769 Z. J. Cendes, D. N. Shenton, and H. Shahnasser. Magnetic field computation using Delaunay triangulation and complementary finite element methods. *IEEE Trans. Magn.*, MAG-19(6), 1983. [css-mfcud-83] *Annote:* Uses incremental switching algorithm. Triangles are refined by adding point at the centroid.

Z. J. Cendes. See also [12105, 12106].

Y. Censor. See also [610].

2770 Bureau of the Census. The dime geocoding system. Report 4, U.S. Department of Commerce, Bureau of the Census, Washington, 1970. Census use Study. [b-dgs-70]

J. A. Cerbrian. See also [12228].

André Cérézo. See also [2160–2170].

S. Ceri. See also [1509].

2771 R. Chadha and D. Allison. Partitioning rectilinear figures into rectangles. In *Proc. ACM Annu. Computer Sci. Conf.*, pages 102–106, 1988. [ca-prfr-88] *Keywords:* partition, isothetic.

2772 T. Chadzelek, J. Eckstein, and E. Schömer. Heuristic motion planning with many degrees of freedom. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 167–172, 1996. [ces-hmpmd-96]

2773 T. Chadzelek, J. Eckstein, and E. Schömer. Heuristic motion planning with movable obstacles. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 131–136, 1996. [ces-hmpmo-96]

2774 Th. Chadzelek. Heuristische Bewegungsplanung mit vielen Freiheitsgraden. M.Sc. thesis, Dept. Comput. Sci., University Saarland, Saarbrücken, Germany, 1995. [c-hbvf-95] *URL:* http://hamster.cs.uni-sb.de/~chadzele/publications/Diplom-Chadzelek.ps%.Z. *Keywords:* master thesis, motion planning, collision detection, heuristic, quaternion.

2775 Th. Chadzelek, G. Hotz, and E. Schömer. Heuristic motion planning with many degrees of freedom. Report 95-08, Dept. Comput. Sci., University Saarland, Saarbrücken, Germany, 1995. [c-hmpmd-95] *URL:* http://hamster.cs.uni-sb.de/~chadzele/publications/TechReport.ps.gz. *Keywords:* motion planning, collision detection, heuristic, quaternion.

2776 Soo-Won Chae and Jong-Soo Kim. Tetrahedral meshing algorithm using basic operators. In *Proc. 4th International Meshing Roundtable*, pages 305–319, Albuquerque, NM, 1995. Sandia National Laboratories. [ck-tmaub-95]

2777 S. Chaiken, D. J. Kleitman, M. Saks, and I. Shearer. Covering regions by rectangles. *SIAM J. Algebraic Discrete Methods*, 2(4):394–410, 1981. [ckss-crr-81] *Keywords:* isothetic, covering.

S. Chaiken. See also [13418–13420].

2778 Don Chakerian and Dave Logothetti. Cube slices, pictorial triangles, and probability. *Math. Mag.*, 64:219–241, 1991. [cl-csptp-91]

2779 G. D. Chakerian and P. Filliman. The measures of the projections of a cube. *Studia Scientiarum Mathematicum Hungarica*, 21:103–110, 1986. [cf-mpc-86]

2780 G. D. Chakerian and M. A. Ghandehari. The Fermat problem in Minkowski space. *Geom. Dedicata*, 17:227–238, 1985. [cg-fpms-85]

2781 G. D. Chakerian and L. H. Lange. Geometric extremum problems. *Math. Mag.*, 44:57–69, 1971. [cl-gep-71]

P. P. Chakrabarti. See also [3773, 3774, 3778, 3779].

2782 I. Chakravarty and H. Freeman. Characteristic views as a basis for three-demensional object recognition. In *Proc. SPIE: Robot Vision*, volume 336, pages 37–45, 1982. [cf-cvbtd-82]

I. Chakravaty. See also [2722]

P. Chalasani. See also [2094–2096, 9728].

2783 S. B. Chalasani and C. S. Raghavendra. Geometric algorithms on a mesh architecture. In *Computer Architecture in Pattern Analysis and Machine Intelligence*, pages 169–175. IEEE Computer Society, October 1987. [cr-gaha-87] *Keywords:* parallel computation.

2784 L. C. Chalmet, R. L. Francis, and A. Kolen. Finding efficient solutions for rectilinear distance location problems efficiently. *European J. Oper. Res.*, 6:117–124, 1981. [cfk-fesrd-81] *Keywords:* facility location, L_1-metric.

2785 Bradford Chamberlain, Tony DeRose, Dana Lischinski, David Salesin, and John Snyder. Fast rendering of complex environments using a spatial hierarchy. In *Proceedings of Graphics Interface '96*, 1996. [cdlss-frceu-96]

S. Chamberlain. See also [12231].

E. P. F. Chan. See also [13346, 13347].

2786 I. W. Chan and D. K. Friesen. Parallel algorithms for some dominance problems based on a CREW PRAM. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 375–384. Springer-Verlag, 1991. [cf-pasdp-91] *Precedes:* cf-pasdp-93.

2787 I. W. Chan and D. K. Friesen. Parallel algorithms for some dominance problems based on the PRAM model. *Internat. J. Comput. Geom. Appl.*, 3:367–382, 1993. [cf-pasdp-93] *Keywords:* parallel algorithms, computational geometry, isothetic rectangles, direct dominance. *Succeeds:* cf-pasdp-91.

2788 K. Chan and T. Lam. Finding least-weight subsequences with fewer processors. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 318–327. Springer-Verlag, 1990. [cl-flwsf-90]

2789 K. C. Chan and S. T. Tan. Hierarchical structure of winged-edge structure: *a* conversion algorithm. *Visual Comput.*, 4:133–141, 1988. [ct-hswes-88] *Keywords:* data structuring.

2790 K. F. Chan and T. W. Lam. An on-line algorithm for navigating in unknown environment. *Internat. J. Comput. Geom. Appl.*, 3:227–244, 1993. [cl-olanu-93] *Keywords:* on-line algorithms, motion-planning, competitiveness, shortest paths, computational geometry. *Succeeds:* cl-olanu-91. *Annote:* They consider on-line navigation among a disjoint set of non-aligned rectangular obstacles, having aspect ratio at most r. They give a strategy that has competitive ratio $(\frac{r}{2}+1)$, and show that this is tight.

2791 K. F. Chan and T. W. Lam. An on-line algorithm for navigating in unknown terrain. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 127–136. Springer-Verlag, 1991. [cl-olanu-91] *Precedes:* cl-olanu-93.

2792 K. W. Chan and Francis Y. L. Chin. Optimal multiresolution polygonal approximation. In *Proc. 3rd Ann. Internat. Conf. Computing and Combinatorics*, volume 1276 of *Lecture Notes Comput. Sci.*, pages 32–41. Springer-Verlag, 1997. [cc-ompa-97]

2793 M. Y. Chan. A note on redundant disk modulo allocation. *Inform. Process. Lett.*, 20:121–123, 1985. [c-nrdma-85]

2794 T. M. Chan. A simple trapezoid sweep algorithm for reporting red/blue segment intersections. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 263–268, 1994. [c-stsar-94] *Cites:* a-fcagi-94, bo-arcgi-79, ce-oails-92, m–83, m-rlsi-81, ps-crrbs-93, e-ftssg-85, ZZZ.

2795 Timothy M. Chan. Approximate nearest neighbor queries revisited. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 352–358, 1997. [c-annqr-97] *Cites:* aesw-emstb-91, am-rsps-93, am-annqf-93, am-ars-95, amnsw-oaann-94, amn-abenn-96, b-acpqh-93, ck-fasgg-93, c-oaitd-92, c-aacpq-94, ks-ntead-96, ms-rscp-93, ps-cgi-85, s-cmsga-91, v-sgagc-91, y-cmstk-82, ZZZ.

2796 Timothy M. Chan. Approximating the diameter, width, smallest enclosing cylinder, and minimum-width annulus. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 300–309, 2000. [c-adwse-00]

2797 Timothy M. Chan. Dynamic planar convex hull operations in near-logarithmic amortized time. In *Proc. 40th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 92–99, 1999. [c-dpcho-99]

2798 T. M. Chan. Dynamic planar convex hull operations in near-logarithmic amortized time. *J. ACM*, 48:1–12, 2001. [c-dpcho-01]

2799 Timothy M. Chan. Fixed-dimensional linear programming queries made easy. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 284–290, 1996. [c-fdlpq-96] *Cites:* aes-vdsl3-95, am-rsps-93, am-dhsrr-95, as-erasg-95, ako-iqco-93, bcm-prsss-93, cg-fc2a-86, c-osrch-95, c-lvali-95, cm-ltdao-93, dk-dsppu-90, dmn-rass-91, esz-cskec-94, hw-ensrq-87, m-roass-91, m-ept-92, m-rph-92, m-loq-93, m-rsehc-93, m-grs-94, m-ekpc-95, m-gofvc-95, m-apcad-83, m-lpltw-84, ms-rscp-93, m-cgitr-93, p-slpab-90, s-sdlpc-91, st-ecdmp-95, sw-cblpr-92, t-mnlcf-92, ZZZ.

2800 T. M. Chan. Geometric applications of a randomized optimization technique. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 269–278, 1998. [c-garot-98]

2801 T. M. Chan. Geometric applications of a randomized optimization technique. *Discrete Comput. Geom.*, 22(4):547–567, 1999. [c-garot-99]

2802 T. M. Chan. More planar two-center algorithms. *Comput. Geom. Theory Appl.*, 13:189–198, 1999. [c-mptca-99]

2803 T. M. Chan. On enumerating and selecting distances. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 279–286, 1998. [c-oesd-98]

2804 T. M. Chan. On enumerating and selecting distances. *Internat. J. Comput. Geom. Appl.*, 11:291–304, 2001. [c-oesd-01]

2805 Timothy M. Chan. On levels in arrangements of curves. In *Proc. 41th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 219–227, 2000. [c-lac-00]

2806 Timothy M. Chan. Optimal output-sensitive convex hull algorithms in two and three dimensions. *Discrete Comput. Geom.*, 16:361–368, 1996. [c-oosch-96]

2807 Timothy M. Chan. Output-sensitive results on convex hulls, extreme points, and related problems. *Discrete Comput. Geom.*, 16:369–387, 1996. [c-osrch-96]

2808 T. M. Chan. Random sampling, half-space range reporting, and construction of $(\leq k)$-levels in three dimensions. In *Proc. 39th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 586–595, 1998. [c-rshrr-98]

2809 T. M. Chan. Random sampling, half-space range reporting, and construction of $(\leq k)$-levels in three dimensions. *SIAM J. Comput.*, 30:561–575, 2000. [c-rshrr-00]

2810 T. M. Chan. Reporting curve segment intersections using restricted predicates. *Comput. Geom. Theory Appl.*, 16(4):245–256, 2000. [c-rcsiu-00]

2811 T. M. Chan, M. T. Goodrich, S. R. Kosaraju, and R. Tamassia. Optimizing area and aspect ratio in straight-line orthogonal tree drawings. In S. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 63–75. Springer-Verlag, 1997. [cgkt-oaars-97] *URL:* http://www.cs.brown.edu/cgc/papers/cgkt-oaars-97.ps.gz. *Keywords:* graph drawing, upward, tree, planar, straight-line, orthogonal, CGC, Brown.

2812 Timothy M. Chan, Jack Snoeyink, and Chee-Keng Yap. Output-sensitive construction of polytopes in four dimensions and clipped Voronoi diagrams in three. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 282–291, 1995. [csy-oscpf-95] *Keywords:* convex hulls, Voronoi diagram, ultimate convex hull algorithm.

2813 T. M. Chan, J. Snoeyink, and C. K. Yap. Primal dividing and dual pruning: Output-sensitive construction of 4-d polytopes and 3-d Voronoi diagrams. *Discrete Comput. Geom.*, 18:433–454, 1997. [csy-pddpo-97]

Timothy M. Chan. See also [136, 6666].

2814 Timothy M. Y. Chan. Output-sensitive results on convex hulls, extreme points, and related problems. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 10–19, 1995. [c-osrch-95] *Cites:* am-rsps-92, bkst-anmsv-78, bs-dspls-80, csy-oscpf-95, c-clps-85, c-chdc-93, ck-acp-70, cm-dosch-92, c-mosga-94, cs-arscg-89, dk-fdpi-83, e-acg-87, es-otatd-91, em-sstcd-90, ew-cbtda-86, ec-eargd-92, g-eadch-72, j-ichfs-73, ks-upcha-86, m-loq-93, m-gofvc-94, ms-rscp-93, m-mnfcp-70, m-lpltw-84, m-osclv-90, m-cgitr-93, o-cgc-94, ol-mcp-81, ph-chfsp-77, ps-cgi-85, r-slcdn-70, r-dcikc-88a, s-chaop-81, s-chdch-86, sw-cblpr-92, s-fchff-85, ZZZ.

2815 W. K. Chan. On the largest RAT-free subset of a finite set of points, ?? [c-lrfsf-??] *Keywords:* triangle, points, extremal figures. *Annote:* RAT is right-angle triangle.

2816 W. S. Chan and F. Chin. Approximation of polygonal curves with minimum number of line segments. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 378–387. Springer-Verlag, 1992. [cc-apcmn-92] *Precedes:* cc-apcmn-96.

2817 W. S. Chan and F. Chin. Approximation of polygonal curves with minimum number of line segments or minimum error. *Internat. J. Comput. Geom. Appl.*, 6:59–77, 1996. [cc-apcmn-96] *Succeeds:* cc-apcmn-92.

2818 Wun-Tat Chan and Francis Y. L. Chin. Algorithms for finding optimal disjoint paths around a rectangle. In *Proc. 8th Annu. Internat. Sympos. Algorithms Comput.*, volume 1350 of *Lecture Notes Comput. Sci.*, pages 314–323. Springer-Verlag, 1997. [cc-afodp-97]

2819 W.-T. Chan and F. Y. L. Chin. Efficient algorithms for finding disjoint paths in grids. In *Proc. 8th ACM-SIAM Sympos. Discrete Alogrithms*, pages 454–463, 1997. [cc-eafdp-97]

Y. T. Chan. See also [12886].

2820 D. R. Chand and S. S. Kapur. An algorithm for convex polytopes. *J. ACM*, 17(1):78–86, January 1970. [ck-acp-70]

2821 A. K. Chandra, D. S. Hirschberg, and C. K. Wong. Bin packing with geometric constraints in computer network design. *Oper. Res.*, 26(5):760–772, 1978. [chw-bpgcc-78] *Keywords:* packing.

A. K. Chandra. See also [273, 277–279].

2822 B. Chandra. Constructing sparse spanners for most graphs in higher dimensions. *Inform. Process. Lett.*, 51:289–294, 1994. [c-cssmg-94]

2823 B. Chandra, G. Das, G. Narasimhan, and J. Soares. New sparseness results on graph spanners. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 192–201, 1992. [cdns-nsrgs-92] *Precedes:* cdns-nsrgs-95. *Cites:* addjs-sswg-93, a-cns-85, ap-sp-90, bd-rstod-86, bclr-ostm-86, b-egt-78, c-tipga-86, d-ascg-90, dj-wtacg-89, d-ntpcg-59, dfs-dgaag-90, k-aceg-88, kg-cgwac-92, ll-tapga-89, ps-gs-89, pu-osh-89, pu-tbser-88, r-cpscn-55, r-css-63, rs-addce-91, s-cmsga-91, s-aedsd-92, s-s-91, v-sgagc-91, v-mstkd-88, ZZZ.

2824 B. Chandra, G. Das, G. Narasimhan, and J. Soares. New sparseness results on graph spanners. *Internat. J. Comput. Geom. Appl.*, 5:125–144, 1995. [cdns-nsrgs-95] *Keywords:* spanners, geometric graphs, greedy algorithm, transformational method, sparse spanners, euclidean graphs. *Succeeds:* cdns-nsrgs-92.

2825 B. Chandra, H. Karloff, and C. Tovey. New results on the old k-opt algorithm for the traveling salesman problem. *SIAM J. Comput.*, 28:1998–2029, 1999. [ckt-nroko-99]

2826 B. Chandra, H. Karloff, and C. Tovey. New results on the old k-opt algorithm for the TSP. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 150–159, 1994. [ckt-nroko-94]

2827 B. Chandra and S. Vishwanathan. Constructing reliable communication networks of small weight on-line. Manuscript, ??, 1991. [cv-crcns-91]

2828 S. Chandran and D. M. Mount. A parallel algorithm for enclosed and enclosing triangles. *Internat. J. Comput. Geom. Appl.*, 2(2):191–214, 1992. [cm-paeet-92] *Keywords:* minimum enclosures, convex polygons, parallel algorithms, rotating calipers.

S. Chandran. See also [9902].

S. Chandrasekar. See also [60–64].

2829 R. Chandrasekaran. The weighted Euclidean 1-center problem. *Oper. Res. Lett.*, 1(3):111–112, 1982. [c-we1cp-82] *Keywords:* facility location, d-dimensional, linear programming.

2830 R. Chandrasekaran and A. Tamir. Algebraic optimization: the Fermat-Weber location problem. *Math. Program.*, 46(2):219–224, 1990. [ct-aofwl-90] *Keywords:* facility location.

R. Chandrasekaran. See also [1917, 1918, 7651, 7652, 9436].

Narayanaswami Chandrasekhar. See also [5498, 5499].

2831 V. Chandru and D. Dutta. Composition of planar offsets. Technical Report, Purdue Univ., W. Lafayette, IN, June 1987. [cd-cpo-87]

2832 V. Chandru, D. Dutta, and C. Hoffmann. On the geometry of dupin cyclides. *Visual Comput.*, 5:227–290, 1989. [cdh-gdc-89]

2833 V. Chandru, S. K. Ghosh, A. Maheshwari, V. T. Rajan, and S. Saluja. *NC*-algorithms for minimum link path and related problems. Technical Report CS-90/3, TATA inst., Bombay, India, 1990. [cgmrs-namlp-90]

2834 V. Chandru, S. K. Ghosh, A. Maheshwari, V. T. Rajan, and S. Saluja. *NC*-algorithms for minimum link path and related problems. *J. Algorithms*, 19:173–203, 1995. [cgmrs-namlp-95]

2835 V. Chandru, V. T. Rajan, and R. Swaminathan. Monotone pieces of chains. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 156–159, 1990. [crs-mpc-90] *Cites:* ll-ccmp-84, ZZZ.

2836 V. Chandru, V. T. Rajan, and R. Swaminathan. Monotone pieces of chains. *ORSA J. Comput.*, 4(4):439–446, 1992. [crs-mpc-92] *Succeeds:* crs-mpc-90. *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

2837 V. Chandru and R. Samuel. How to draw a circumscribing gleichdick. Technical Report CC-87-36, School Indust. Engrg., Purdue Univ., West Lafayette, IN, 1987. [cs-hdcg-87]

2838 V. Chandru and R. Venkataraman. Circular hulls and orbiforms of simple polygons. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 433–440, 1991. [cv-chosp-91]

V. Chandru. See also [61–64, 1918, 3169, 3260, 5032].

2839 C. C. Chang, R. C. T. Lee, and M. W. Du. Symbolic gray code as a perfect multiattribute hashing scheme for partial match queries. *IEEE Trans. Softw. Eng.*, SE-8:235–249, 1982. [cld-sgcpm-82]

C.-H. Chang. See also [6965, 6966, 8607].

D. R. Chang. See also [4362, 4363].

2840 E.-C. Chang and C. K. Yap. A wavelet approach to foveating images. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 397–399, 1997. [cy-wafi-97] *Cites:* awb-av-88, b-ap-88, b-msvav-92, crd-isasv-96, hw-rffam-68, hw-srgoc-74, j-euimp-89, kg-ifics-96, r-svcvc-89, rs-dcsvv-90, s-dsvpm-77, s-smpsp-77, sgb-svavd-95, wbs-vbvct-92, ZZZ.

E.-C. Chang. See also [13820, 13821].

2841 F. R. K. Chang, E. Szemeredi, and W. T. Trotter. The number of different distances determined by a set of points in the Euclidean plane. *Discrete Comput. Geom.*, 7:1–11, 1992. [cst-nddds-92]

2842 G. Chang, W. Guida, and W. Still. An internal coordinate Monte-Carlo method for searching conformational space. *J. Amer. Chem. Soc.*, 111:4379–4386, 1989. [cgs-icmcm-89]

H.-S. Chang. See also [3103].

2843 J. Chang and V. Milenkovic. An experiment using LN for exact geometric computations. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 67–72, 1993. [cm-euleg-93] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation, exact arithmetic. *Cites:* m-cacau-89, dbs-gttd-92, fm-nsala-91, fv-eeacg-93, h-gsm-89, kln-edtur-91, m-vigau-88t, m-cacau-89, m-rfldd-90, m-rflp-89, fw-lnum-93, si-cvdom-89, f-pcg-93, ZZZ.

2844 J. M. Chang and K. S. Fu. Extended K-d tree database organization: a dynamic multiattribute clustering method. *IEEE Trans. Softw. Eng.*, SE-7:284–290, 1981. [cf-ekdtd-81]

2845 J. S. Chang. Polygon optimization problems. Report 240, Comput. Sci. Div., New York Univ., New York, NY, 1986. [c-pop-86]

2846 J. S. Chang and C. K. Yap. A polynomial solution for the potato-peeling and other polygon inclusion and enclosure problems. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 408–416, 1984. [cy-psppo-84] *Precedes:* cy-psppp-86.

2847 J. S. Chang and C. K. Yap. A polynomial solution for the potato-peeling problem. *Discrete Comput. Geom.*, 1:155–182, 1986. [cy-psppp-86] *Succeeds:* cy-psppo-84.

J. S. Chang. See also [280, 8222, 8223, 13378].

J. W. Chang. See also [13506].

L.-W. Chang. See also [3088].

2848 Maw Shang Chang, Nen-Fu Huang, and Chuan-Yi Tang. An optimal algorithm for constructing oriented Voronoi diagrams and geographic neighborhood graphs. *Inform. Process. Lett.*, 35(5):255–260, August 1990. [cht-oacov-90] *Keywords:* computational geometry, Voronoi diagrams, geographic neighborhood graphs. *Annote:* OVD is just a cdfVD with a wedge shaped distance function. Sweepline algorithm given. *Abstract:* Given n points on the plane, we propose an O(n log n) algorithm to construct the oriented Voronoi diagram and the geographic neighborhood graph of these n points. We also show that both problems have the same lower bound of Omega (n log n) and hence the proposed algorithm is optimal. (Author abstract) 4 Refs.

2849 M. S. Chang, C. Y. Tang, and C. T. Lee. Solving the Euclidean bottleneck matching problem by k-relative neighborhood graphs. *Algorithmica*, 8:177–194, 1992. [ctl-sebmp-92]

2850 M. S. Chang, C. Y. Tang, and R. C. T. Lee. 20-relative neighborhood graphs are Hamiltonian. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 53–65. Springer-Verlag, 1990. [ctl-20rng-90]

R. Chang. See also [7276].

2851 R. C. Chang and H. S. Lee. Finding a maximal set of independent chords in a circle. *Inform. Process. Lett.*, 41(2):99–102, 1992. [cl-fmsic-92] *Keywords:* geometric graphs, polygons, decomposition.

2852 R. C. Chang and R. C. T. Lee. An $O(n \log n)$ minimal spanning tree algorithm for n points in the plane. *BIT*, 26:7–16, 1986. [cl-omsta-86] *Annote:* See [12540] for a discussion of lots of errors.

2853 R. C. Chang and R. C. T. Lee. On the average length of Delaunay triangulations. *BIT*, 24:269–273, 1984. [cl-aldt-84]

2854 R. C. Chang and R. C. T. Lee. The average-case performance analysis of a closest-pair problem. *Internat. J. Comput. Math.*, 16(2):125–130, 1984. [cl-acpac-84] *Keywords:* proximity, average-case analysis.

R. C. Chang. See also [3031, 7153, 7277–7280, 8640–8642, 12590–12592].

S. C. Chang. See also [8650].

H. S. Chao. See also [13363].

S. C. Chao. See also [4455].

E. Chapuis. See also [3552].

2855 B. W. Char, K. O. Geddes, G. H. Gonnet, B. L. Leong, M. B. Monagan, and S. M. Watt. *First leaves: a tutorial introduction to Maple V.* Springer-Verlag, New York, 1992. [cgglmw-fltim-92]

2856 B. W. Char, K. O. Geddes, G. H. Gonnet, B. L. Leong, M. B. Monagan, and S. M. Watt. *Maple V Language Reference Manual.* Springer-Verlag, New York, 1991. [cgglmw-m5lrm-91]

2857 Bruce W. Char, Keith O. Geddes, Gaston H. Gonnet, Benton L. Leong, Micheal B. Monagan, and Stephen M. Watt. *Maple V Language Reference Manual.* Springer-Verlag, New York, 1991. [cgglmw-mvlrm-91]

2858 Moses Charikar, Chandra Chekuri, Tomás Feder, and Rajeev Motwani. Incremental clustering and dynamic information retrieval. In *Proc. 29th Annu. ACM Sympos. Theory Comput.*, pages 626–635, 1997. [ccfm-icdir-97]

2859 M. Charikar, C. Chekuri, A. Goel, and S. Guha. Rounding via trees: Deterministic approximation algorithms for group Steiner trees and k-median. In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, pages 114–123, 1998. [ccgg-rvtda-98]

2860 M. Charikar and S. Guha. Improved combinatorial algorithms for facility location and k-median problems. In *Proc. 40th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 378–388, 1999. [cg-icafl-99]

2861 M. Charikar, S. Guha, E. Tardos, and D. Shmoys. A constant-factor approximation algorithm for the k-median problem. In *Proc. 31st Annu. ACM Sympos. Theory Comput.*, pages 1–10, 1999. [cgts-cfaak-99]

2862 Moses Charikar, Dan Halperin, and Rajeev Motwani. The dynamic servers problem. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 410–419, 1998. [chm-dsp-98] *Keywords:* minimum-length monotone subdivision, approximation algorithms.

2863 A. Charnes. Optimality and degeneracy in linear programming. *Econometrica*, 20(2):160–170, 1952. [c-odlp-52]

Charrot. See also [6270].

2864 P. Charrot and J. A. Gregory. A pentagonal surface patch for computer aided geometric design. *Comput. Aided Design*, 1:87–94, 1984. [cg-pspca-84]

T. D. Charters. See also [6007].

2865 G. Chartrand and O. R. Oellermann. *Applied and Algorithmic Graph Theory.* McGraw-Hill, New York, 1993. [co-aagt-93]

2866 J.-M. Chassery. Discrete and computational geometric approaches applied to a problem of finite approximation. In *Proc. Scand. Conf. Image Anal.*, volume 2, pages 856–859, 1989. [c-dcgaa-89] *Keywords:* convex, fitting, discrete geometry.

2867 J. M. Chassery and C. Garbay. Iterative process for colour image segmentation using a convexity criterion. In A. Oosterline and A. G. Tescher, editors, *Applications of Digital Image Processing*, volume 397 of *Proc. SPIE*, pages 165–172. ??, 1983. [cg-ipcis-83]

2868 J.-M. Chassery and A. Montanvert. Segmentation methods in a Voronoi diagram environment. In *Proc. Scand. Conf. Image Anal.*, volume 1, pages 408–415, 1989. [cm-smvde-89] *Keywords:* Voronoi diagram.

2869 S. Chatterjee and S. Chatterjee. A note on finding extreme points in multivariare space. *Comput. Statist. Data Anal.*, 10(1):87–92, 1990. [cc-nfepm-90] *Keywords:* convex hull, d-dimensional, peeling, extremal points.

S. Chatterjee. See also [2077, 2869].

B. N. Chatterji. See also [3773–3775].

2870 S. Chattopadhyay and P. Das. The k-dense corridor problems. *Pattern Recogn. Lett.*, 11:463–469, 1990. [cd-kdcp-90]

2871 S. Chattopadhyay and P. P. Das. Counting thin and bushy triangulations of convex polygons. *Pattern Recogn. Lett.*, 12:139–144, 1991. [cd-ctbtc-91] *Annote:* Computes formulae for number of thin triangulations (2 ears) and bushy triangulations (max ears) of a convex polygon.

2872 Vasiliki Chatzi. Finding basis functions for pyramidal finite elements. In *CGC Workshop on Geometric Computing*, 1998. [c-fbfpf-98] *URL:* http://www.cs.brown.edu/cgc/cgc98/.

2873 B. B. Chaudhuri. Fuzzy convex hull determination in two-dimensional space. *Pattern Recogn. Lett.*, 12(10):591–594, 1991. [c-fchdt-91] *Keywords:* convex hull.

2874 B. B. Chaudhuri. Optimal circular fit to objects in two and hree dimensions. *Pattern Recogn. Lett.*, 11:571–574, 1990. [c-ocfod-90]

2875 B. B. Chaudhuri and P. Kundu. Optimum circular fit to weighted data in multi-dimensional space. *Pattern Recogn. Lett.*, 14:1–6, 1993. [ck-ocfwd-93]

2876 J. Chaudhuri and S. C. Nandy. Largest empty rectangle among a point set. In *Proc. 19th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1738 of *Lecture Notes Comput. Sci.*, pages 34–46. Springer-Verlag, 1999. [cn-lerps-99]

P. K. Chaudhuri. See also [4512].

2877 Bernard Chazelle. A decision procedure for optimal polyhedron partitioning. *Inform. Process. Lett.*, 16:75–78, 1983. [c-dpopp-83]

2878 Bernard Chazelle. A faster deterministic algorithm for minimum spanning trees. In *Proc. 38th Annu. IEEE Sympos. Found. Comput. Sci.*, page To appear, 1997. [c-fdams-97]

2879 Bernard Chazelle. A functional approach to data structures and its use in multidimensional searching. Report CS-85-16, Comput. Sci. Dept., Brown Univ., Providence, RI, 1985. [c-fadsi-85] *Precedes:* c-fadsi-88.

2880 Bernard Chazelle. A functional approach to data structures and its use in multidimensional searching. *SIAM J. Comput.*, 17(3):427–462, June 1988. [c-fadsi-88] *Succeeds:* c-fadsi-85.

2881 Bernard Chazelle. A simple proof technique for geometric discrepancy. Technical report, Princeton University, February 1993. [c-sptgd-93] *Comments:* DIMACS Workshop on Randomized Algorithms for Combinatorial Optimization.

2882 Bernard Chazelle. A spectral approach to lower bounds. In *Proc. 35th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 674–682, 1994. [c-salb-94]

2883 Bernard Chazelle. A spectral approach to lower bounds with applications to geometric searching. *SIAM J. Comput.*, 27(2):545–556, 1998. [c-salb-98]

2884 Bernard Chazelle. A theorem on polygon cutting with applications. In *Proc. 23rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 339–349, 1982. [c-tpca-82] *Keywords:* decomposition, polygons, divide-and-conquer, triangulation, visibility.

2885 Bernard Chazelle. Algorithms for computing depths and layers. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 427–436, 1983. [c-acdl-83] *Keywords:* points, convex.

2886 Bernard Chazelle. An algorithm for segment-dragging and its implementation. *Algorithmica*, 3:205–221, 1988. [c-asdii-88]

2887 Bernard Chazelle. An improved algorithm for the fixed-radius neighbor problem. *Inform. Process. Lett.*, 16:193–198, 1983. [c-iafrn-83]

2888 Bernard Chazelle. An optimal algorithm for intersecting three-dimensional convex polyhedra. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 586–591, 1989. [c-oaitd-89] *Keywords:* intersection, polyhedra, polytopes, duality, convex hulls, Voronoi diagrams. *Precedes:* c-oaitd-92.

2889 Bernard Chazelle. An optimal algorithm for intersecting three-dimensional convex polyhedra. *SIAM J. Comput.*, 21(4):671–696, 1992. [c-oaitd-92] *Succeeds:* c-oaitd-89.

2890 B. Chazelle. An optimal algorithms for intersecting three-dimensional convex polyhedra. Technical Report, Princeton Univ., Princeton, NJ, 1989. [c-oaitd-89t]

2891 Bernard Chazelle. An optimal convex hull algorithm and new results on cuttings. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 29–38, 1991. [c-ochan-91]

2892 Bernard Chazelle. An optimal convex hull algorithm for point sets in any fixed dimension. Technical Report CS-TR-336-91, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, 1991. [c-ochap-91]

2893 Bernard Chazelle. An optimal convex hull algorithm in any fixed dimension. *Discrete Comput. Geom.*, 10:377–409, 1993. [c-ochaa-93] *Succeeds:* c-ochan-91.

2894 Bernard Chazelle. Approximation and decomposition of shapes. In J. T. Schwartz and C.-K. Yap, editors, *Advances in Robotics 1: Algorithmic and Geometric Aspects of Robotics*, pages 145–185. Lawrence Erlbaum Associates, Hillsdale, NJ, 1987. [c-ads-87] *Keywords:* survey paper, polygons, two-dimensional, three-dimensional, approximation, decomposition, covering, partition, triangulation.

2895 Bernard Chazelle. Computational geometry: A retrospective. In *Proc. 26th Annu. ACM Sympos. Theory Comput.*, pages 75–94, 1994. [c-cgr-94]

2896 Bernard Chazelle. Computational geometry: a retrospective. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 22–46. World Scientific, 2nd edition, 1995. [c-cgr-95] *Keywords:* survey paper.

2897 Bernard Chazelle. *Computational geometry and convexity*. Ph.D. thesis, Dept. Comput. Sci., Yale Univ., New Haven, CT, 1979. Carnegie-Mellon Univ. Report CS-80-150. [c-cgc-79] *Keywords:* doctoral thesis. *Comments:* UMI KRA81-10021, 313 pp.

2898 Bernard Chazelle. Computational geometry for the gourmet: old fare and new dishes. In *Automata, Languages and Programming (Proc. 18th ICALP)*, volume 510 of *Lecture Notes Comput. Sci.*, pages 686–696. 1991. [c-cggof-91]

2899 Bernard Chazelle. Computational geometry on a systolic chip. *IEEE Trans. Comput.*, C-33(9):774–785, September 1984. [c-cgsc-84] *Keywords:* parallel computation, VLSI design.

2900 Bernard Chazelle. Computing on a free tree via complexity preserving mappings. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 358–368, 1984. [c-cftvc-84]

2901 Bernard Chazelle. Computing on a free tree via complexity-preserving mappings. *Algorithmica*, 2:337–361, 1987. [c-cftcp-87]

2902 Bernard Chazelle. Convex decompositions of polyhedra. In *Proc. 13th Annu. ACM Sympos. Theory Comput.*, pages 70–79, 1981. [c-cdp-81] *Precedes:* c-cpplb-84.

2903 Bernard Chazelle. Convex partitions of polyhedra: a lower bound and worst-case optimal algorithm. *SIAM J. Comput.*, 13:488–507, 1984. [c-cpplb-84] *Succeeds:* c-cdp-81.

2904 Bernard Chazelle. Criticality considerations in the design of geometric algorithms. In *Proc. 22nd Allerton Conf. Commun. Control Comput.*, pages 71–80, 1984. [c-ccdga-84]

2905 Bernard Chazelle. Cutting hyperplanes for divide-and-conquer. Manuscript, Princeton Univ., Princeton, NJ, 1991. [c-chdc-91] *Keywords:* partition, divide-and-conquer, hyperplanes.

2906 Bernard Chazelle. Cutting hyperplanes for divide-and-conquer. *Discrete Comput. Geom.*, 9(2):145–158, 1993. [c-chdc-93] *Keywords:* partition, divide-and-conquer, hyperplanes. *Succeeds:* c-chdc-91.

2907 Bernard Chazelle. Efficient polygon trinangulation. Technical Report CS-TR-249-90, Princeton Univ., 1990. [c-ept-90]

2908 B. Chazelle. Fast searching in a real algebraic manifold with applications to geometric complexity. Technical Report 84-13, Dept. Comput. Sci., Brown Univ., Providence, RI, 1984. [c-fsram-84]

2909 Bernard Chazelle. Fast searching in a real algebraic manifold with applications to geometric complexity. In *Proc. Internat. Colloq. on Trees in Algebra and Program.*, volume 185 of *Lecture Notes Comput. Sci.*, pages 145–156. Springer-Verlag, 1985. [c-fsram-85]

2910 Bernard Chazelle. Filtering search: A new approach to query-answering. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 122–132, 1983. [c-fsnaq-83] *Precedes:* c-fsnaq-86.

2911 Bernard Chazelle. Filtering search: a new approach to query-answering. *SIAM J. Comput.*, 15:703–724, 1986. [c-fsnaq-86] *Succeeds:* c-fsnaq-83.

2912 Bernard Chazelle. Geometric complexity and the discrepancy method. In *Abstracts 15th European Workshop Comput. Geom.*, pages 21–23. INRIA Sophia-Antipolis, 1999. [c-gcdm-99]

2913 Bernard Chazelle. Geometric discrepancy revisited. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 392–399, 1993. [c-gdr-93]

2914 Bernard Chazelle. How to search in history. In *??*, volume 158 of *Lecture Notes Comput. Sci.*, pages 52–63. 1983. [c-hsh-83] *Precedes:* c-hsh-85.

2915 Bernard Chazelle. How to search in history. *Inform. Control*, 64:77–99, 1985. [c-hsh-85] *Keywords:* data structuring, search, dynamizing. *Succeeds:* c-hsh-83.

2916 Bernard Chazelle. Intersecting is easier than sorting. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 125–134, 1984. [c-iies-84] *Precedes:* c-rcsi-86.

2917 Bernard Chazelle. Lower bounds for off-line range searching. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 733–740, 1995. [c-lbolr-95]

2918 B. Chazelle. Lower bounds for off-line range searching. *Discrete Comput. Geom.*, 17(1):53–66, 1997. [c-lbolr-97]

2919 Bernard Chazelle. Lower bounds for orthogonal range searching, I: The reporting case. *J. ACM*, 37:200–212, 1990. [c-lbors1-90] *Succeeds:* c-lbcms-86. *Precedes:* c-lbors2-90.

2920 Bernard Chazelle. Lower bounds for orthogonal range searching, II: The arithmetic model. *J. ACM*, 37:439–463, 1990. [c-lbors2-90] *Succeeds:* c-lbors1-90.

2921 Bernard Chazelle. Lower bounds on the complexity of multidimensional searching. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 87–96, 1986. [c-lbcms-86] *Precedes:* c-lbors1-90.

2922 Bernard Chazelle. Lower bounds on the complexity of polytope range searching. *J. Amer. Math. Soc.*, 2:637–666, 1989. [c-lbcpr-89] *Keywords:* simplex range searching, integral geometry, lower bounds. *Succeeds:* c-prsig-87.

2923 Bernard Chazelle. New techniques for computing order statistics in Euclidean space. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 125–134, 1985. [c-ntcos-85] *Precedes:* c-stgsi-87. *Cites:* bs-dcms-76, bfprt-tbs-73, bddg-fep-82, cgl-pgd-83, cw-mvdbs-84, c-sssl-83, dl-msp-76, eos-calha-83, fj-csrxm-82, fj-fkppc-83, fj-gsrsm-84, gm-fsapo-79, h-acca-77, jm-sktex-78, mt-fmvdb-83, mtzc-oaktn-81, oamb-oafme-84, ph-chfsp-77, s-gspi-76, t-oacmv-83, y-cmstk-82, ZZZ.

2924 Bernard Chazelle. On the convex layers of a planar set. *IEEE Trans. Inform. Theory*, IT-31(4):509–517, July 1985. [c-clps-85]

2925 B. Chazelle. Polygon triangulation. In *Proceedings of FOCCS*, 1990. [c-pt-90i] *Precedes:* c-ept-90, c-tsplt-90t.

2926 Bernard Chazelle. Polytope range searching and integral geometry. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 1–10, 1987. [c-prsig-87] *Precedes:* c-lbcpr-89.

2927 Bernard Chazelle. Reporting and counting segment intersections. *J. Comput. Syst. Sci.*, 32:156–182, 1986. [c-rcsi-86] *Succeeds:* c-iies-84.

2928 Bernard Chazelle. Slimming down search structures: A functional approach to algorithm design. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 165–174, 1985. [c-sdssf-85] *Keywords:* searching, data structuring.

2929 Bernard Chazelle. Some techniques for geometric searching with implicit set representations. *Acta Inform.*, 24:565–582, 1987. [c-stgsi-87] *Succeeds:* c-ntcos-85.

2930 Bernard Chazelle. The bottom-left bin-packing heuristic: an efficient implementation. *IEEE Trans. Comput.*, C-32:697–707, 1983. [c-blbph-83]

2931 Bernard Chazelle. The polygon containment problem. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 1–33. JAI Press, Greenwich, Conn., 1983. [c-pcp-83]

2932 Bernard Chazelle. The power of triangulation: applications to problems of visibility and internal distance. Report CMU-CS-82-121, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1982. [c-ptapv-82]

2933 Bernard Chazelle. Tight bounds on the stabbing number of spanning trees in Euclidean space. Report CS-TR-155-88, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, 1988. [c-tbsns-88]

2934 Bernard Chazelle. Triangulating a simple polygon in linear time. Technical Report CS-TR-264-90, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, 1990. [c-tsplt-90t] *Succeeds:* c-pt-90i. *Precedes:* c-tsplt-90i.

2935 Bernard Chazelle. Triangulating a simple polygon in linear time. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 220–230, 1990. [c-tsplt-90i] *Succeeds:* c-tsplt-90t. *Precedes:* c-tsplt-91a.

2936 Bernard Chazelle. Triangulating a simple polygon in linear time. *Discrete Comput. Geom.*, 6(5):485–524, 1991. [c-tsplt-91a] *Succeeds:* c-tsplt-90i.

2937 Bernard Chazelle. VLSI implementations of geometric tasks. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 615–624, 1982. [c-vigt-82] *Keywords:* parallel computation.

2938 Bernard Chazelle and R. Bar-Yehuda. Triangulating a set of non-intersecting and simple polygonal chains. Technical Report, 1992. [cb-tsnis-92] *Keywords:* simple polygons, visibility, triangulation. *Precedes:* bc-tdjc-94.

2939 Bernard Chazelle, R. Cole, F. P. Preparata, and C. K. Yap. New upper bounds for neighbor searching. Technical Report CS-84-11, Brown Univ., Providence, RI, 1984. [ccpy-nubns-84]

2940 Bernard Chazelle, R. Cole, F. P. Preparata, and C. K. Yap. New upper bounds for neighbor searching. *Inform. Control*, 68:105–124, 1986. [ccpy-nubns-86] *Keywords:* locus approach, reporting, subdivisions, points, circles. *Succeeds:* cp-hrsaa-85.

2941 Bernard Chazelle, Olivier Devillers, Ferran Hurtado, Mercè Mora, Vera Sacristán, and Monique Teillaud. Splitting a Delaunay triangulation in linear time. In *Proc. 9th. European Symposiun on Algorithms*, volume 2161 of *Lecture Notes Comput. Sci.*, pages 312–320. Springer-Verlag, 2001. [cdhmst-sdtlt-01]

2942 Bernard Chazelle, D. Dobkin, N. Shouraboura, and A. Tal. Strategies for polyhedral surface decomposition: An experimental study. *Comput. Geom. Theory Appl.*, 7:327–342, 1997. [cdst-spsde-97] *Succeeds:* cdst-spsde-95.

2943 Bernard Chazelle and D. P. Dobkin. Decomposing a polygon into its convex parts. In *Proc. 11th Annu. ACM Sympos. Theory Comput.*, pages 38–48, 1979. [cd-dpicp-79] *Precedes:* cd-ocd-85.

2944 Bernard Chazelle and D. P. Dobkin. Detection is easier than computation. In *Proc. 12th Annu. ACM Sympos. Theory Comput.*, pages 146–153, 1980. [cd-diec-80] *Precedes:* cd-icott-87.

2945 Bernard Chazelle and D. P. Dobkin. Intersection of convex objects in two and three dimensions. *J. ACM*, 34(1):1–27, January 1987. [cd-icott-87] *Keywords:* polygons, polyhedra, intersection, detection. *Succeeds:* cd-diec-80.

2946 Bernard Chazelle and D. P. Dobkin. Optimal convex decompositions. In G. T. Toussaint, editor, *Computational Geometry*, pages 63–133. North-Holland, Amsterdam, Netherlands, 1985. [cd-ocd-85] *Succeeds:* cd-dpicp-79.

2947 Bernard Chazelle, David P. Dobkin, Nadia Shouraboura, and Ayellet Tal. Convex surface decomposition. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages V9–V10, 1995. [cdst-csd-95] *Keywords:* video review. *Cites:* cdst-spsde-95, dt-gascg-94, td-gsvga-94, ZZZ.

2948 Bernard Chazelle, David P. Dobkin, Nadia Shouraboura, and Ayellet Tal. Strategies for polyhedral surface decomposition: An experimental study. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 297–305, 1995. [cdst-spsde-95] *Keywords:* convex surfaces. *Precedes:* cdst-spsde-97. *Cites:* as-tsbac-90, as-car-92, -arm-92, bd-cdpr-92, b-ct-93, be-mgot-92i, beg-pgmg-90, c-cpplb-84, cp-tncp-90, cp-dag-94, cp-dbnp-92, cs-bst-94, dk-fdpi-83, fkn-vsgpt-80, o-agta-87, mv-qmgtd-92i, rs-dttdn-92, sh-ffbtp-93, swfcb-immcb-93, ZZZ.

2949 Bernard Chazelle, R. L. Drysdale, III, and D. T. Lee. Computing the largest empty rectangle. In *Proc. 1st Sympos. Theoret. Aspects Comput. Sci.*, volume 166 of *Lecture Notes Comput. Sci.*, pages 43–54. Springer-Verlag, 1984. [cdl-cler-84] *Keywords:* rectangles, Voronoi diagrams. *Precedes:* cdl-cler-86.

2950 Bernard Chazelle, R. L. Drysdale, III, and D. T. Lee. Computing the largest empty rectangle. *SIAM J. Comput.*, 15:300–315, 1986. [cdl-cler-86] *Keywords:* rectangles, Voronoi diagrams. *Succeeds:* cdl-cler-84.

2951 B. Chazelle and H. Edelsbrunner. A fast algorithm for line segment intersection and its extensions. Manuscript, ??, 1987. [ce-falsi-87]

2952 Bernard Chazelle and H. Edelsbrunner. An improved algorithm for constructing kth-order Voronoi diagrams. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 228–234, 1985. [ce-iacko-85] *Precedes:* ce-iacko-87. *Cites:* b-vdch-79, cgl-pgd-83, csy-khrp-84, e-cestd-84, eos-calha-83, ew-cbtda-86, l-knnvd-82, ol-mcp-81, s-cg-78, sh-cpp-75, v-nadpc-08, ZZZ.

2953 Bernard Chazelle and H. Edelsbrunner. An improved algorithm for constructing kth-order Voronoi diagrams. *IEEE Trans. Comput.*, C-36:1349–1354, 1987. [ce-iacko-87] *Keywords:* discrete geometry, design of algorithms, construction, geometric transformations, repeated search, Voronoi diagrams, two-dimensional, three-dimensional. *Succeeds:* ce-iacko-85.

2954 Bernard Chazelle and H. Edelsbrunner. An optimal algorithm for intersecting line segments in the plane. Technical Report UIUCDCS-R-1419, Dept. Comput. Sci., Univ. of Illinois, Urbana, IL, March 1988. [ce-oails-88t]

2955 Bernard Chazelle and H. Edelsbrunner. An optimal algorithm for intersecting line segments in the plane. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 590–600, 1988. [ce-oails-88] *Keywords:* intersection, topological sweep, segments. *Precedes:* ce-oails-92.

2956 Bernard Chazelle and H. Edelsbrunner. An optimal algorithm for intersecting line segments in the plane. *J. ACM*, 39(1):1–54, 1992. [ce-oails-92] *Keywords:* intersection, topological sweep, segments. *Succeeds:* ce-oails-88.

2957 Bernard Chazelle and H. Edelsbrunner. Linear space data structures for two types of range search. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 293–302, 1986. [ce-lsdst-86] *Precedes:* ce-lsdst-87. *Cites:* b-mdc-80, c-fsnaq-83, c-fadsi-85, ce-oscpr-85a, cg-fcdst-84, cgl-pgd-83, de-ssio-84, egs-oplms-86, ew-hrsls-83, gbt-srtgp-84, gs-pmgsc-83, k-osps-83, klp-fmsv-75, lt-apst-80, m-pst-81, mp-fitcp-78, ns-picg-79, w-pr-82, y-3spia-83, ZZZ.

2958 Bernard Chazelle and H. Edelsbrunner. Linear space data structures for two types of range search. *Discrete Comput. Geom.*, 2:113–126, 1987. [ce-lsdst-87] *Keywords:* data structuring, reporting, domination, range search, point location, directed acyclic graphs, two-dimensional, three-dimensional. *Succeeds:* ce-lsdst-86.

2959 Bernard Chazelle and H. Edelsbrunner. Optimal solutions for a class of point retrieval problems. In *??*, volume 194 of *Lecture Notes Comput. Sci.*, pages 80–89. 1985. [ce-oscpr-85a]

2960 Bernard Chazelle and H. Edelsbrunner. Optimal solutions for a class of point retrieval problems. *J. Symbolic Comput.*, 1:47–56, 1985. [ce-oscpr-85] *Keywords:* data structuring, reporting, range search, directed acyclic graphs, translates.

2961 Bernard Chazelle, H. Edelsbrunner, M. Grigni, Leonidas J. Guibas, J. Hershberger, Micha Sharir, and J. Snoeyink. Ray shooting in polygons using geodesic triangulations. In *Proc. 18th Internat. Colloq. Automata Lang. Program.*, volume 510 of *Lecture Notes Comput. Sci.*, pages 661–673. Springer-Verlag, 1991. [cegghss-rspug-91] *Keywords:* ray shooting, simple polygon, geodesics.

2962 Bernard Chazelle, H. Edelsbrunner, M. Grigni, Leonidas J. Guibas, J. Hershberger, Micha Sharir, and J. Snoeyink. Ray shooting in polygons using geodesic triangulations. *Algorithmica*, 12:54–68, 1994. [cegghss-rspug-94] *Keywords:* ray shooting, simple polygon, geodesics. *Succeeds:* cegghss-rspug-91.

2963 Bernard Chazelle, H. Edelsbrunner, M. Grigni, Leonidas J. Guibas, and Micha Sharir. Improved bounds on weak ϵ-nets for convex sets. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 495–504, 1993. [ceggs-ibwen-93]

2964 Bernard Chazelle, H. Edelsbrunner, M. Grigni, Leonidas J. Guibas, Micha Sharir, and J. Snoeyink. Ray shooting in polygons using geodesic triangulations. Manuscript, 1990. [ceggss-rspug-90]

2965 Bernard Chazelle, H. Edelsbrunner, M. Grigni, Leonidas J. Guibas, Micha Sharir, and Emo Welzl. Improved bounds on weak ϵ-nets for convex sets. *Discrete Comput. Geom.*, 13:1–15, 1995. [ceggsw-ibwen-95]

2966 B. Chazelle, H. Edelsbrunner, L. Guibas, J. Hershberger, R. Seidel, and M. Sharir. Selecting heavily covered points. *SIAM J. Comput.*, 23:1138–1151, 1994. [ceghss-shcp-94]

2967 B. Chazelle, H. Edelsbrunner, L. Guibas, and M. Sharir. Point location in real-algebraic varieties and its applications. *ICALP*, ??, 1989. [cegs-plrav-89]

2968 Bernard Chazelle, H. Edelsbrunner, and Leonidas J. Guibas. The complexity of cutting complexes. *Discrete Comput. Geom.*, 4:139–181, 1989. [ceg-ccc-89] *Keywords:* discrete geometry, optimization, visibility, cell complexes, arrangements, polytopes, convex, three-dimensional, directed acyclic graphs. *Succeeds:* ceg-cccp-87.

2969 Bernard Chazelle, H. Edelsbrunner, and Leonidas J. Guibas. The complexity of cutting convex polytopes. In *Proc. 19th Annu. ACM Sympos. Theory Comput.*, pages 66–76, 1987. [ceg-cccp-87] *Keywords:* discrete geometry, optimization, visibility, cell complexes, arrangements, polytopes, convex, three-dimensional, directed acyclic graphs. *Precedes:* ceg-ccc-89.

2970 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, J. E. Hershberger, R. Seidel, and Micha Sharir. Slimming down by adding; selecting heavily covered points. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 116–127, 1990. [ceghss-sdash-90] *Cites:* cff-aatdf-85, acegsw-ptphp-90, d-slsv-34, dv-cprac-77, e-narip1-83, e-acg-87, em-sstcd-90, f-ldead-72, gs-nsagv-69, ht-fafnc-84, h-uzztu-53, ms-pggrg-80, ps-cgi-85, sf-afem-73, ZZZ.

2971 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, R. Pollack, R. Seidel, Micha Sharir, and J. Snoeyink. Counting and cutting cycles of lines and line segments in space. Technical Report, ?? [cegpsss-cccll-??] *Keywords:* discrete and computational geometry, three dimensions, hidden surface removal, depth sort, line segments, lines, cycles, incidences.

2972 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, R. Pollack, R. Seidel, Micha Sharir, and J. Snoeyink. Counting and cutting cycles of lines and rods in space. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 242–251, 1990. [cegpsss-ccclr-90] *Keywords:* arrangements of lines in 3D, Plucker coordinates, convex hulls.

2973 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, R. Pollack, R. Seidel, Micha Sharir, and J. Snoeyink. Counting and cutting cycles of lines and rods in space. *Comput. Geom. Theory Appl.*, 1:305–323, 1992. [cegpsss-ccclr-92]

2974 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. A singly-exponential stratification scheme for real semi-algebraic varieties and its applications. In *Proc. 16th Internat. Colloq. Automata Lang. Program.*, volume 372 of *Lecture Notes Comput. Sci.*, pages 179–193. Springer-Verlag, 1989. [cegs-sessr-89] *Keywords:* cell decomposition, random sampling, triangulation. *Precedes:* cegs-sessr-91.

2975 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. A singly-exponential stratification scheme for real semi-algebraic varieties and its applications. *Theoret. Comput. Sci.*, 84:77–105, 1991. [cegs-sessr-91] *Keywords:* cell decomposition, random sampling, triangulation. *Succeeds:* cegs-sessr-89.

2976 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. Algorithms for bichromatic line segment problems and polyhedral terrains. Report UIUCDCS-R-90-1578, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1989. [cegs-ablsp-89] *Keywords:* arrangements, terrains, intersection problems.

2977 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. Algorithms for bichromatic line segment problems and polyhedral terrains. *Algorithmica*, 11:116–132, 1994. [cegs-ablsp-94] *Succeeds:* cegs-ablsp-89.

2978 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. Diameter, width, closest line pair, and parametric searching. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 120–129, 1992. [cegs-dwclp-92] *Cites:* aass-sdp-90, aesw-emstb-91, aest-cscpp-91, am-rsps-92, as-pglp-90, ast-apsgo-92, aps-zsha-93, c-ochan-91, cegs-lscaa-89, cegs-sessr-89, cegs-ablsp-94, cs-arscg-89, c-sdsno-87, csss-otass-89, csy-khrp-87, dmn-rass-92, egs-oplms-86, hw-ensrq-87, ht-cws-85, k-osps-83, m-ept-91, m-roass-91, m-aogdc-91, m-ccpps-91, m-loq-93, m-apcad-83, ns-cpcps-90, sw-frmrl-92, t-epcp-91, v-pcp-75, ZZZ.

2979 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. Diameter, width, closest line pair and parametric searching. *Discrete Comput. Geom.*, 10:183–196, 1993. [cegs-dwclp-93] *Succeeds:* cegs-dwclp-92.

2980 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. Lines in space: combinatorics, algorithms, and applications. In *Proc. 21st Annu. ACM Sympos. Theory Comput.*, pages 382–393, 1989. [cegs-lscaa-89] *Keywords:* arrangements of lines in 3D, Plucker coordinates, random sampling, convex hulls.

2981 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, Micha Sharir, and J. Snoeyink. Computing a face in an arrangement of line segments. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 441–448, 1991. [cegss-cfals-91] *Keywords:* arrangements, randomized incremental algorithm. *Precedes:* cegss-cfals-93.

2982 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, Micha Sharir, and J. Snoeyink. Computing a face in an arrangement of line segments and related problems. *SIAM J. Comput.*, 22:1286–1302, 1993. [cegss-cfals-93] *Succeeds:* cegss-cfals-91.

2983 Bernard Chazelle, H. Edelsbrunner, Leonidas J. Guibas, Micha Sharir, and J. Stolfi. Lines in space: Combinatorics and algorithms. *Algorithmica*, 15:428–447, 1996. [cegss-lsca-96]

2984 Bernard Chazelle and J. Friedman. A deterministic view of random sampling and its use in geometry. Report CS-TR-181-88, ??, 1988. [cf-dvrsi-88t]

2985 Bernard Chazelle and J. Friedman. A deterministic view of random sampling and its use in geometry. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 539–549, 1988. [cf-dvrsi-88] *Keywords:* point location, range search, d-dimensional. *Precedes:* cf-dvrsi-90. *Annote:* derandomizes with polynomial overhead.

2986 Bernard Chazelle and J. Friedman. A deterministic view of random sampling and its use in geometry. *Combinatorica*, 10(3):229–249, 1990. [cf-dvrsi-90] *Keywords:* point location, range search, d-dimensional. *Succeeds:* cf-dvrsi-88. *Annote:* derandomizes with polynomial overhead.

2987 Bernard Chazelle and J. Friedman. Point location among hyperplanes. Manuscript, 1991. [cf-plh-91]

2988 Bernard Chazelle and J. Friedman. Point location among hyperplanes and unidirectional ray-shooting. *Comput. Geom. Theory Appl.*, 4:53–62, 1994. [cf-plhur-94]

2989 Bernard Chazelle and Leonidas J. Guibas. Fractional cascading. In *Proc. Internat. Colloq. Automata Lang. Program.*, 1985. To appear. [cg-fc-85]

2990 Bernard Chazelle and Leonidas J. Guibas. Fractional cascading: A data structuring technique with geometric applications. In *Efficicent Algorithms Workshop*, 1984. [cg-fcdst-84]

2991 Bernard Chazelle and Leonidas J. Guibas. Fractional cascading: I. A data structuring technique. *Algorithmica*, 1(3):133–162, 1986. [cg-fc1ds-86]

2992 Bernard Chazelle and Leonidas J. Guibas. Fractional cascading: II. Applications. *Algorithmica*, 1:163–191, 1986. [cg-fc2a-86]

2993 Bernard Chazelle and Leonidas J. Guibas. Visibility and intersection problems in plane geometry. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 135–146, 1985. [cg-vippg-85] *Precedes:* cg-vippg-89. *Cites:* c-tpca-82, c-cftvc-84, cg-fcdst-84, e-eacwv-84, grs-kfcg-83, ll-cvpe-84, egs-oplms-84, ZZZ.

2994 Bernard Chazelle and Leonidas J. Guibas. Visibility and intersection problems in plane geometry. Report CS-TR-167-88, Princeton Univ., 1988. [cg-vippg-88]

2995 Bernard Chazelle and Leonidas J. Guibas. Visibility and intersection problems in plane geometry. *Discrete Comput. Geom.*, 4:551–581, 1989. [cg-vippg-89] *Succeeds:* cg-vippg-85.

2996 Bernard Chazelle, Leonidas J. Guibas, and D. T. Lee. The power of geometric duality. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 217–225, 1983. [cgl-pgd-83] *Precedes:* cgl-pgd-85.

2997 Bernard Chazelle, Leonidas J. Guibas, and D. T. Lee. The power of geometric duality. *BIT*, 25:76–90, 1985. [cgl-pgd-85] *Succeeds:* cgl-pgd-83.

2998 Bernard Chazelle and J. Incerpi. Computing connected components of D-ranges. *Bull. EATCS*, 22:9–11, 1984. [ci-cccdr-84]

2999 Bernard Chazelle and J. Incerpi. Triangulating a polygon by divide and conquer. In *Proc. 21st Allerton Conf. Commun. Control Comput.*, pages 447–456, 1983. [ci-tpdc-83] *Annote:* $O(n \log s)$ divide and conquer algorithm for Vertical Decomposition of a polygon (obtained by drawing a vertical line through each vertex). s is sinuosity (number of times polygon alternates twists in different directions.).

3000 Bernard Chazelle and J. Incerpi. Triangulation and shape-complexity. *ACM Trans. Graph.*, 3(2):135–152, 1984. [ci-tsc-84] *Keywords:* triangulation, polygons, simple, decomposition, divide-and-conquer.

3001 Bernard Chazelle and D. T. Lee. On a circle placement problem. *Computing*, 36:1–16, 1986. [cl-cpp-86]

3002 Bernard Chazelle and Alexey Lvov. A trace bound for the hereditary discrepancy. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 64–69, 2000. [cl-tbhd-00]

3003 Bernard Chazelle and J. Matoušek. Derandomizing an output-sensitive convex hull algorithm in three dimensions. Technical report, Dept. Comput. Sci., Princeton Univ., 1992. [cm-dosch-92] *Precedes:* cm-dosch-95.

3004 Bernard Chazelle and J. Matoušek. Derandomizing an output-sensitive convex hull algorithm in three dimensions. *Comput. Geom. Theory Appl.*, 5:27–32, 1995. [cm-dosch-95] *Succeeds:* cm-dosch-92.

3005 Bernard Chazelle and J. Matoušek. On linear-time deterministic algorithms for optimization problems in fixed dimension. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 281–290, 1993. [cm-ltdao-93]

3006 Bernard Chazelle and J. Matoušek. On linear-time deterministic algorithms for optimization problems in fixed dimension. *J. Algorithms*, 21:579–597, 1996. [cm-ltdao-96]

3007 Bernard Chazelle and L. Monier. A model of computation for VLSI with related complexity results. In *Proc. 13th Annu. ACM Sympos. Theory Comput.*, pages 318–325, 1981. [cm-mcvrc-81] *Precedes:* cm-mcvrc-85.

3008 Bernard Chazelle and L. Monier. A model of computation for VLSI with related complexity results. *J. ACM*, 32:573–588, 1985. [cm-mcvrc-85] *Succeeds:* cm-mcvrc-81.

3009 Bernard Chazelle et al. Application challenges to computational geometry: CG impact task force report. Technical Report TR-521-96, Princeton Univ., April 1996. [c-accgc-96] *URL:* http://www.cs.princeton.edu/~chazelle/taskforce/CGreport.ps. *Comments:* Also at http://www.cs.duke.edu/~jeffe/compgeom/taskforce.html.

3010 Bernard Chazelle et al. Application challenges to computational geometry: CG impact task force report. In B. Chazelle, J. E. Goodman, and R. Pollack, editors, *Advances in Discrete and Computational Geometry*, volume 223 of *Contemporary Mathematics*, pages 407–463. American Mathematical Society, Providence, 1999. [c-accgc-99]

3011 Bernard Chazelle, T. Ottmann, E. Soisalon-Soininen, and D. Wood. The complexity and decidability of SEPARATION™. In *Proc. 11th Internat. Colloq. Automata Lang. Program.*, volume 172 of *Lecture Notes Comput. Sci.*, pages 119–127. Springer-Verlag, 1984. [cosw-cds-84]

3012 Bernard Chazelle and L. Palios. Decomposing the boundary of a nonconvex polyhedron. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 364–375. Springer-Verlag, 1992. [cp-dbnp-92]

3013 B. Chazelle and L. Palios. Decomposition algorithms in geometry. In C. Bajaj, editor, *Algebraic Geometry and its Applications*, chapter 27, pages 419–447. Springer-Verlag, 1994. [cp-dag-94]

3014 Bernard Chazelle and L. Palios. Triangulating a non-convex polytope. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 393–400, 1989. [cp-tncp-89] *Precedes:* cp-tncp-90. *Cites:* as-tsbac-88, b-tdmgt-87, bgr-ntp-88, b-prcv-75, c-namrm-87, c-cpplb-84, c-ads-87, cegs-plrav-89, c-qercf-75, dl-pmtds-87, eos-calha-86, fp-dpscf-75, gs-pmgsc-85, l-pnrh-82, m-dsa-84, mp-fitcp-78, o-agta-87, ps-cgi-85, p-aicad-86, s-dpcs-78, ss-pmp2g-83, s-scgmm-88, w-esrav-57, ZZZ.

3015 Bernard Chazelle and L. Palios. Triangulating a non-convex polytope. *Discrete Comput. Geom.*, 5:505–526, 1990. [cp-tncp-90] *Succeeds:* cp-tncp-89.

3016 Bernard Chazelle and F. P. Preparata. Halfspace range search: An algorithmic application of k-sets. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 107–115, 1985. [cp-hrsaa-85] *Precedes:* cp-hrsaa-86, ccpy-nubns-86. *Cites:* bm-nenns-79, c-fsnaq-83, c-ccdga-84, ccpy-nubns-84, cgl-pgd-83, cy-grp-83, e-agc-, eos-calha-83, elss-dgpps-73, l-knnvd-82, ps-cgi-85, ZZZ.

3017 Bernard Chazelle and F. P. Preparata. Halfspace range search: An algorithmic application of k-sets. *Discrete Comput. Geom.*, 1:83–93, 1986. [cp-hrsaa-86] *Succeeds:* cp-hrsaa-85.

3018 Bernard Chazelle and B. Rosenberg. Computing partial sums in multidimensional arrays. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 131–139, 1989. [cr-cpsma-89] *Precedes:* cr-ccpso-91. *Cites:* ass-sulbl-89, as-opaol-87, b-dsp-79, b-mdc-80, bm-ewcds-80, c-fsnaq-86, c-lbcms-86, cg-fc2a-86, c-fadsi-88, f-lbcor-81, hs-ndssg-86, l-dsorq-78, m-dsa-84, o-ddds-83, t-egbnl-75, t-cmncc-78, v-sttor-85, w-ndsor-85, wl-arrcd-85, w-lbdrq-86, y-sttoa-82, y-cmps-85, ZZZ.

3019 Bernard Chazelle and B. Rosenberg. Lower bounds on the complexity of simplex range reporting on a pointer machine. In *Proc. 19th Internat. Colloq. Automata Lang. Program.*, volume 623 of *Lecture Notes Comput. Sci.*, pages 439–449. Springer-Verlag, 1992. Also to appear in *Comput. Geom. Theory Appl.* [cr-lbcsr-92]

3020 Bernard Chazelle and B. Rosenberg. Simplex range reporting on a pointer machine. *Comput. Geom. Theory Appl.*, 5:237–247, 1996. [cr-srrpm-96]

3021 Bernard Chazelle and B. Rosenberg. The complexity of computing partial sums off-line. *Internat. J. Comput. Geom. Appl.*, 1(1):33–45, 1991. [cr-ccpso-91] *Keywords:* partial sums, lower bounds, orthogonal range searching. *Succeeds:* cr-cpsma-89.

3022 Bernard Chazelle and Micha Sharir. An algorithm for generalized point location and its application. *J. Symbolic Comput.*, 10:281–309, 1990. [cs-agpli-90] *Keywords:* algebraic varieties, point location, cylindrical algebraic decomposition.

3023 Bernard Chazelle and Micha Sharir. An algorithm for generalized point location and its applications. Technical Report 153, Robotics Lab., Courant Inst. Math. Sci., New York, NY, May 1988. [cs-agpli-88]

3024 Bernard Chazelle, Micha Sharir, and Emo Welzl. Quasi-optimal upper bounds for simplex range searching and new zone theorems. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 23–33, 1990. [csw-qoubs-90] *Cites:* a-idaac-89, as-tsbac-88, c-lbcpr-89, cegs-sessr-89, cf-dvrsi-90, cp-tncp-89, cw-qorss-89, c-narsc-87, c-racpq-88, cegsw-ccbac-88, cs-arscg-89, c-sssl-86, cy-grp-84, e-acg-87, e-ueplf-89, eghsssw-irals-88, egs-ueplf-89, eos-calha-86, ew-hrsls-86, hw-ensrq-87, m-mdscg-84, ps-ueplf-89, py-prp-86, pss-stsps-88, w-pr-82, y-3spia-83, yy-gaddg-85, ZZZ.

3025 Bernard Chazelle, Micha Sharir, and Emo Welzl. Quasi-optimal upper bounds for simplex range searching and new zone theorems. *Algorithmica*, 8:407–429, 1992. [csw-qoubs-92] *Succeeds:* csw-qoubs-90.

3026 Bernard Chazelle and N. Shouraboura. Bounds on the size of tetrahedralizations. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 231–239, 1994. [cs-bst-94] *Cites:* as-tsbac-90, as-ucptd-93, as-car-92, bd-cdpr-92, b-ct-93, c-cpplb-84, c-oaitd-92, cp-tncp-90, d-tcrpa-91, dk-fdpi-83, dl-pmtds-89, m-spai3-91, m-mdscg-84, m-cgitr-93, p-bcspi-93, rs-dttdn-92, s-udzvd-28, ZZZ.

3027 Bernard Chazelle and Emo Welzl. Quasi-optimal range searching in spaces of finite VC-dimension. *Discrete Comput. Geom.*, 4:467–489, 1989. [cw-qorss-89] *Succeeds:* cw-rsvdc-88.

3028 Bernard Chazelle and Emo Welzl. Range searching and VC-dimension: a characterization of efficiency. Report B-88-09, Fachber. Math., Free Univ. Berlin, Berlin, West Germany, November 1988. [cw-rsvdc-88] *Precedes:* cw-qorss-89.

B. Chazelle. See also [281–283,573,574, 833,834,1348,1404,2470–2475,12715].

R. L. Chazin. See also [12254].

3029 O. Chein and L. Steinberg. Routing past unions of disjoint rectilinear barriers. *Networks*, 13(3):389–398, 1983. [cs-rpudr-83] *Keywords:* isothetic, routing, VLSI design.

C. Chekuri. See also [2858, 2859].

3030 ?. Chen, T. Ling, and L. S. Davis. Parallel algorithms for testing if a point is inside a closed curve. *Pattern Recogn. Lett.*, 12(2):73–77, 1991. [cld-patip-91] *Keywords:* point location, parallel computation, digital geometry.

3031 Chiuyuan Chen and Ruei-Chuan Chang. On the minimality of polygon triangulation. *BIT*, 30:570–582, 1990. [cc-mpt-90] *Annote:* Triangulate polygon into minimum number of triangles. $O(n \log^2 n + DK^2)$. D is maximum number of vertices on same line. K is number of degenerate triangles.

C. Chen. See also [8827].

3032 C.-L. Chen. Computing the convex hull of a simple polygon. *Pattern Recogn. Lett.*, 22(5):561–566, 1989. erratic. [c-cchsp-89] *Keywords:* convex hull, simple, polygon.

3033 D. Chen. Efficient geometric algorithms on the EREW PRAM. *IEEE Trans. Parallel Distrib. Syst.*, 6(1):41–47, 1995. [c-egaep-95]

D. Chen. See also [366,1000,1001,3083, 12742].

3034 D. Z. Chen. An optimal parallel algorithm for detecting weak visibility of a simple polygon. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 63–72, 1992. [c-opadw-92] *Precedes:* c-opadw-95. *Cites:* ag-pasft-88, at-oadvp-81, bmt-ltacs-91, cg-vippg-89, c-egaep-90, ckt-cgp-89, cg-opapp-88, g-fchsp-87, g-tpp-89, g-psppt-92, gsg-pmvsp-90, ghlst-ltavs-87, gmpsv-cwvpr-90t, hm-svpap-90, k-dwvsp-88, krs-ppp-85a, lf-ppc-80, ll-cvpe-84, lp-oafkp-79, ol-mcp-81, ps-cgi-85, ss-oadwv-90, t-ltass-86a, y-ptptc-88, ZZZ.

3035 D. Z. Chen. An optimal parallel algorithm for detecting weak visibility of a simple polygon. *Internat. J. Comput. Geom. Appl.*, 5:93–124, 1995. [c-opadw-95] *Keywords:* computational geometry, CREW PRAM, parallel algorithms, simple polygons, weak visibility. *Succeeds:* c-opadw-92.

3036 D. Z. Chen. Determining weak external visibility of polygons in parallel. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 375–380, 1994. [c-dwevp-94] *Precedes:* c-dwvpe-98. *Cites:* bcetsu-csts-91, bkt-dsvp-89, bt-cst-90t, c-ptpvr-92, c-egaep-90, c-opadw-92, c-ocswv-93, g-fchsp-87, ta-chapi-82, acw-opavs-91, bmt-ltacs-91, ZZZ.

3037 D. Z. Chen. Determining weak visibility of a polygon from an edge in parallel. *Internat. J. Comput. Geom. Appl.*, 8:277–304, 1998. [c-dwvpe-98] *Succeeds:* c-dwevp-94.

3038 D. Z. Chen. Efficient geometric algorithms in the EREW-PRAM. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 818–827, 1990. [c-egaep-90] *Keywords:* parallel computation.

3039 Danny Z. Chen. On the all-pairs Euclidean short path problem. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 292–301, 1995. [c-apesp-95] *Keywords:* shortest paths among obstacles, two-point query, approximation algorithm. *Abstract:* Given a set of polygonal obstacles of n vertices in the plane, the problem of processing the all-pairs Euclidean *short* path queries is that of reporting an obstacle-avoiding path P (or its length) between two arbitrary query points p and q in the plane, such that the length of P is within a small factor of the length of a Euclidean *shortest* obstacle-avoiding path between p and q. The goal is to answer each short path query quickly by constructing data structures that capture path information in the obstacle-scattered plane. For the related all-pairs Euclidean *shortest* path problem, the best known algorithms for even very simple cases (e.g., *rectilinear* shortest paths among disjoint *rectangular* obstacles in the plane) require at least quadratic space and time to construct a data structure, so that a length query can be answered in polylogarithmic time. The previously best known solution to the all-pairs Euclidean *short* path problem also uses a data structure of quadratic space and superquadratic construction time, in order to answer a length query in polylogarithmic time. In this paper, we present a data structure that requires nearly linear space and takes subquadratic time to construct. Precisely, for any given ϵ satisfying $0 < \epsilon \leq 1$, our data structure can be built in $o(q^{3/2}) + O((n \log n)/\epsilon)$ time and $O(n \log n + n/\epsilon)$ space, where q, $1 \leq q \leq n$, is the minimum number of faces needed to cover all the vertices of a certain planar graph we use. This data structure enables us to report the length of a short path between two arbitrary query points in $O((\log n)/\epsilon + 1/\epsilon^2)$ time and the actual path in $O((\log n)/\epsilon + 1/\epsilon^2 + L)$ time, where L is the number of edges of the output path. The constant approximation factor, $6 + \epsilon$, for the short paths that we compute is quite small. Our techniques are parallelizable and can also be used to improve the previously best known results on several related graphic and geometric problems.

3040 D. Z. Chen. Optimally computing the shortest weakly visible subedge of a simple polygon. Technical Report 92-028, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, May 1992. [c-ocswv-92]

3041 Danny Z. Chen. Optimally computing the shortest weakly visible subedge of a simple polygon. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 323–332. Springer-Verlag, 1993. [c-ocswv-93]

3042 Danny Z. Chen. Optimally computing the shortest weakly visible subedge of a simple polygon. *J. Algorithms*, 20:459–478, 1996. [c-ocswv-96]

3043 D. Z. Chen. Parallel techniques for paths, visibility, and related problems. Technical Report 92-051, Dept. of Computer Sciences, Purdue University, July 1992. Ph.D. Thesis. [c-ptpvr-92]

3044 D. Z. Chen, W. Chen, K. Wada, and K. Kawaguchi. Parallel algorithms for partitioning sorted sets and related problems. In *Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 234–245. Springer-Verlag, 1996. [ccwk-papss-96]

3045 D. Z. Chen and O. Daescu. Maintaining visibility of a polygon with a moving point of view. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 240–245, 1996. [cd-mvpmp-96]

3046 Danny Z. Chen, Ovidiu Daescu, and Kevin S. Klenk. On geometric path query problems. In *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 248–257. Springer-Verlag, 1997. [cdk-gpqp-97]

3047 D. Z. Chen, G. Das, and M. Smid. Lower bounds for computing geometric spanners and approximate shortest paths. Report TR 96-09, Department of Computer Science, King's College, London, UK, 1996. [cds-lbcgs-96t]

3048 D. Z. Chen, G. Das, and M. Smid. Lower bounds for computing geometric spanners and approximate shortest paths. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 155–160, 1996. [cds-lbcgs-96i]

3049 D. Z. Chen, G. Das, and M. Smid. Lower bounds for computing geometric spanners and approximate shortest paths. *Discrete Appl. Math.*, 110:151–167, 2001. [cds-lbcgs-01]

3050 Danny Z. Chen, Vladimir Estivill-Castro, and Jorge Urrutia. Optimal guarding of polygons and monotone chains. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 133–138, 1995. [ceu-ogpmc-95]

3051 Danny Z. Chen and Sumanta Guha. Testing a simple polygon for monotonicity optimally in parallel. In *Proc. 7th IEEE Internat. Parallel Process. Sympos.*, pages 326–330. IEEE Computer Society, 1993. [cg-tspmo-93] *Precedes:* cg-tspmo-93a.

3052 Danny Z. Chen and Sumantha Guha. Testing a simple polygon for monotonicity optimally in parallel. *Inform. Process. Lett.*, 47(6):325–331, October 1993. [cg-tspmo-93a] *Succeeds:* cg-tspmo-93.

3053 Danny Z. Chen and Kevin S. Klenk. Rectilinear short path queries among rectangular obstacles. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 169–174, 1995. [ck-rspqr-95]

3054 D. Z. Chen and K. S. Klenk. Rectilinear short path queries among rectangular obstacles. *Inform. Process. Lett.*, 57:313–319, 1996. [ck-rspqr-96]

3055 Danny Z. Chen, Kevin S. Klenk, and Hung-Yi T. Tu. Shortest path queries among weighted obstacles in the rectilinear plane. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 370–379, 1995. [ckt-spqwo-95] *Keywords:* weighted regions, rectilinear paths, all-pairs paths. *Precedes:* ckt-spqwo-96. *Cites:* akmsw-gamsa-87, ac-prspr-91, ac-proap-93a, cg-fc1ds-86, c-apesp-95, cpt-uadpl-93, ckv-rsptp-, ckv-rsptp-87, bkn-spqrw-91, rlw-rsppr-89, em-osrqa-94, ft-fhtui-87, gmmn-pp0wr-88, gt-drssp-93, gh-ospqs-87, ghlst-ltavs-87, h-ndssp-91, hs-ecesp-93, isn-spapr-94, k-rspqw-94, ll-fmrdp-81, lp-esppr-84, lyc-srpwo-91, m-naspo-88, m-oasrp-89, m-lsppo-92, m-spop-93, mp-wrpfs-91, ps-cgi-85, sr-spppo-94, w-cvgnl-85, w-ndiv-89, lyc-srpwo-91, wwsw-rspms-87, ycl-srpwr-90, ZZZ.

3056 D. Z. Chen, K. S. Klenk, and H.-Y. T. Tu. Shortest path queries among weighted obstacles in the rectilinear plane. Manuscript, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1996. [ckt-spqwo-96] *Succeeds:* ckt-spqwo-95.

3057 D. Z. Chen, K. S. Klenk, and H.-Y. T. Tu. Shortest path queries among weighted obstacles in the rectilinear plane. *SIAM J. Comput.*, 29:1223–1246, 2000. [ckt-spqwo-00]

3058 D. Z. Chen and J. Xu. An efficient direct approach for computing shortest rectilinear paths among obstacles in a two-layer interconnection model. *Comput. Geom. Theory Appl.*, 18:155–166, 2001. [cx-edacs-01]

3059 Danny Z. Chen and Jinhui Xu. Two-variable linear programming in parallel. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 169–180. Springer-Verlag, 1998. [cx-tvlpp-98]

D. Z. Chen. See also [753, 926, 964, 1014–1022, 7171].

3060 G. H. Chen, M.-S. Chern, and R. C. T. Lee. A new systolic algorithm for convex hull and half-plane intersection problems. *BIT*, 27(2):141–147, 1987. [ccml-nsach-87] *Keywords:* parallel computation, convex hull, intersection, halfplanes.

G. H. Chen. See also [7209, 12149].

H. Chen. See also [13076].

3061 H. H. Chen and T. S. Huang. A survey of construction and manipulation of octrees. *Comput. Vision Graph. Image Process.*, 43:409–431, 1988. [ch-scmo-88] *Keywords:* survey, octree, data structuring.

3062 H. H. Chen and T. S. Huang. Maximum matching of three-dimensional points for multiobject motion estimation. *Pattern Recogn.*, 21(2):75–90, 1988. [ch-mmtdp-88] *Keywords:* pattern recognition, points, motion planning. *Succeeds:* ch-mmttd-86.

3063 H. H. Chen and T. S. Huang. Maximum matching of two three-dimensional point sets. In *Proc. IEEE Internat. Conf. Pattern Recogn.*, pages 1048–1050, 1986. [ch-mmttd-86] *Precedes:* ch-mmtdp-88.

I. M. Chen. See also [8608].

3064 J. Chen and Y. Han. Shortest paths on a polyhedron. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 360–369, 1990. [ch-spp-90] *Precedes:* ch-spp-96. *Cites:* aaos-supa-90, c-namrm-87, ch-sppp2-90, cr-nlbtr-87, d-ntpcg-59, gjpt-tsp-78, hct-faspe-89, k-osps-83, m-spppo-84, m-psp-86, mmp-dgp-87, m-fspcp-85, m-nspsp-86, osb-spps-84, p-nappl-81, rs-spesp-85, rs-dsppp-88, sh-cpp-75, so-nmesc-88, ss-spps-86, ZZZ.

3065 J. Chen and Y. Han. Shortest paths on a polyhedron. *Internat. J. Comput. Geom. Appl.*, 6:127–144, 1996. [ch-spp-96] *Succeeds:* ch-spp-90.

3066 J. Chen and Y. Han. Shortest paths on a polyhedron, Part ii: storing shortest paths. Technical Report 161-90, Comput. Sci. Dept., Univ. Kentucky, Lexington, KY, February 1990. [ch-sppp2-90]

3067 J. Chen and Y. Han. Storing shortest paths for a polyhedron. In F. Dehne, F. Fiala, and W. W. Koczkodaj, editors, *Advances in Computing and Information — ICCI '91 International Conference Proceedings*, pages 169–80. Springer-Verlag, 1991. [ch-sspp-91]

3068 Jianer Chen, Saroja P. Kanchi, and Arkady Kanevsky. On the complexity of graph embeddings. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 234–245. Springer-Verlag, 1993. [ckk-cge-93]

J. Chen. See also [1255, 1838, 1839, 1841, 2727, 7720].

J.-M. Chen. See also [13231, 13376].

3069 J. R. Chen. The lattice points in a circle. *Sci. Sinica*, 12:633–649, 1963. [c-lpc-63]

3070 L. Chen. Efficient deterministic parallel algorithms for integer sorting. In S. G. Akl, F. Fiala, and W. W. Koczkodaj, editors, *Advances in Computing and Information – Proc. International Conference on Computing and Information*, pages 367–371, 1990. [c-edpai-90]

3071 L. Chen. Efficient parallel algorithms for several intersection graphs. In *Proc. IEEE Internat. Symp. Circuits and Systems*, volume 2, pages 973–976, 1989. [c-epasi-89] *Keywords:* geometric graphs, parallel computation, intersection.

3072 L. Chen. Efficient parallel algorithms on circular arcs. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 66–69, 1990. [c-epaca-90] *Cites:* c-nacag-89, c-edpai-90, cy-ptcop-89, c-pms-88, cv-fopps-89, g-acag-74, k-pafmc-89, krs-ppp-85a, lf-ppc-80, ZZZ.

3073 L. Chen. Nc algorithms for circular-arc graphs. In F. Dehne, J.-R. Sack, and N. Santoro, editors, *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 291–302. Springer-Verlag, 1989. [c-nacag-89]

3074 L. Chen, S. Chou, and T. Woo. Parting directions for mould and die design. *Comput. Aided Design*, 25:762–768, 1993. [ccw-pdmdd-93]

3075 L. Chen and Y. Yesha. Parallel testing for the consecutive ones property and transformable convex bipartite graphs and finding a maximum matching. In *Proc. 27th Allerton Conf. Commun. Control Comput.*, pages 756–765, 1989. [cy-ptcop-89]

L. Chen. See also [13224].

3076 L.-L. Chen and T. C. Woo. Computational geometry on the sphere with application to automated machining. *Journal of Mechanical Design*, 114:288–295, 1992. [cw-cgsaa-92]

L.-L. Chen. See also [3259, 8465, 12800, 12801, 13372].

3077 M. Chen and P. Townsend. Efficient and consistent algorithms for determining the containment of points in polygons and polyhedra. In G. Marechal, editor, *EUROGRAPHICS '87*, pages 423–437. North-Holland, August 1987. [ct-ecadc-87] *Keywords:* point location.

M. Chen. See also [7602].

3078 N.-P. Chen. New algorithms for Steiner tree on graphs. In *IEEE Sympos. Circuits Systems*, pages 1217–1219, 1983. [c-nastg-83]

3079 P.-C. Chen, P. Hansen, and B. Jaumard. On-line and off-line vertex enumeration by adjacency lists. *Oper. Res. Lett.*, 10:403–409, 1991. [chj-ololv-91]

3080 S. E. Chen. Incremental radiosity: An extension of progressive radiosity to an interactive image synthesis system. *Comput. Graph.*, 24(4):135–144, August 1990. Proc. SIGGRAPH '90. [c-irepr-90]

T. H. Chen. See also [8609, 8637, 13753, 13754].

3081 Wei Chen, Xiao Wen Deng, Koichi Wada, and Kimio Kawaguchi. Constructing a strongly convex superhull of points. In *Proc. 3rd Ann. Internat. Conf. Computing and Combinatorics*, volume 1276 of *Lecture Notes Comput. Sci.*, pages 42–51. Springer-Verlag, 1997. [cdwk-cscsp-97]

3082 Wei Chen, Koichi Wada, and Kimio Kawaguchi. Parallel robust algorithms for constructing strongly convex hulls. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 133–140, 1996. [cwk-pracs-96] *Cites:* acgoy-pcg-88, ds-rgnap-88, f-smpst-89, gr-epa-88, gy-frcg-86, gss-egbra-89, gss-cscah-93, h-pargc-89, lm-cschu-92, m-vigau-88a, m-cacau-89, m-dpggt-89, otu-nsga-87, ZZZ.

3083 Wei Chen, Koichi Wada, Kimio Kawaguchi, and Danny Chen. Finding the convex hull of discs in parallel. *Internat. J. Comput. Geom. Appl.*, 8:305–320, 1998. [cwkc-fchdp-98]

W. Chen. See also [1552, 3044].

W. W. L. Chen. See also [486].

3084 X. Chen. Robust solid boolean operations. Master's thesis, Agricultural and Mech. College, Louisiana State Univ., USA, 1991. [c-rsbo-91] *Keywords:* numerical precision, stability, robustness.

3085 X. Chen and C. M. Hoffmann. On editability of feature-based design. *Comput. Aided Design*, 27(12):905–914, 1996. [ch-efbd-96]

3086 Xiangping Chen and Daoning Ying. Polygon triangulation algorithm as a powerful core processor of plan-1. *Comput. Graph. Forum*, 8(3):193–198, September 1989. [cy-ptapc-89] *Keywords:* polygon triangulation, plan-i (production layout automation nucleus) system, non-self-intersecting polygon, triangular splitting algorithm, triangular- faceted structure, boundary representation. *Annote:* $O(n^2)$ search for an empty triangle on a particular edge. Hence an $O(n^3)$ algorithm. *Abstract:* A concise, complete and reliable algorithm for triangulating an arbitrary polygon is presented as a powerful core processor of PLAN-I (Production Layout Automation Nucleus) system. A polygon with inner loops is converted into a non-self-intersecting polygon (NIP) through adding 'Bridge Edges'. A triangular splitting algorithm for NIP is described and implemented. The program is about 300 lines in FORTRAN-77. Sweeping and local operations with respect to the triangular-faceted boundary representation are designed with the algorithm to improve functions of solid modeling in PLAN-I. The algorithm of triangulation can also be applied to Boolean operations and other issues. (Author abstract) 9 Refs.

X. Chen. See also [2712].

3087 Y. Chen and T. R. Smith. Finitely representable spatial objects and efficient computation. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 181–189. Springer-Verlag, 1994. [cs-frsoe-94]

3088 Y.-A. Chen, Y.-L. Lin, and L.-W. Chang. A systolic algorithm for the k-nearest neighbors problem. *IEEE Trans. Comput.*, 41(1):103–108, 1992. [clc-saknn-92] *Keywords:* proximity, parallel computation.

3089 Y.-B. Chen, M. Hsieh, A. Inselberg, and H. Q. Lee. Planar conflict resolution for air traffic control. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 160–163, 1990. [chil-pcrat-90] *Cites:* ZZZ.

3090 Y.-B. Chen and D. Ierardi. Oblivious plans for orienting and distinguishing polygonal parts. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 204–209, 1992. [ci-opodp-92] *Cites:* gme-gsppp-91, g-oppws-93, mw-posfp-85, n-spadp-89, rg-rspid-91, ZZZ.

3091 Y. B. Chen and D. Ierardi. Optimal motion planning for a rod in the plane subject to acceleration and velocity constraints. Technical Report, Univ. Southern California, ?? In preparation. [ci-omprp-]

3092 Y. B. Chen and D. Ierardi. Optimal motion planning for a rod in the plane subject to velocity constraints. Technical Report USC-CS-92-529, Univ. Southern California, 1992. [ci-omprp-92]

3093 Y.-B. Chen and D. Ierardi. Optimal motion planning for a rod in the plane subject to velocity constraints. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 143–152, 1993. [ci-omprp-93] *Precedes:* ci-totrp-97. *Cites:* cdrx-ckp-88, ci-omprp-92, ci-omprp-, d-upoml-85, g-mpmmm-73, g-meds-75, h-ei-17, h-cvoct-66, irwy-spls-91, l-rmp-91, ls-esmpa-85, o-mpic-87, rt-akpul-89, ss-pmp1c-83, u-pcv-60, ZZZ.

3094 Y.-B. Chen and D. Ierardi. Time-optimal trajectories of a rod in the plane subject to velocity constraints. *Algorithmica*, 18(2):165–197, June 1997. [ci-totrp-97] *Succeeds:* ci-omprp-93.

3095 Y.-B. Chen and D. J. Ierardi. The complexity of oblivious plans for orienting and distinguishing polygonal parts. *Algorithmica*, 14:367–397, 1995. [ci-copod-95]

Y.-B. Chen. See also [7327].

3096 Y. C. Chen. Set operations in hierarchical probe model. Report ??, Dept. Math. Sci., Purdue Univ., West Lafayette, IN, 1985. [c-sohpm-85]

3097 Y.-M. Chen and P. Ramanan. Euclidean shortest path with presence of obstacles. *Networks*, 21:257–267, 1991. [cr-esppo-91] *Keywords:* path planning.

Y.-M. Chen. See also [4440, 4441].

3098 Zhixiang Chen. Learning unions of two rectangles in the plane with equivalence queries. In *Proc. 6th ACM Conf. Comput. Learning Theory*, page ??, July 1993. [c-lutrp-93]

3099 Z. Chen and J. A. Guevara. System selection of very important points (VIP) from digital terrain models for constructing triangular irregular networks. In *Proc. 8th Internat. Sympos. Comput. Assist. Cartography*, pages 50–56, 1988. [cg-ssvip-88]

3100 Z. Chen, A. T. Holle, B. M. E. Moret, J. Saia, and A. Boroujerdi. Network routing models applied to aircraft routing problems. In *Proc. Winter Simulation Conf.*, pages 1200–1206, 1995. [chmsb-nrm-95]

3101 Z. T. Chen and W. R. Tobler. Quadtree representation of digital terrain. In *Proc. Autocarto*, pages 475–484, 1986. [ct-qrdt-86]

3102 Fuhua Cheng and Wein Chung Jiaan. Finding the intersection points of a line with a polygon and its applications. In *Proc. 14th ACM Annu. Computer Sci. Conf.*, pages 448–448, 1986. [cj-fiplp-86] *Keywords:* intersection, polygon. *Succeeds:* clc-fiplp-85.

3103 F. Cheng, J.-Y. Lu, and H.-S. Chang. Finding the intersection points of a line with a polygon and its applications. Report ??, Inst. Comput. Decision Sci., National Tsing Hua Univ., Taiwan, 1985. [clc-fiplp-85] *Precedes:* cj-fiplp-86.

F. Cheng. See also [9031].

3104 H.-L. Cheng, H. Edelsbrunner, and P. Fu. Shape space from deformation. *Comput. Geom. Theory Appl.*, 19:191–204, 2001. [cef-ssd-01]

K.-H. Cheng. See also [8786].

3105 Q. Cheng, M. Chrobak, and G. Sundaram. Computing simple paths among obstacles. *Comput. Geom. Theory Appl.*, 16:223–233, 2000. [ccs-cspao-00]

3106 Siu-Wing Cheng. The Steiner tree problem for terminals on the boundary of a rectilinear polygon. In *Proc. of the DIMACS Workshop on Network Design: Connectivity and Facilities Location*, April 1997. [c-stptb-97] *Annote:* Submitted to Theoretical Computer Science. They give an $O(k^3 n)$ algorithm for finding a min rectilinear Steiner tree for n points on the boundary of a rectilinear k-gon. They use dynamic programming.

3107 S.-W. Cheng. Widest empty corridor with multiple links and right-angle turns. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 57–62, 1994. [c-wecml-94] *Cites:* cd-kdcp-90, hm-fwecs-88, jp-wcp-93t, st-pplup-86, ZZZ.

3108 S.-W. Cheng. Widest empty L-shaped corridor. *Inform. Process. Lett.*, 58:277–283, 1996. [c-welsc-96]

3109 S.-W. Cheng, H. Edelsbrunner, P. Fu, and K.-P. Lam. Design and analysis of planar shape deformation. *Comput. Geom. Theory Appl.*, 19:205–218, 2001. [cefl-dapsd-01]

3110 Siu Wing Cheng, Mordecai J. Golin, and Jeffrey C. F. Tsang. Expected case analysis of β-skeletons with applications to the construction of minimum-weight triangulations. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 279–284, 1995. [cgt-ecabs-95]

3111 S. W. Cheng and R. Janardan. Algorithms for ray-shooting and intersection searching. *J. Algorithms*, 13:670–692, 1992. [cj-arsis-92]

3112 S. W. Cheng and R. Janardan. Efficient dynamic algorithms for some geometric intersection problems. *Inform. Process. Lett.*, 36:251–258, 1990. [cj-edasg-90]

3113 S. W. Cheng and R. Janardan. Efficient maintenance of the union intervals on a line, with applications. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 74–83, 1990. [cj-emuil-90] *Precedes:* cj-emuil-91.

3114 S. W. Cheng and R. Janardan. Efficient maintenance of the union intervals on a line, with applications. *J. Algorithms*, 12:57–74, 1991. [cj-emuil-91] *Succeeds:* cj-emuil-90.

3115 S. W. Cheng and R. Janardan. New results on dynamic planar point location. Technical Report TR 90-13, Dept. Comput. Sci., Univ. Minnesota, Minneapolis, MN, 1990. [cj-nrdpp-90]

3116 S. W. Cheng and R. Janardan. New results on dynamic planar point location. *SIAM J. Comput.*, 21:972–999, 1992. [cj-nrdpp-92] *Keywords:* point location, dynamization.

3117 S. W. Cheng and R. Janardan. New results on dynamic point location. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 96–105, 1990. [cj-nrdpl-90] *Keywords:* point location, dynamization.

3118 S. W. Cheng and R. Janardan. Space-efficient ray shooting and intersection searching: algorithms, dynamization and applications. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 7–16, 1991. [cj-sersi-91] *Keywords:* ray tracing, dynamization, spanning trees of low stabbing number.

3119 Siu-Wing Cheng and Kam-Hing Lee. Quadtree decomposition, Steiner triangulation, and ray shooting. In *ISAAC: 9th Internat. Sympos. Algorithms Computation*, pages 367–376, 1998. [cl-qrsam-98] *URL:* citeseer.nj.nec.com/cheng98quadtree.html.

3120 Siu-Wing Cheng, Andrew Lim, and Ching-Ting Wu. Optimal rectilinear Steiner tree for extremal point sets. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 523–532. Springer-Verlag, 1993. [clw-orste-93]

3121 Siu-Wing Cheng and Chi-Keung Tang. A fast algorithm for computing optimal rectilinear Steiner trees for extremal point sets. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 322–331. Springer-Verlag, 1995. [ct-facor-95]

3122 Siu-Wing Cheng and Yin-Feng Xu. Approaching the largest β-skeleton within a minimum weight triangulation. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 196–203, 1996. [cx-alesw-96] *Cites:* aatr-tin-95, beemt-eiot-93, dmm-naefm-95, dg-aivib-70, e-acg-87, g-nrpt-79, gmi-hibef-90, hp-nrmwt-94, k-csmwt-94, kr-fcm-85, lk-qgtam-96, l-nhmwt-87, ph-hta-87, y-bsmwt-95, yxy-cdapp-94, y-cdcrc-75, ZZZ.

3123 Siu-Wing Cheng and Yin-Feng Xu. Constrained independence systems and triangulations of planar point sets. In Ding-Zhu Du and Ming Li, editors, *Proc. 1st Ann. Internat. Conf. Computing and Combinatorics*, volume 959 of *Lecture Notes Comput. Sci.*, pages 275–291. Springer-Verlag, 1995. [cx-cistp-95] *Precedes:* aacktrx-tin-96.

S.-W. Cheng. See also [335, 336, 367, 901, 902, 3710].

3124 W. Cheng, J. Y. H. Fu, A. Y. C. Nee, Y. S. Wong, H. T. Loh, and T. Miyazawa. Multi-objective optimization of part-building orientation in stereolithography. *Rapid Prototyping Journal*, 1:12–23, 1995. [cfnwlm-moopb-95]

3125 Y. Cheng, S. S. Iyengar, and R. L. Kashyap. A new method of image compression using irreducible cover of maximal rectangles. *IEEE Trans. Softw. Eng.*, 14(5):651–658, 1988. [cik-nmicu-88] *Keywords:* isothetic, covering.

3126 Christian Chenier and Jorge Urrutia. Shortest paths in convex and simple weighted polygons. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 175–179, 1995. [cu-spcsw-95]

3127 Otfried Cheong and René van Oostrum. Reaching a polygon with directional uncertainty. *Internat. J. Comput. Geom. Appl.*, 11:197–214, 2001. [co-rpwdu-01]

Otfried Cheong. See also [336–338, 1689].

V. D. Chepoi. See also [2396].

3128 C. Cherfils and F. Hermeline. Diagonal swap procedures and characterizations of 2D-Delaunay triangulations. *RAIRO-Mathematical Modelling And Numerical Analysis-Modelisation Mathematique Et Analyse Numerique*, 24(5):613–625, 1990. [ch-dspc2-90] *Annote:* Proves that Delaunay switchings converge to DT.

3129 D. Cheriton and R. E. Tarjan. Finding minimum spanning trees. *SIAM J. Comput.*, 5:724–742, 1976. [ct-fmst-76]

3130 J. Cheriyan and R. Thurimella. Algorithms for parallel k-vertex connectivity and sparse certificates. Technical report, Eng. and Theory Center, Cornell Univ., Ithaca, New York, ?? [ct-apkvc-??]

3131 B. Cherkassky. An algorithm for finding shortest paths in a maze. *Optimization*, 17(2):237–242, 1986. [c-afspm-86] *Keywords:* motion planning, shortest paths.

M.-S. Chern. See also [3060].

3132 S. S. Chern. Curves and surfaces in Eucidean space. In S. S. Chern, editor, *Studies in Global Geometry and Analaysis*, volume 4 of *MAA Studies in Mathmatics*, pages 16–56. Math. Assoc. Amer., 1967. [c-cses-67]

3133 S. S. Chern. Curves and surfaces in Eucidean space. In S. S. Chern, editor, *Global Differential Geometry*, volume 27 of *Studies in Mathmatics*, pages 99–139. Math. Assoc. Amer., 1989. [c-cses-89] *Comments:* Explains/extends s-usedkkk-21.

3134 H. Chernoff. A measure of asymptotic efficiency for tests of a hypothesis based on the sum of the observations. *Ann. Math. Statist.*, 23:493–509, 1952. [c-maeth-52]

3135 N. I. Chernov and G. A. Ososkov. Effective algorithms for circle fitting. *Comput. Phys. Comm.*, 33:329–333, 1984. [co-eacf-84] *Keywords:* facility location, optimization, fitting, center.

A. Y. Chervonenkis. See also [13177].

3136 Jean-Marie Chesneaux and Jean Vignes. Les fondements de l'arithmétique stochastique. *Compte-rendus de l'académie des Sciences, Paris*, 307:1435–1440, 1992. [cv-fas-92]

3137 N. Chetayav. *The stability of motion*. Pergamon Press, New York, NY, 1961. [c-sm-61]

3138 D. Chetverikov. Fast neighborhood search in planar point sets. *Pattern Recogn. Lett.*, 12(7):409–412, 1991. [c-fnspp-91] *Keywords:* proximity, points, searching.

3139 L. Chew. Guaranteed quality Delaunay meshing in 3d. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 391–393, 1997. [c-gqdm3-97] *Cites:* be-mgot-92i, beg-pgmg-94, c-gqtm-89, c-gqmgc-93, mv-qmgtd-92i, r-nsaq2-93, ZZZ.

3140 L. P. Chew. Building Voronoi diagrams for convex polygons in linear expected time. Technical Report PCS-TR90-147, Dept. Math. Comput. Sci., Dartmouth College, Hanover, NH, 1986. [c-bvdcp-86] *Succeeds:* c-bvdcp-86t.

3141 L. P. Chew. Building Voronoi diagrams for convex polygons in linear expected time. manuscript, 1986. [c-bvdcp-86t] *Precedes:* c-bvdcp-86.

3142 L. P. Chew. Constrained Delaunay triangulations. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 215–222, 1987. [c-cdt-87] *Precedes:* c-cdt-89. *Cites:* cd-vdbcd-85, c-tipga-86, c-pgsge-, f-savd-86, k-eccs-79, l-prp-78, ls-tacdt-80, ps-cgi-85, y-oavds-84, ZZZ.

3143 L. P. Chew. Constrained Delaunay triangulations. *Algorithmica*, 4:97–108, 1989. [c-cdt-89] *Succeeds:* c-cdt-87.

3144 L. P. Chew. Guaranteed-quality mesh generation for curved surfaces. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 274–280, 1993. [c-gqmgc-93] *Cites:* r-nsaq2-92, be-mgot-92i, beg-pgmg-90, c-gqtm-89, mv-qmgtd-92i, ms-cinap-92, ZZZ.

3145 L. P. Chew. Guaranteed-quality triangular meshes. Technical Report TR-89-983, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, April 1989. [c-gqtm-89]

3146 L. P. Chew. Near-quadratic bounds for the L_1 Voronoi diagram of moving points. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 364–369, 1993. [c-nqblv-93] *Precedes:* c-nqblv-97. *Cites:* ass-sulbl-89, a-vdsfg-91, cd-vdbcd-85, ck-plscc-89, ck-cppop-93, gmr-vdmpp-92, kti-mmstl-92, ZZZ.

3147 L. P. Chew. Near-quadratic bounds for the L_1 Voronoi diagram of moving points. *Comput. Geom. Theory Appl.*, 7:73–80, 1997. [c-nqblv-97] *Succeeds:* c-nqblv-93.

3148 L. P. Chew. Planar graphs and sparse graphs for efficient motion planning in the plane. Manuscript, ??, ?? [c-pgsge-]

3149 L. P. Chew. Planning the shortest path for a disc in $O(n^2 \log n)$ time. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 214–220, 1985. [c-pspdo-85]

3150 L. P. Chew. There are planar graphs almost as good as the complete graph. *J. Comput. Syst. Sci.*, 39:205–219, 1989. [c-tapga-89] *Succeeds:* c-tipga-86.

3151 L. P. Chew. There is a planar graph almost as good as the complete graph. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 169–177, 1986. [c-tipga-86] *Precedes:* c-tapga-89. *Cites:* aaghi-vpses-85, cd-vdbcd-85, h-oarms-79, ls-tacdt-80, p-aspmt-85, sh-cpp-75, s-spacp-85, ss-spps-84, w-cvgnl-85, ZZZ.

3152 L. P. Chew, D. Dor, A. Efrat, and K. Kedem. Geometric pattern matching in d-dimensional space. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 979 of *Lecture Notes Comput. Sci.*, pages 264–279. Springer-Verlag, 1995. [cdek-gpmds-95]

3153 L. P. Chew and R. L. Drysdale, III. Voronoi diagrams based on convex distance functions. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 235–244, 1985. [cd-vdbcd-85] *Keywords:* Voronoi diagrams, points, two-dimensional, L_1 metric, L_p metric, L_∞ metric. *Cites:* c-ign-59, cdl-cler-84, d-gvdgs-79, h-oarms-79, k-eccs-79, kn-lts-63, k-ss-73, l-csta-82, l-tdvdl-80, l-knnvd-82, lw-vdllm-80, osy-rnamp-83, sh-cpp-75, y-oavds-84, ZZZ.

3154 L. P. Chew and R. L. Drysdale, III. Voronoi diagrams to solve largest empty oriented-convex-shape problems. Extended Abstract, Dept. Math. Comput. Sci., Dartmouth College, Hanover, NH, 1984. [cd-vdsle-84]

3155 L. P. Chew and S. Fortune. Sorting helps for Voronoi diagrams. In *Proc. 13th Symposium on Mathematical Programming, Japan*, 1988. [cf-shvd-88]

3156 L. P. Chew and S. Fortune. Sorting helps for Voronoi diagrams. *Algorithmica*, 18:217–228, 1997. [cf-shvd-97]

3157 L. P. Chew, M. T. Goodrich, D. P. Huttenlocher, K. Kedem, J. M. Kleinberg, and D. Kravets. Geometric pattern matching under Euclidean motion. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 151–156, 1993. [cghkkk-gpmem-93] *Precedes:* cghkkk-gpmem-97. *Cites:* ast-apsgo-92, abb-amps-91, ag-mrpc-92, amww-cssgo-88, aiit-mlcop-90, achkm-ecmcp-90, akmsw-mpnrc-91, ab-pptr-88, c-tsplt-91a, cegs-dwclp-92, c-sdsno-87, c-pms-88, csss-otass-89, clr-ia-90, e-acg-87, gjpt-tsp-78, gs-dfbt-78, hs-adaps-92, hks-uevsi-91, isi-mgftc-89, m-apcad-83, r-lbchd-93, ck-igpmp-92, hkk-dvdmh-92i, ps-cgi-85, t-dsna-83, ZZZ.

3158 L. P. Chew, M. T. Goodrich, D. P. Huttenlocher, K. Kedem, J. M. Kleinberg, and D. Kravets. Geometric pattern matching under Euclidean motion. *Comput. Geom. Theory Appl.*, 7:113–124, 1997. [cghkkk-gpmem-97] *Succeeds:* cghkkk-gpmem-93.

3159 L. P. Chew and K. Kedem. A convex polygon among polygonal obstacles: Placement and high-clearance motion. *Comput. Geom. Theory Appl.*, 3:59–89, 1993. [ck-cppop-93] *Succeeds:* ck-plscc-89.

3160 L. Paul Chew and Klara Kedem. Getting around a lower bound for the minimum Hausdorff distance. *Comput. Geom. Theory Appl.*, 10:197–202, 1998. [ck-glbmh-98]

3161 L. P. Chew and K. Kedem. High-clearance motion planning for a convex polygon among polygonal obstacles. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 20, 1989. [ck-hcmpc-89] *Succeeds:* ck-hcmpc-90.

3162 L. P. Chew and K. Kedem. High-clearance motion planning for a convex polygon among polygonal obstacles. Technical Report 184/90, Eskenasy Inst. Comput. Sci., Tel-Aviv Univ., Tel-Aviv, Israel, 1990. [ck-hcmpc-90] *Keywords:* robotics, motion planning, Voronoi diagrams. *Comments:* Also Cornell Technical Report TR 90-1133. *Precedes:* ck-hcmpc-89.

3163 L. P. Chew and K. Kedem. Improvements on geometric pattern matching problems. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 318–325. Springer-Verlag, 1992. [ck-igpmp-92]

3164 L. P. Chew and K. Kedem. Placing the largest similar copy of a convex polygon among polygonal obstacles. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 167–174, 1989. [ck-plscc-89] *Precedes:* ck-cppop-93. *Cites:* ab-pptr-88, ass-sulbl-89, a-dcg-83, cd-vdbcd-85, c-pcp-83, c-cdt-89, f-fapct-85, f-savd-87, ks-empac-90, ll-gdtpg-86, ls-pptmc-87, scklps-gadss-86, y-oavds-87, ZZZ.

3165 L. P. Chew, K. Kedem, and S. Schirra. On characteristic points and approximate decision algorithms for the minimum Hausdorff distance. Report MPI-I-94-150, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [cks-ocpad-94t]

3166 L. Paul Chew, Klara Kedem, Micha Sharir, Boaz Tagansky, and Emo Welzl. Voronoi diagrams of lines in 3-space under polyhedral convex distance functions. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 197–204, 1995. [ckstw-vdl3s-95] *Precedes:* ckstw-vdl3s-98.

3167 L. Paul Chew, Klara Kedem, Micha Sharir, Boaz Tagansky, and Emo Welzl. Voronoi diagrams of lines in 3-space under polyhedral convex distance functions. *J. Algorithms*, 29(2):238–255, 1998. [ckstw-vdl3s-98] *Succeeds:* ckstw-vdl3s-95.

L. P. Chew. See also [753, 760–762, 1789].

3168 P. Chew and S. Fortune. Sorting helps for Voronoi diagrams. Manuscript, AT&T Bell Laboratories, 1991. [cf-shvd-91]

P. Chew. See also [1790, 1810].

3169 D. Chhajed and V. Chandru. Rectilinear hull, efficient sets, convex hull: relationship and algorithms. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 37, 1989. [cc-rhesc-89]

3170 G. C.-P. Chi. Method for net representation with polygon decomposition. In *Proc. Internat. Conf. Computer-Aided Design*, pages 222–225, 1988. [c-mnrpd-88] *Keywords:* polygon, decomposition.

3171 C.-S. Chiang. *The Euclidean distance transform.* Ph.D. thesis, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, August 1992. Report CSD-TR 92-050. [c-edt-92] *Keywords:* doctoral thesis, geometric transformations, medial axis, two-dimensional, three-dimensional. *Abstract:* The medial-axis transform (MAT), also called skeleton, is a shape abstraction proposed by computer vision, and has a number of important engineering applications such as finite-element mesh generation. The theory for the MAT of 2D solids is investigated. We prove the uniqueness, divisibility and connectedness properties of the MAT of 2D solids. Algorithms are proposed to extract the MAT based on two criteria, the maximal circle criterion and the equal distance criterion. [....] The algorithms can be extended to 3D with more complex data structures.

3172 Yi-Jen Chiang. Experiments on the practical I/O efficiency of geometric algorithms: Distribution sweep versus plane sweep. *Comput. Geom. Theory Appl.*, 9(4):211–236, 1998. [c-epioe-98] *Succeeds:* c-epioe-95.

3173 Yi-Jen Chiang. Experiments on the practical I/O efficiency of geometric algorithms: Distribution sweep vs. plane sweep. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 346–357. Springer-Verlag, 1995. [c-epioe-95] *Precedes:* c-epioe-98.

3174 Y.-J. Chiang, M. T. Goodrich, E. F. Grove, R. Tamassia, D. E. Vengroff, and J. S. Vitter. External-memory graph algorithms. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 139–149, 1995. [cggtvv-emga-95] *URL:* http://www.cs.brown.edu/cgc/papers/cggtvv-emga-95.ps.gz.

3175 Y.-J. Chiang, J. T. Klosowski, C. Lee, and Joseph S. B. Mitchell. Geometric algorithms for conflict detection/resolution in atm. In *36th IEEE Conference on Decision and Control*, pages 1835–1840, December 1997. [cklm-gacdr-97] *Keywords:* air traffic control, conflict resolution, nearest neighbors.

3176 Yi-Jen Chiang and Joseph S. B. Mitchell. Two-point Euclidean shortest path queries in the plane. Technical Report, University at Stony Brook, 1997. [cm-tpesp-97] *Keywords:* all-pairs shortest paths, geodesic paths, point location, shortest path maps, visibility.

3177 Yi-Jen Chiang and Joseph S. B. Mitchell. Two-point Euclidean shortest path queries in the plane. In *Abstracts 14th European Workshop Comput. Geom.*, pages 55–57. Universitat Politècnica de Catalunya, Barcelona, 1998. [cm-tpesp-98]

3178 Y.-J. Chiang, F. P. Preparata, and R. Tamassia. A unified approach to dynamic point location, ray shooting, and shortest paths in planar maps. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 44–53, 1993. [cpt-uadpl-93] *Precedes:* cpt-uadpl-96.

3179 Y.-J. Chiang, F. P. Preparata, and R. Tamassia. A unified approach to dynamic point location, ray shooting, and shortest paths in planar maps. *SIAM J. Comput.*, 25:207–233, 1996. [cpt-uadpl-96] *URL:* http://www.cs.brown.edu/cgc/papers/cpt-uadpl-96.ps.gz. *Succeeds:* cpt-uadpl-93.

3180 Y.-J. Chiang and C. T. Silva. I/O optimal isosurface extraction. In *Proc. IEEE Visualization*, pages 293–300, 1997. [cs-ioie-97]

3181 Y.-J. Chiang and C. T. Silva. Isosurface extraction in large scientific visualization applications using the I/O-filter technique. Manuscript, University at Stony Brook, November 1997. [cs-ielsv-97]

3182 Yi-Jen Chiang, Claudio T. Silva, and William Schroeder. Interactive out-of-core isosurface extraction. Technical report, University at Stony Brook, 1998. [css-iocie-98] *Comments:* Submitted for publication.

3183 Y.-J. Chiang and R. Tamassia. Dynamic algorithms in computational geometry. Report CS-91-24, Comput. Sci. Dept., Brown Univ., Providence, RI, 1991. [ct-dacg-91] *Keywords:* survey paper.

3184 Y.-J. Chiang and R. Tamassia. Dynamic algorithms in computational geometry. *Proc. IEEE*, 80(9):1412–1434, September 1992. [ct-dacg-92] *Keywords:* survey paper.

3185 Y.-J. Chiang and R. Tamassia. Dynamization of the trapezoid method for planar point location. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 61–70, 1991. [ct-dtmpp-91] *Keywords:* point location, subdivision, dynamizing data structures. *Precedes:* ct-dtmpp-92. *Cites:* bst-bst-85, cj-nrdpp-90, ct-dacg-91, egs-oplms-86, f-zepud-85, fmn-dgds-85, gt-dtdpl-91, k-osps-83, lp-lppsi-77, m-pst-85, m-dsa-84, ol-mcp-81, o-ddds-83, o-rssls-85, p-nappl-81, ps-cgi-85, pt-fdplm-89, pt-dpplo-90, st-pplup-86, t-irmdp-91, ZZZ.

3186 Y.-J. Chiang and R. Tamassia. Dynamization of the trapezoid method for planar point location in monotone subdivisions. *Internat. J. Comput. Geom. Appl.*, 2(3):311–333, 1992. [ct-dtmpp-92] *Keywords:* planar point location, dynamic data structures, monotone subdivision, analysis of algorithm. *Succeeds:* ct-dtmpp-91.

3187 Y.-J. Chiang and R. Tamassia. Optimal shortest path and minimum-link path queries between two convex polygons in the presence of obstacles. Report CS-94-03, Comput. Sci. Dept., Brown Univ., Providence, RI, 1994. [ct-ospml-94t]

3188 Y.-J. Chiang and R. Tamassia. Optimal shortest path and minimum-link path queries between two convex polygons inside a simple polygonal obstacle. *Internat. J. Comput. Geom. Appl.*, 7:85–121, 1997. [ct-ospml-97] *URL:* http://www.cs.brown.edu/cgc/papers/ct-ospml-.ps.gz. *Keywords:* Shortest Path, Minimum-Link Path, dynamic algorithm, CGC, Brown. *Succeeds:* ct-ospml-94i.

3189 Y.-J. Chiang and R. Tamassia. Optimal shortest path and minimum-link path queries in the presence of obstacles. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 266–277. Springer-Verlag, 1994. [ct-ospml-94i] *Keywords:* Shortest Path, Minimum-Link Path, dynamic algorithm.

Y.-J. Chiang. See also [763–765].

3190 N. Chiba, I. Nisbigaki, Y. Yamasbita, C. Takizawa, and K. Fujisbiro. Automatic hexahedral mesh generation system based on shape-recognition and boundary-fit method. In *Proc. 5th International Meshing Roundtable*, pages 281–290, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [cnytf-ahmgs-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

3191 N. Chiba, I. Nishioka, and I. Shirakawa. An algorithm of maximal planarization of graphs. In *Proc. IEEE Internat. Sympos. on Circuits and Systems*, pages 649–652, 1979. [cns-ampg-79] *Keywords:* graph drawing.

3192 N. Chiba and T. Nishizeki. Arboricity and subgraph listing algorithms. *SIAM J. Comput.*, 14:210–223, 1985. [cn-asla-85]

3193 N. Chiba and T. Nishizeki. The Hamiltonian cycle problem is linear-time solvable for 4-connected planar graphs. *J. Algorithms*, 10(2):187–211, June 1989. [cn-hcpls-89]

3194 N. Chiba, T. Nishizeki, S. Abe, and T. Ozawa. A linear algorithm for embedding planar graphs using PQ-trees. *J. Comput. Syst. Sci.*, 30(1):54–76, 1985. [cnao-laepg-85] *Keywords:* graph drawing.

3195 N. Chiba, T. Nishizeki, and N. Saito. A linear 5-coloring algorithm of planar graphs. *J. Algorithms*, 2:317–327, 1981. [cns-l5cap-81]

3196 N. Chiba, K. Onoguchi, and T. Nishizeki. Drawing planar graphs nicely. *Acta Inform.*, 22:187–201, 1985. [con-dpgn-85] *Keywords:* graph drawing.

3197 N. Chiba, T. Yamanouchi, and T. Nishizeki. Linear algorithms for convex drawings of planar graphs. In J. A. Bondy and U. S. R. Murty, editors, *Progress in Graph Theory*, pages 153–173. Academic Press, New York, NY, 1984. [cyn-lacdp-84] *Keywords:* graph drawing.

N. Chiba. See also [10163].

3198 C. Chien and J. Aggarwal. Model reconstruction and shape recognition from occluding contours. *IEEE Trans. Pattern Anal. Mach. Intell.*, 11:372–389, 1989. [ca-mrsro-89]

C.-B. Chien. See also [10395].

3199 C. H. Chien and J. K. Aggarwal. Volume/surface octrees for the representation of three-dimensional objects. *Comput. Vision Graph. Image Process.*, 36:100–113, 1986. [ca-vsort-86]

3200 Hank Chien and William Steiger. Some geometric lower bounds. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 72–81. Springer-Verlag, 1995. [cs-sglb-95]

R. T. Chien. See also [350].

Y. T. Chien. See also [13386].

M. Chilenskas. See also [11139].

3201 F. Chin, J. Sampson, and C. A. Wang. A unifying approach for a class of problems in the computational geometry of polygons. *Visual Comput.*, 1:124–132, 1985. [csw-uacpc-85]

3202 Francis Chin, Jack Snoeyink, and Cao-An Wang. Finding the medial axis of a simple polygon in linear time. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 382–391. Springer-Verlag, 1995. [csw-fmasp-95]

3203 F. Chin, J. Snoeyink, and C. A. Wang. Finding the medial axis of a simple polygon in linear time. *Discrete Comput. Geom.*, 21(3):405–420, 1999. [csw-fmasp-99]

3204 F. Chin and C. A. Wang. Finding the constrained Delaunay triangulation and constrained Voronoi diagram of a simple polygon in linear time. *SIAM J. Comput.*, 28:471–486, 1998. [cw-fcdtc-98]

3205 F. Chin and C. A. Wang. Minimum vertex distance between separable convex polygons. *Inform. Process. Lett.*, 18:41–45, 1984. [cw-mvdbs-84]

3206 F. Chin and C. A. Wang. Optimal algorithms for the intersection and the minimum distance problems between planar polygons. *IEEE Trans. Comput.*, C-32(12):1203–1207, 1983. [cw-oaimd-83]

Francis Chin. See also [2816, 2817, 10839, 10840].

3207 F. Y. Chin, P. Kossowki, and S. C. Loh. Efficient interference control for range sum queries. *Theoret. Comput. Sci.*, 32:77–86, 1984. [ckl-eicrs-84]

3208 Francis Y. Chin and Cao An Wang. On the difficulty of greedy tetrahedralization of points in 3-d. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 285–290, 1995. [cw-dgtp3-95]

F. Y. Chin. See also [13348].

F. Y. L. Chin. See also [2792, 2818, 2819].

3209 Norman Chin and Steven Feiner. Fast object-precision shadow generation for areal light sources using BSP trees. *Comput. Graph.*, 25:21–30, March 1992. Proc. 1992 Sympos. Interactive 3D Graphics. [cf-fopsg-92] *Keywords:* shadow volume, area light source, penumbra, umbra.

3210 Norman Chin and Steven Feiner. Near real-time shadow generation using BSP trees. In *Proc. SIGGRAPH '89*, volume 23, pages 99–106, New York, August 1989. ACM SIGGRAPH. [cf-nrtsg-89]

3211 R. T. Chin and C. R. Dyer. Model-based recognition in robot vision. *ACM Comput. Surv.*, 18:67–108, 1986. [cd-mbrrv-86]

3212 W. Chin and S. Ntafos. Optimum watchman routes. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 24–33, 1986. [cn-owr-86] *Precedes:* cn-owr-88. *Cites:* ateadps-81, c-ctpg-75, cw-oaimd-83, e-cedbt-85, eow-sgrag-84, f-spcwt-78, gj-cigtn-79, gjpt-tsp-78, kkk-tgrfw-83, ll-ccagp-86, lp-esppr-84, lnprpss-91, l-dprcq-85, o-aprag-83, o-gnfmg-83, p-etspi-77, s-oadrp-82, ZZZ.

3213 W. Chin and S. Ntafos. Optimum watchman routes. *Inform. Process. Lett.*, 28:39–44, 1988. [cn-owr-88] *Succeeds:* cn-owr-86. *Precedes:* cn-wrsp-91.

3214 W. Chin and S. Ntafos. Optimum zookeeper routes. *Congr. Numer.*, ??, 1989. [cn-ozkr-89]

3215 W.-P. Chin and S. Ntafos. Optimum zookeeper routes. *Congr. Numer.*, 58:257–266, 1987. Combinatorics, Graph Theory and Computing. Proc. 20th South-East Conf., Boca Raton. [cn-ozr-87] *Keywords:* visibility.

3216 W. P. Chin and S. Ntafos. Shortest watchman routes in simple polygons. Technical report. [cn-swrsp-] *Precedes:* cn-wrsp-91, cn-wrsp-87.

3217 W.-P. Chin and S. Ntafos. Shortest watchman routes in simple polygons. *Discrete Comput. Geom.*, 6(1):9–31, 1991. [cn-wrsp-91] *Keywords:* visibility. *Succeeds:* cn-owr-88, cn-swrsp-.

3218 W. P. Chin and S. Ntafos. Watchman routes in simple polygons. Technical Report, Dept. Comput. Sci., Univ. Texas, Dallas, TX, 1987. [cn-wrsp-87] *Succeeds:* cn-swrsp-.

Y. H. Chin. See also [8650].

3219 Y. T. Ching, M. T. Ko, and H. Y. Tu. On the cruising guard problems. Technical Report, Inst. Inform. Sci., Academia Sinica, Taipei, Taiwan, 1989. [ckt-cgp-89]

3220 Y. T. Ching and D. T. Lee. Finding the diameter of a set of lines. Manuscript, Dept. Elect. Engrg. Comput. Sci., Northwestern Univ., Evanston, IL, 1983. [cl-fdsl-83] *Precedes:* cl-fdsl-85.

3221 Y. T. Ching and D. T. Lee. Finding the diameter of a set of lines. *Pattern Recogn. Lett.*, 18(3–4):249–255, 1985. [cl-fdsl-85] *Succeeds:* cl-fdsl-83.

3222 Y.-T. Ching, K. Mehlhorn, and M. Smid. Dynamic deferred data structuring. *Inform. Process. Lett.*, 35(1):37–40, 1990. [cms-ddds-90] *Keywords:* data structuring, deferred data structures.

Y. T. Ching. See also [8219, 8220, 8610].

3223 W. G. Chinn and N. E. Steenrod. *First Concepts of Topology: The Geometry of Mappings of Segments, Curves, Circles, and Disks*. Mathematical Association of America, Washington, DC, 1966. [cs-fctgm-66]

3224 A. E. Chiou, M. Khoshnevisan, and P. Yeh. Optical matrix-matrix multiplication using multicolor four-wave mixing. In *Proc. SPIE*, volume 881, pages 250–257, 1988. [cky-ommmu-88]

A. E. Chiou. See also [7072].

3225 A. Chistov and d. Grigoryev. Subexponential-time solving systems of algebraic equations i. Preprint E-9-83, Steklov Inst., 1983. [cg-stssa-83]

3226 J.-S. Chiu and J.-S. Wang. Monotone polygon containment problem. *J. Inform. Process.*, 13(4):486–493, 1990. [cw-mpcp-90] *Keywords:* monotone polygon, containment.

3227 J.-S. Chiu and J.-S. Wang. Monotone polygon containment problems under translation. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 123–130, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [cw-mpcpu-89] *Keywords:* monotone polygons, rectilinear polygons, polygon containment.

3228 Kenneth Chiu, Peter Shirley, and Changyaw Wang. Multi-jittered sampling. In Paul Heckbert, editor, *Graphics Gems IV*, pages 370–374. Academic Press, Boston, MA, 1994. [csw-mjs-94] *Keywords:* antialiasing, jitter, stochastic sampling. *Annote:* Presents a new technique for high quality stochastic sampling. This is useful for antialiasing. Contains C code.

M. Y. Chiu. See also [5982].

3229 H. Chiyokura and F. Kimura. Design of solids with free-form surfaces. In *Proc. Siggraph*, pages 289–298, 1983. [ck-dsffs-83]

3230 B. S. Chlebus, K. Diks, and M. Kowaluk. $o(\log\log n)$-time integer geometry on the crcw pram. *Algorithmica*, 14:52–69, 1995. [cdk-otigc-95]

3231 F. S. Cho and D. Forsyth. Interactive ray tracing with the visibility complex. *Computers and Graphics (Special Issue on Visibility - Techniques and Applications)*, 23(5):703–717, 1999. [cf-irtvc-99]

W. Cho. See also [10662].

W. S. Cho. See also [13506].

A. Choi. See also [13834, 13835].

3232 B. K. Choi, D. H. Kim, and R. B. Jerard. C-space approach to tool-path generation for die and mould machining. *Comput. Aided Design*, 29(9):657–669, September 1997. [ckj-csatp-97]

3233 B. K. Choi, H. Y. Shin, Y. I. Yoon, and J. W. Lee. Triangulation of scattered data in 3d space. *Comput. Aided Design*, 20(5):239–248, June 1988. [csyl-tsd3d-88] *Keywords:* three-dimensional triangulation procedure, Thiessen polygonization, optimal partitioning, surface interpolation, 3d space. *Annote:* Incremental algorithm for 3D triangulation. Points are sorted by angle from a particular point and then joined to all the visible points. Then switchings are done to insert constrained edges. (I don't see how this is possible, because of nonconvex quads.) Switchings are then done to minimize the angle between adjacent triangles. *Abstract:* Triangular interpolants are widely used to construct smooth surfaces from scattered data in 3D. To apply smooth triangular interpolants, the input 3D points have to be triangulated. An algorithmic procedure for 3D triangulation is presented. Relevant algorithms and datastructures are described in detail. Existing methods of 2D triangulation are based on Thiessen polygonization, which is an optimal partitioning of a geometric domain. To obtain an optimal triangular grid on the domain, the max-min angle criterion is frequently used. As there is no domain for 3D points, a new criterion called the smoothness criterion is proposed. (Edited author abstract). 15 Refs.

3234 Hyeong In Choi, Sung Woo Choi, and Hwan Pyo Moon. Mathematical theory of medial axis transform. *Pacific Journal of Mathematics*, 181(1):57–88, 1997. [ccm-mtmat-97]

3235 H. I. Choi, S. W. Choi, and H. P. Moon. New algorithm for medial axis transform of plane domain. *Graph. Models Image Process.*, 59(6):463–483, November 1997. [ccm-namat-97]

3236 H. I. Choi, C. Y. Han, H. P. Moon, K. H. Roh, and N. S. Wee. Medial axis transform and offset curves by Minkowski Pythagorean hodograph curves. *Comput. Aided Design*, 31(1):59–72, March 1999. [chmrw-matoc-99]

3237 H. K. Choi and C. M. Kyung. A shadow-testing acceleration scheme for ray tracing. *Comput. Aided Design*, 24(2):93–104, 1992. [ck-stasr-92] *Keywords:* ray tracing, computer graphics.

3238 J. Choi, J. Sellen, and C. K. Yap. Approximate Euclidean shortest path in 3-space. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 41–48, 1994. [csy-aesp3-94] *Keywords:* ray shooting, octrees, quadtress, simple cover complexity. *Precedes:* csy-aesp3-97. *Cites:* b-fmpee-76, cr-nlbtr-87, c-aaspm-87, egppss-acptc-92, l-vta-50, p-aspmt-85, hs-ecesp-93, y-tegc-93, y-fpaa-93, ZZZ.

3239 J. Choi, J. Sellen, and C. K. Yap. Approximate Euclidean shortest paths in 3-space. *Internat. J. Comput. Geom. Appl.*, 7(4):271–295, August 1997. [csy-aesp3-97] *Keywords:* shortest paths, geodesics, approximation algorithm, bit complexity, precision. *Succeeds:* csy-aesp3-94. *Annote:* Special issue devoted to SoCG'94.

3240 Joonsoo Choi, Jürgen Sellen, and Chee-Keng Yap. Precision-sensitive Euclidean shortest path in 3-space. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 350–359, 1995. [csy-psesp-95] *Keywords:* bit complexity, shortest paths. *Cites:* b-earsh-92, b-hsrr-90, cr-nlbtr-87, csy-aesp3-94, g-cra-67, r-ccgfo-89, p-aspmt-85, p-cc-94, r-ca-70, ss-spps-86, vv-niedu-86, w-aep-65, y-tegc-93, ZZZ.

3241 Joonsoo Choi and Chee-Keng Yap. Monotonicity of rectilinear geodesics in d-space. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 339–348, 1996. [cy-mrgds-96] *Cites:* aaghi-vdp-86, ac-prspr-91, acm-mpoap-89, c-gphd-95, cy-rg3s-95, rlw-rsprb-85, rlw-rsppr-89, em-osrqa-94, hs-ecesp-93, lp-esppr-84, m-psp-86, mrw-mlpop-92, w-cvgnl-85, ZZZ.

3242 Joonsoo Choi and Chee-Keng Yap. Rectilinear geodesics in 3-space. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 380–389, 1995. [cy-rg3s-95] *Keywords:* shortest paths, monotonicity, boxes. *Cites:* aaghi-vdp-86, ckv-rsptp-87, bkno-spqrw-92, rlw-rsppr-89, e-acg-87, em-osrqa-94, gm-osacv-91, hs-ecesp-93, l-tdvdl-80, m-wcohs-87, m-lsppo-92, w-cvgnl-85, ZZZ.

J. Choi. See also [11975].

3243 J. S. Choi. *Geodesic problems in high dimensions*. PhD thesis, Courant Institute, New York University, New York, June 1995. [c-gphd-95] *Keywords:* shortest paths.

S. Choi. See also [643–645].

3244 S.-H. Choi. Visibility properties of graphs and their recognition. Master's thesis, Department of Computer Science, Korea Advanced Institute of Science and Technology, 1992. [c-vpgr-92] *Keywords:* master thesis.

3245 S. H. Choi, S. Y. Shin, and K. Y. Chwa. Characterizing and recognizing the visibility graph of a funnel-shaped polygon. *Algorithmica*, 14:27–51, 1995. [csc-crvgf-95]

3246 S. H. Choi, S. Y. Shin, and K. Y. Chwa. Characterizing and recognizing visibility graphs of funnel-shaped polygons. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 219–228. Springer-Verlag, 1992. [csc-crvgf-92]

S. W. Choi. See also [3234, 3235].

3247 Y.-K. Choi and K. H. Park. A heuristic triangulation algorithm for multiple planar contours using an extended double branching procedure. *Visual Comput.*, 10(7):372–387, 1994. [cp-htamp-94]

3248 J. Chomicki and P. Z. Revesz. A geometric framework for specifying spatiotemporal objects. In *Proc. 6th Intl. Workshop on Time Representation and Reasoning*, pages 41–46, 1999. [cr-gfsso-99]

T. Chomut. See also [7389].

3249 K. W. Chong and T. W. Lam. Finding connected components in $o(\log n \log\log n)$ time on the EREW PRAM. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 11–20, 1993. [cl-fccot-93]

T. Chorzempa. See also [13055].

3250 A. Chou and K. Ko. Some complexity issues on the simply connected regions of the two-dimensional plane. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, page ??, 1993. [ck-scisc-93]

3251 J. J. Chou. *Numerical control milling machine toll path generation for regions bounded by free form curves and surfaces*. Ph.D. thesis, Univ. Utah, 1989. [c-ncmmt-89] *Keywords:* doctoral thesis.

3252 J. J. Chou. Voronoi diagrams for planar shapes. *IEEE Comput. Graph. Appl.*, 15(2):52–59, March 1995. [c-vdps-95]

3253 P. Chou. Optimal partitioning for classification and regression trees. *IEEE Trans. Pattern Anal. Mach. Intell.*, 13:340–354, 1991. [c-opcrt-91]

S. Chou. See also [3074].

3254 S.-C. Chou. *Mechanical Geometry Theorem Proving*. D. Reidel, 1988. [c-mgtp-88]

3255 S.-C. Chou. Proving elementary geometry theorems using Wu's algorithm. In *Contemporary Mathematics*, volume 29, pages 243–286. American Mathematical Society, 1984. [c-pegtu-84]

3256 S.-C. Chou and M. Rathi. Machine proofs of geometry theorems. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*, pages 91–115. World Scientific, Singapore, 1992. [cr-mpgt-92] *Keywords:* survey paper, machine proofs. *Precedes:* cr-mpgt-95.

3257 Shang-Ching Chou and Mahesh Rathi. Machine proofs of geometry theorems. In Ding-Zhu Du and Frank Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 124–148. World Scientific, Singapore, 2nd edition, 1995. [cr-mpgt-95] *Keywords:* survey paper. *Succeeds:* h-dqgpg-92.

S. C. Chou. See also [5747].

3258 Sheng-Lin Chou and Wen-Hsiang Tsai. Line segment matching for 3d computer vision using a new iteration scheme. *Mach. Vison Appl.*, 6:191–205, 1993. [ct-lsm3d-93]

3259 S.-Y. Chou, T. C. Woo, L.-L. Chen, K. Tang, and S. Y. S hin. Scallop hull and its offset. *Comput. Aided Design*, 26(7):537–542, July 1994. [cwcts-shio-94]

S.-Y. Chou. See also [8465, 12800, 12801, 13372].

3260 Y.-C. Chou, V. Chandru, and M. M. Barash. A mathematical approach to automatic configuration of machining fixtures: Analysis and synthesis. *J. of Engineering for Industry*, 111, November 1989. [ccb-maacm-89]

3261 S. Choudhury and M. Murty. A parallel architecture for constructing the minimal spanning tree in Euclidean space. In *Tencon'87*, volume 2, pages 793–795, 1987. [cm-pacms-87] *Keywords:* parallel computation, minimal spanning tree.

3262 A. L. Chow. A parallel algorithm for determining convex hulls of sets of points in two dimensions. In *Proc. 19th Allerton Conf. Commun. Control Comput.*, pages 214–223, 1981. [c-padch-81]

3263 A. L. Chow. A practical parallel algorithm for reporting intersections of rectangles. In *IEEE Sympos. Parallel Processing*, pages 304–305, 1981. [c-ppari-81]

3264 A. L. Chow. *Parallel algorithms for geometric problems*. Ph.D. thesis, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1980. [c-pagp-80] *Keywords:* doctoral thesis. *Comments:* UMI KRA81-08465, 163 pp.

Y. Chow. See also [6272].

Y. C. Chow. See also [7168].

N. Chrisman. See also [10747].

N. R. Chrisman. See also [4398].

3265 Albert H. J. Christensen. Fitting a triangulation to contour lines. In *Proceedings, AUTOCARTO 8*, pages 57–67, 1987. [c-ftcl-87] *Annote:* Constrained Delaunay triangulation of contours + medial axes of contours. This avoids the problem of a triangle with all three vertices on the same contour.

3266 C. Christensen. Kvadrat indskrevet i konveks figur. *Matematisk Tiddskrifft B*, 1950:22–26, 1950. [c-kiikf-50]

3267 J. Christensen, S. Friedman, J. Marks, and S. Shieber. Empirical testing of algorithms for variable-sized label placement. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 415–417, 1997. [cfms-etavs-97] *Cites:* cms-esapf-95, ecms-gcla-97, ww-pmla-97, ZZZ.

3268 J. Christensen, J. Marks, and S. Shieber. Algorithms for cartographics label placement. In *Proc. 1993 ASPRS/ACSM Annual Convention and Exposition*, volume 1, pages 75–89, 1993. [cms-aclp-93]

3269 J. Christensen, J. Marks, and S. Shieber. An empirical study of algorithms for point-feature label placement. *ACM Trans. Graph.*, 14:202–232, 1995. [cms-esapf-95]

3270 Jon Christensen, Joe Marks, and Stuart Shieber. Placing text labels on maps and diagrams. In Paul Heckbert, editor, *Graphics Gems IV*, pages 497–504. Academic Press, Boston, MA, 1994. [cms-ptlmd-94] *Keywords:* cartography, label placement, layout, relaxation, simulated annealing. *Annote:* Presents an algorithm to arrange text labels in a way that avoids overlap. This is useful in cartography.

J. Christensen. See also [4796].

3271 N. N. Christiansen and T. W. Sederberg. Conversion of complex contour line definitions into polygonal element mosaic. *Comput. Graphics*, 12(2):187–192, 1978. [cs-cccld-78] *Keywords:* computer graphics, contours, shape, polyhedra, surfaces, approximation.

3272 T. Christof, M. Jünger, and G. Reinelt. A complete description of the traveling salesman polytope on 8 nodes. Report 249-1990, Institut für Mathematik, Universität Augsburg, Augsburg, Germany, 1990. [cjr-cdtsp-90]

3273 N. Christofides. Worst-case analysis of a new heuristic for the traveling salesman problem. In J. F. Traub, editor, *Sympos. on New Directions and Recent Results in Algorithms and Complexity*, page 441, New York, NY, 1976. Academic Press. [c-wcanh-76]

Wayne Christopher. See also [7060].

3274 M. Chrobak, K. Diks, and T. Hagerup. Parallel 5-colouring of planar graphs, 1987. Preprint. [cdh-p5cpg-87]

3275 Marek Chrobak, Michael T. Goodrich, and Roberto Tamassia. Convex drawings of graphs in two and three dimensions. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 319–328, 1996. [cgt-cdgtt-96] *URL:* http://www.cs.brown.edu/cgc/papers/cgt-cdgtt-96.ps.gz. *Keywords:* graph drawing, straight-line, 3D, convex, CGC, Brown. *Cites:* a-lbvsc-63, bh-olpgf-87, bo-lwbl-87, cdpgn-85, cyn-lacdp-84, ck-cgd3c-93, cn-mwgdp-95, cp-ltadp-95, celr-tdgd-95, c-re-82, cw-mmap-90, cw-sfmps-82, dg-caitd-95, fpp-sssfe-88, fpp-hdpgg-90, dett-adgab-94, dtt-arsdp-92, dtv-olcpt-95, ds-ltati-92, eg-dspg-96, esw-tkbtd-95, f-slrpg-48, fhhklsww-dgphr-93, gt-pdara-94, gt-anda-87, g-cp-67, hr-udfs-94, hrs-cchpc-92, ht-dgtc-73, ht-ept-74, hk-prga-92, jj-3dlrg-95, k-dpguc-96, k-dpgul-92, ls-cavg-92, ld-cpdt3-95, lrt-gnd-79, lt-apst-80, mp-arpg-94, m-orfdf-64, ps-cgi-85, r-3dvpi-95, r-e3vpi-95, s-epgg-90, st-ce3cp-92, s-cm-51, sr-vudtd-34, t-pdfip-80, t-prg-84, t-crg-60, t-hdg-63, w-mspp-82, ZZZ.

3276 M. Chrobak and G. Kant. Convex grid drawings of 3-connected planar graphs. Technical Report RUU-93-45, Dept. of Computer Sci., Utrecht Univ., 1993. [ck-cgd3c-93] *Keywords:* graph drawing, planar, convex, straight-line.

3277 M. Chrobak and G. Kant. Convex grid drawings of 3-connected planar graphs. *Internat. J. Comput. Geom. Appl.*, 7(3):211–223, 1997. [ck-cgd3c-97] *Succeeds:* ck-cgd3c-93.

3278 M. Chrobak and S. Nakano. Minimum-width grid drawings of plane graphs. Technical Report UCR-CS-94-5, Dept. of Computer Sci., Univ. California, Riverside, 1994. [cn-mwgd-94] *Keywords:* graph drawing, planar, straight-line.

3279 M. Chrobak and S. Nakano. Minimum-width grid drawings of plane graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 104–110. Springer-Verlag, 1995. [cn-mwgdp-95] *Keywords:* graph drawing, planar, straight-line.

3280 Marek Chrobak and Shin ichi Nakano. Minimum-width grid drawings of plane graphs. *Comput. Geom. Theory Appl.*, 11:29–54, 1998. [cn-mwgdp-98] *Succeeds:* cn-mwgd-94, cn-mwgdp-95.

3281 M. Chrobak and T. Payne. A linear-time algorithm for drawing planar graphs. *Inform. Process. Lett.*, 54:241–246, 1995. [cp-ltadp-95] *Keywords:* graph drawing. *Succeeds:* cp-ltadp-90.

3282 M. Chrobak and T. H. Payne. A linear time algorithm for drawing a planar graph on a grid. Technical Report UCR-CS-90-2, Dept. of Math. and Comput. Sci., Univ. California Riverside, 1990. [cp-ltadp-90] *Keywords:* graph drawing. *Precedes:* cp-ltadp-95.

3283 Marek Chrobak and G. Sundaram. Paths among points inside a simple polygon. In *Proc. 5th MSI Stony Brook Workshop on Computational Geometry*, 1995. [cs-ppisp-95] *URL:* ??.

3284 M. Chrobak, T. Szymacha, and A. Krawczyk. A data structure useful for finding Hamiltonian cycles. *Theoret. Comput. Sci.*, 71(3):419–424, 1990. [csk-dsufh-90] *Keywords:* data structuring.

M. Chrobak. See also [3105].

3285 Yiorgos Chrysanthou. *Shadow Computation for 3D Interaction and Animation*. Ph.D. thesis, Queen Mary and Westfield College, University of London, 1996. [c-sc3di-96] *Keywords:* bsp trees, shadow, radiosity.

3286 C. Chryssostomidis. Computer aided interference control and space reservation. In K. Lind Y. Fujita and T. J. Williams, editors, *Proc. IFIP/IFAC/JSNA Joint Conference on Computer Applications in the Automation of Shipyard Operation and Ship Design*, pages 507–513, 1974. [c-caics-74]

3287 C. Chryssostomidis. Computer aided ship design education at the massachusetts institute of technology. In F. Borgström A. Jacobsson and T. J. Williams, editors, *Proc. IFIP/IFAC/SSI/City of Gothenburg Scandinavian Joint Conference on Computer Applications in the Automation of Shipyard Operation and Ship Design*, pages 65–71, 1976. [c-casde-76]

3288 C. Chryssostomidis and N. M. Patrikalakis. Geometric modeling in computer aided design of marine systems. In *Proc. 3rd International Symposium on Practical Design of Ships and Mobile Units*, volume II, pages 861–870, 1987. [cp-gmcad-87]

3289 C. Chryssostomidis and N. M. Patrikalakis. Geometric modeling issues in computer aided design of marine structures. *Marine Technology Society Journal*, 22(2):15–33, 1988. [cp-gmica-88]

C. Chryssostomidis. See also [77, 7541, 9159, 10663, 13065, 13069].

3290 G. Chrystal. On the problem to construct the minimal circle enclosing n given points in the plane. *Proc. Edinburgh Math. Soc.*, 3:30–33, 1885. pre-Shamos. [c-pcmce-85] *Keywords:* points, extremal figures, center.

J.-L. Chu. See also [5365].

3291 J. H. Chuang and C. M. Hoffmann. Curvature computations on surfaces in n-space. Technical Report 90.2, ITC, Trento, Italy, August 1990. [ch-ccsns-90]

3292 A. Chubarev. Robust set operations on polyhedral solids: a fixed precision approach. *Internat. J. Comput. Geom. Appl.*, 6:187–204, 1996. [c-rsops-96]

3293 C. K. Chui. *Multivariate spline spaces*. Soc. for Industrial & Applied Mathematics, Philadelphia, PA, 1988. [c-mss-88]

3294 F. Chung, M. Gardner, and R. Graham. Steiner trees on a checkerboard. *Math. Mag.*, 62(2):83–96, 1989. [cgg-stc-89] *Keywords:* Steiner tree.

F. Chung. See also [1932].

3295 F. R. K. Chung. On linear arrangements of trees. *Comput. Math. Appl.*, 10:43–60, 1984. [c-lat-84]

3296 F. R. K. Chung. Sphere-and-point incidence relations in high dimensions with applications to unit distances and furthest-neighbor pairs. *Discrete Comput. Geom.*, 4:183–190, 1989. [c-spirh-89]

3297 F. R. K. Chung and R. L. Graham. A new bound for Euclidean Steiner minimal trees. *Ann. New York Acad. Sci.*, 440:328–346, 1985. [cg-nbesm-85] *Keywords:* Steiner tree.

3298 F. R. K. Chung and R. L. Graham. On Steiner trees for bounded point sets. *Geom. Dedicata*, 11:353–361, 1981. [cg-stbps-81]

3299 F. R. K. Chung and R. L. Graham. Steiner trees for ladders. *Ann. Discrete Math.*, 2:173–200, 1978. [cg-stl-78] *Keywords:* Steiner tree.

3300 F. R. K. Chung and F. K. Hwang. The largest minimal rectilinear Steiner trees for a set of n points enclosed in a rectangle with given perimeter. *Networks*, 9:19–36, 1979. [ch-lmrst-79]

3301 V. Chvátal. A combinatorial theorem in plane geometry. *J. Combin. Theory Ser. B*, 18:39–41, 1975. [c-ctpg-75]

3302 V. Chvátal. A greedy heuristic for the set-covering problem. *Math. Oper. Res.*, 4:233–235, 1979. [c-ghscp-79] *Keywords:* approximation.

3303 V. Chvatal. Hamiltonian cycles. In *The Traveling Salesman Problem*, pages 403–429. John Wiley & Sons, 1985. [c-hc-85]

3304 V. Chvátal. Lecture notes on the new AKS sorting network. Report DCS-TR-294, Computer Science Dept., Rutgers University, 1992. Available at ftp://athos.rutgers.edu/pub/technical-reports/dcs-tr-294.ps.Z. [c-lnnas-92]

3305 V. Chvátal. *Linear Programming*. W. H. Freeman, New York, NY, 1983. [c-lp-83]

3306 V. Chvátal. Tough graphs and Hamiltonian circuits. *Discrete Math.*, 5(3):215–228, July 1973. [c-tghc-73]

3307 V. Chvátal and G. Klincsek. Finding largest convex subsets. *Congr. Numer.*, 29:453–460, 1980. Combinatorics, Graph Theory and Computing. Proc. South-East Conf., Boca Raton, vol. 2. [ck-flcs-80] *Keywords:* convex, extremal figures, peeling.

V. Chvátal. See also [388, 1144, 1755].

K.-Y. Chwa. See also [1212, 1213, 3245, 3246, 4331, 4332, 8045, 8646–8648, 8653, 8654, 10626, 12156, 12157, 13764].

3308 S. Chynoweth and M. J. Sewell. Mesh duality and legendre duality. *Proceedings Of The Royal Society Of London Series A-Mathematical And Physical Sciences*, 428(1875):351–377, 1990. [cs-mdld-90] *Annote:* Another proof of mapping between convex hull on paraboloid and DT in k dimensions.

3309 M. J. Cieselski and E. Kinnen. Digraph relaxation for two-dimensional placement of IC blocks. *IEEE Trans. Comput.-Aided. Design Integr. Circuits Syst.*, 6(1):55–66, 1987. [ck-drtdp-87] *Keywords:* geometric graphs, decomposition, placement, VLSI design, isothetic.

3310 D. Cieslik. The Fermat-Steiner-Weber problem in Minkowski spaces. *Optimization*, 19(4):485–489, 1988. [c-fswpm-88] *Keywords:* facility location.

3311 D. Cieslik. The Steiner ratio of Banach-Minkowski planes. In R. Bodendiek, editor, *Contemporary Methods in Graph Theory*, pages 231–248. BI-Wissenschaftsverlag, Mannheim, Germany, 1990. [c-srbmp-90]

3312 P. Cignoni, F. Ganovelli, C. Montani, and R. Scopigno. Reconstruction of topologically correct and adaptive trilinear isosurfaces. *Computers & Graphics*, 24(3):399–418, 2000. [cgms-rtcat-00]

3313 P. Cignoni, C. Montani, E. Puppo, and R. Scopigno. Optimal isosurface extraction from irregular volume data. In *Proc. IEEE Symposium on Volume Visuatization*, 1996. [cmps-oieiv-96]

3314 P. Cignoni, C. Montani, and R. Scopigno. A comparison of mesh simplification algorithms. In *Computers & Graphics*, volume 22. Pergamon Press. To appear; http://miles.cnuce.cnr.it/cg/bibliography.html. [cms-cmsa-98]

3315 P. Cignoni, C. Montani, and R. Scopigno. A comparison of mesh simplification algorithms. *Comput. & Graphics*, 22(1):37–54, 1998. [cms-cmsa-98-b]

3316 P. Cignoni, C. Montani, and R. Scopigno. A merge-first divide & conquer algorithm for E^d Delaunay triangulations. Technical report, Consiglio Nazionale delle Ricerche, Pisa, Italy, 1994. [cms-mfdca-94]

3317 P. Cignoni, C. Montani, and R. Scopigno. Triangulating convex polygons having t-vertices. *J. Graphics Tools*, 1(2):1–4, 1996. [cms-tcpht-96]

3318 V. Čik. The algorithm of constructing the triangulation of points. In *Počitačova grafika'89. Zb. Konf.*, pages 26–30, 1989. [c-actp-89] *Keywords:* point-set triangulation.

3319 R. J. Cimikowski. Finding Hamiltonian cycles in certain planar graphs. *Inform. Process. Lett.*, 35:249–254, 1990. [c-fhccp-90] *Keywords:* geometric graphs, Delaunay triangulation.

3320 R. J. Cimikowski. Properties of some Euclidean proximity graphs. *Pattern Recogn. Lett.*, 13(6):417–423, June 1992. [c-psepg-92]

G. J. Clapworthy. See also [13855].

A. Clare. See also [11078].

3321 A. R. Clare and A. M. Day. Experiments in the parallel computation of 3d convex hulls. *Comput. Graph. Forum*, 13(1):21–36, March 1994. [cd-epc3d-94]

Brett Clark. See also [1662].

3322 B. N. Clark, C. J. Colbourn, and D. S. Johnson. Unit disk graphs. *Discrete Math.*, 86(1–3):165–178, 1990. [ccj-udg-90] *Keywords:* geometric graphs, computational complexity, disks.

3323 Brett W. Clark and Steven E. Benzley. Development and evaluation of a degenerate seven-node hexahedron finite element. In *Proc. 5th International Meshing Roundtable*, pages 321–331, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [cb-dedsn-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

3324 J. Clark. A "vlsi" geometry processor for graphics. *Lambda*, 1(2), 1980. [c-vgpg-80] *Keywords:* parallel computation, computer graphics.

J. Clark. See also [2753].

3325 J. H. Clark. A fast algorithm for rendering parametric surfaces. In *Proc. SIGGRAPH '79*, pages 289–299, 1979. [c-farps-79]

3326 J. H. Clark. Designing surfaces in 3-d. *Commun. ACM*, 19:454–460, 1976. [c-ds3d-76]

3327 J. H. Clark. Hierarchical geometric models for visible surface algorithms. *Commun. ACM*, 19:547–554, 1976. [c-hgmvs-76]

3328 J. H. Clark. Parametric curves, surfaces and volumes in computer graphics and computer-aided geometric design. Typescript, NASA Ames Res. Center, 1978. [c-pcsvc-78]

3329 J. H. Clark. The geometry engine: a VLSI geometric system for graphics. *Comput. Graph.*, 16(3):127–133, 1982. [c-gevgs-82] *Keywords:* parallel computation, elementary geometry.

3330 K. C. Clarke. *Analytical and Computer Cartography*. Prentice Hall, Englewood Cliffs, NJ, 2nd edition, 1995. [c-acc-95]

3331 K. Clarkson. Computing a single face in arrangements of segments. Unpublished manuscript, ??, 1990. [c-csfas-90] *Keywords:* arrangements, randomized algorithms.

3332 K. Clarkson, H. Edelsbrunner, Leonidas J. Guibas, Micha Sharir, and Emo Welzl. Combinatorial complexity bounds for arrangements of curves and spheres. *Discrete Comput. Geom.*, 5:99–160, 1990. [cegsw-ccbac-90] *Keywords:* arrangements, complexity of faces, combinatorial geometry. *Succeeds:* cegsw-ccbac-88.

K. Clarkson. See also [6434].

3333 K. L. Clarkson. A bound on local minima of arrangements that implies the upper bound theorem. Manuscript, 1992. [c-blmat-92] *Comments:* proves that the number of local minima of k-level in hyperplane arrangement is $O(k^{d-1})$, derives upper bound thm from it.

3334 K. L. Clarkson. A bound on local minima of arrangements that implies the upper bound theorem. *Discrete Comput. Geom.*, 10:427–233, 1993. [c-blmat-93] *URL:* http://cm.bell-labs.com/who/clarkson/kmins.html. *Abstract:* This paper shows that the i-level of an arrangement of hyperplanes in E^d has at most $\binom{i+d-1}{d-1}$ local minima. This bound follows from ideas previously used to prove bounds on ($\leq k$)-sets. Using linear programming duality, the Upper Bound Theorem is obtained as a corollary, giving yet another proof of this celebrated bound on the number of vertices of a simple polytope in E^d with n facets.

3335 K. L. Clarkson. A Las Vegas algorithm for linear programming when the dimension is small. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 452–456, 1988. [c-lvalp-88] *URL:* http://netlib.bell-labs.com/netlib/att/cs/doc/88/2-lp2.ps. *Keywords:* convex, optimization, d-dimensional, design of algorithms, random sampling, expected-case analysis. *Annote:* finds smallest enclosing sphere of n points, d dimensions; expected time for n constraints, d variables is $O(d^2n) + (\lg(n/d^2))^{\lg d+2}O(d)^{d/2+O(1)}$.

3336 K. L. Clarkson. A probabilistic algorithm for the post office problem. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 175–184, 1985. [c-papop-85] *Keywords:* proximity, data structuring, probabilistic analysis, Voronoi diagrams, simplices. *Precedes:* c-racpq-88.

3337 K. L. Clarkson. A randomized algorithm for closest-point queries. *SIAM J. Comput.*, 17:830–847, 1988. [c-racpq-88] *Keywords:* proximity, data structuring, probabilistic analysis, Voronoi diagrams, simplices. *Succeeds:* c-papop-85.

3338 Kenneth L. Clarkson. Algorithms for polytope covering and approximation. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 246–252. Springer-Verlag, 1993. [c-apca-93]

3339 K. L. Clarkson. An algorithm for approximate closest-point queries. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 160–164, 1994. [c-aacpq-94] *Cites:* am-annqf-93, amnsw-oaann-94, as-rssua-90, b-acpqh-93, c-lvalp-88, c-apca-93, d-mescs-74, p-slpab-90, s-sosl-, v-namcf-89, y-cmstk-82, ZZZ.

3340 K. L. Clarkson. An algorithm for geometric minimum spanning trees requiring nearly linear expected time. *Algorithmica*, 4:461–469, 1989. [c-agmst-89] *Keywords:* minimum spanning trees, approximation, d-dimensional, bucketing, expected-case analysis, geometric graphs. *Succeeds:* c-fetaa-84. *Annote:* He gives a nearly linear expected time algorithm for n points uniformly distributed in a d-cube; time is $O(n\alpha(cn, n)$, with $c > 6$. See also [13138].

3341 K. L. Clarkson. Applications of random sampling in computational geometry, II. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 1–11, 1988. [c-arscg-88] *Precedes:* cs-arscg-89. *Cites:* ag-nssfs-86, ahwpgers-87, cegsw-ccbac-88, c-papop-85, c-narsc-87, cp-hrsaa-86, cs-adpch-88, csy-khrp-84, ctv-flvat-88i, e-acg-87, em-sstcd-88, es-pmc-74, gp-nkssn-84, hw-ensrq-87, ks-upcha-86, tv-otats-88, w-mksfs-86, y-gctsp-88, ZZZ.

3342 K. L. Clarkson. Approximation algorithms for planar traveling salesman tours and minimum-length triangulations. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 17–23, 1991. [c-aapts-91]

3343 K. L. Clarkson. Approximation algorithms for shortest path motion planning. In *Proc. 19th Annu. ACM Sympos. Theory Comput.*, pages 56–65, 1987. [c-aaspm-87] *Keywords:* motion planning, approximation, two-dimensional, three-dimensional, Voronoi diagrams.

3344 K. L. Clarkson. Fast algorithms for the all nearest neighbors problem. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 226–232, 1983. [c-faann-83] *Keywords:* proximity, bucketing, approximation, probabilistic analysis.

3345 K. L. Clarkson. Fast expected time and approximation algorithms for geometric minimum spanning trees. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 342–348, 1984. [c-fetaa-84] *Keywords:* minimum spanning trees, approximation, d-dimensional, bucketing, expected-case analysis, geometric graphs. *Precedes:* c-agmst-89.

3346 K. L. Clarkson. Further applications of random sampling to computational geometry. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 414–423, 1986. [c-farsc-86] *Precedes:* c-narsc-87.

3347 K. L. Clarkson. Las Vegas algorithms for linear and integer programming. *J. ACM*, 42:488–499, 1995. [c-lvali-95] *Keywords:* convex, optimization, d-dimensional, random sampling.

3348 K. L. Clarkson. Las Vegas algorithms for linear and integer programming when the dimension is small. Manuscript, ??, October 1989. [c-lvali-89]

3349 K. L. Clarkson. Linear programming in $O(n3^{d^2})$ time. *Inform. Process. Lett.*, 22:21–24, 1986. [c-lpot-86] *Keywords:* linear programming, d-dimensional, prune-and-search.

3350 K. L. Clarkson. More output-sensitive geometric algorithms. In *Proc. 35th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 695–702, 1994. [c-mosga-94]

3351 K. L. Clarkson. Nearest neighbor queries in metric spaces. In *Proc. 29th Annu. ACM Sympos. Theory Comput.*, pages 609–617, 1997. [c-nnqms-97]

3352 K. L. Clarkson. New applications of random sampling in computational geometry. *Discrete Comput. Geom.*, 2:195–222, 1987. [c-narsc-87] *Keywords:* combinatorial geometry, data structuring, reporting, searching, separation, range search, point location, probabilistic analysis, triangulations, d-dimensional. *Succeeds:* c-farsc-86.

3353 K. L. Clarkson. Randomized geometric algorithms. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*, pages 117–162. World Scientific, Singapore, 1992. [c-rga-92] *Keywords:* survey paper, randomized algorithms, range spaces, VC dimension, incremental algorithms, k-sets, cuttings. *Precedes:* c-rga-95.

3354 Kenneth L. Clarkson. Randomized geometric algorithms. In Ding-Zhu Du and Frank Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 149–194. World

Scientific, Singapore, 2nd edition, 1995. [c-rga-95] *Keywords:* survey paper, randomized algorithms, range spaces, VC dimension, incremental algorithms, k-sets, cuttings. *Succeeds:* c-rga-92.

3355 K. L. Clarkson. Safe and effective determinant evaluation. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 387–395, October 1992. [c-sede-92]

3356 K. L. Clarkson, R. Cole, and R. E. Tarjan. Erratum: Randomized parallel algorithms for trapezoidal diagrams. *Internat. J. Comput. Geom. Appl.*, 2(3):341–343, 1992. [cct-erpat-92] *Keywords:* randomized, parallel, trapezoidal diagram, triangulation. *Succeeds:* cct-rpatd-92.

3357 K. L. Clarkson, R. Cole, and R. E. Tarjan. Randomized parallel algorithms for trapezoidal diagrams. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 152–161, 1991. [cct-rpatd-91] *Keywords:* random sampling, polygon, triangulation. *Precedes:* cct-rpatd-92. *Cites:* acg-cdctd-89, amdplr-88, ce-oails-88, c-tsplt-90i, ci-tsc-84, c-pms-88, cs-arscg-89, ctv-flvat-89, cv-dctao-86, e-acg-87, fm-tspep-84, g-ilspo-89, g-tpp-89, gsg-pmvsp-89, hjw-epcah-90, m-fppa1-88, rr-ostrp-89, s-sfira-90, ZZZ.

3358 K. L. Clarkson, R. Cole, and R. E. Tarjan. Randomized parallel algorithms for trapezoidal diagrams. *Internat. J. Comput. Geom. Appl.*, 2(2):117–133, 1992. [cct-rpatd-92] *Keywords:* randomized, parallel, trapezoidal diagram, triangulation. *Succeeds:* cct-rpatd-91. *Precedes:* cct-erpat-92.

3359 K. L. Clarkson, H. Edelsbrunner, Leonidas J. Guibas, Micha Sharir, and Emo Welzl. Combinatorial complexity bounds and arrangements of curves and spheres. Technical Report R88/1470, Univ. Illinois, Urbana, IL, November 1988. [cegsw-ccbac-88t]

3360 K. L. Clarkson, H. Edelsbrunner, Leonidas J. Guibas, Micha Sharir, and Emo Welzl. Combinatorial complexity bounds for arrangements of curves and surfaces. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 568–579, 1988. [cegsw-ccbac-88] *Keywords:* discrete geometry, extremal problems, bipartite graphs, arrangements of curves and surfaces, triangulations, probabilistic counting, zones, Davenport-Schinzel sequences, counting distances. *Precedes:* cegsw-ccbac-90.

3361 K. L. Clarkson, D. Eppstein, G. L. Miller, C. Sturtivant, and S.-H. Teng. Approximating center points with iterated Radon points. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 91–98, 1993. [cemst-acpir-93] *Precedes:* cemst-acpir-96. *Cites:* abfk-pswen-91, b-rg-85, c-lvalp-88, cm-ltdao-93, csy-khrp-87, dgk-htir-63, d-ltatt-84, e-acg-87, fmt-sbpdc-92, gmt-gampi-92, hw-ensrq-87, jm-ccfps-93, lrt-gnd-79, m-aogdc-91, m-ltalp-83, mt-cppd-90, mt-sttd-90, mttv-amp-92, mtv-ugags-91, mv-dgs-91, t-pssug-90, v-smfmf-84, vc-ucrfe-71, y-3spia-83, ZZZ.

3362 K. L. Clarkson, D. Eppstein, G. L. Miller, C. Sturtivant, and S.-H. Teng. Approximating center points with iterative Radon points. *Internat. J. Comput. Geom. Appl.*, 6:357–377, 1996. [cemst-acpir-96] *Succeeds:* cemst-acpir-93.

3363 K. L. Clarkson, S. Kapoor, and P. M. Vaida. Rectilinear shortest paths through polygonal obstacles in $O(n \log^{3/2} n$ time. Submitted for publication, ?? [ckv-rsptp-]

3364 K. L. Clarkson, S. Kapoor, and P. M. Vaidya. Rectilinear shortest paths through polygonal obstacles in $O(n(\log n)^2)$ time. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 251–257, 1987. [ckv-rsptp-87] *Cites:* d-ntpcg-59, gs-canen-83, ll-fmrdp-81, lp-esppr-84, lw-apcfp-79, rlw-rsprb-85, ZZZ.

3365 K. L. Clarkson, K. Mehlhorn, and R. Seidel. Four results on randomized incremental constructions. Report MPI-I-92-112, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [cms-frric-92t] *Precedes:* cms-frric-92i.

3366 K. L. Clarkson, K. Mehlhorn, and R. Seidel. Four results on randomized incremental constructions. In *Proc. 9th Sympos. Theoret. Aspects Comput. Sci.*, volume 577 of *Lecture Notes Comput. Sci.*, pages 463–474. Springer-Verlag, 1992. [cms-frric-92i] *Succeeds:* cms-frric-92t. *Precedes:* cms-frric-93.

3367 K. L. Clarkson, K. Mehlhorn, and R. Seidel. Four results on randomized incremental constructions. *Comput. Geom. Theory Appl.*, 3(4):185–212, 1993. [cms-frric-93] *Succeeds:* cms-frric-92i.

3368 K. L. Clarkson and P. W. Shor. Algorithms for diametral pairs and convex hulls that are optimal, randomized, and incremental. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 12–17, 1988. [cs-adpch-88] *Keywords:* random sampling, k-sets, convex hulls, diameter. *Cites:* c-bvdcp-86, c-arscg-88, e-acg-87, eks-sspp-83, eos-calha-86, h-bevv-56, ph-chfsp-77, ps-cgi-85, ZZZ.

3369 K. L. Clarkson and P. W. Shor. Applications of random sampling in computational geometry, II. *Discrete Comput. Geom.*, 4:387–421, 1989. [cs-arscg-89] *Succeeds:* c-arscg-88.

3370 K. L. Clarkson, R. E. Tarjan, and C. J. Van Wyk. A fast Las Vegas algorithm for triangulating a simple polygon. Technical Report CS-TR-157-88, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, 1988. [ctv-flvat-88t] *Precedes:* ctv-flvat-88i. *Annote:* $O(n \log^* n)$ expected time.

3371 K. L. Clarkson, R. E. Tarjan, and C. J. Van Wyk. A fast Las Vegas algorithm for triangulating a simple polygon. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 18–22, 1988. [ctv-flvat-88i] *Succeeds:* ctv-flvat-88t. *Precedes:* ctv-flvat-89. *Cites:* c-narsc-87, c-arscg-88, ci-tsc-84, es-pmc-74, fm-tspep-84, gjpt-tsp-78, hw-ensrq-87, hmrt-sjslt-86, ps-cgi-85, r-pta-84, tv-otats-88, ZZZ. *Annote:* $O(n \log^* n)$ expected time.

3372 K. L. Clarkson, R. E. Tarjan, and C. J. Van Wyk. A fast Las Vegas algorithm for triangulating a simple polygon. *Discrete Comput. Geom.*, 4:423–432, 1989. [ctv-flvat-89] *Keywords:* triangulation, simple polygon, random sampling. *Succeeds:* ctv-flvat-88i.

K. L. Clarkson. See also [1638].

Michael Clausen. See also [2590].

R. D. Clear. See also [13384].

3373 J. G. Cleary. Analysis of an algorithm for finding nearest neighbors in Euclidean space. *ACM Trans. Math. Softw.*, 5:183–192, 1979. [c-aafnn-79]

3374 J. G. Cleary, B. Wyvill, G. M. Birtwistle, and R. Vatti. Multiprocessor ray tracing. *Comput. Graph. Forum*, 5:3–12, 1986. [cwbv-mrt-86]

3375 J. L. Cleary. Analysis of an algorithm for fast ray tracing using uniform space subdivision. *Visual Comput.*, 4(2):65–83, 1988. [c-aafrt-88] *Keywords:* ray tracing, computer graphics.

A. Clément. See also [7541].

J. C. Clements. See also [2061].

3376 C. W. Clenshaw, F. W. J. Olver, and P. R. Turner. Level-index arithmetic: an introductory survey. In P. R. Turner, editor, *Numerical Analysis and Parallel Processing*, volume 1397 of *Lecture Notes Math.*, pages 95–168. Springer-Verlag, 1987. [cot-liais-87]

3377 A. K. Cline and R. J. Renka. A constrained 2-dimensional triangulation and the solution of closest node problems in the presence of barriers. *SIAM J. Numer. Anal.*, 27(5):1305–1321, 1990. [cr-c2dts-90] *Annote:* Algorithm for CDT. Compute DT. Sequentially insert constraint edges. Uses selection algorithm to retriangulate resulting polygons in time $O(k^3)$ which seems rather pessimistic. (k is number of triangles intersected by inserted edge.). *Abstract:* A Delaunay triangulation of a set of nodes is a collection of triangles whose vertices are at the nodes and whose union fills the convex hull of the set of nodes. It also has several geometrical properties, making it useful for solving closest point problems. The generalization presented here allows the triangulation to cover nonconvex regions including those with holes. Although a variety of such generalizations are possible, the one presented here is shown to retain important closest point characteristics. Thus it is useful for determining shortest paths within planar regions with polygonal boundaries. (Author abstract) 11 Refs.

3378 A. K. Cline and R. J. Renka. A generalized Delaunay triangulation and the solution of closest node problems in the presence of barriers. Report ??, Univ. Texas Austin, Austin, TX, 1985. [cr-gdtsc-85]

3379 A. K. Cline and R. L. Renka. A storage-efficient method for construction of a Thiessen triangulation. *Rocky Mountain J. Math.*, 14(1):119–140, 1984. [cr-semct-84]

A. K. Cline. See also [11176].

H. Cline. See also [8976].

3380 H. E. Cline, W. E. Lorensen, S. Ludke, C. R. Crawford, and B. C. Teeter. Two algorithms for the three-dimensional reconstruction of tomograms. *Medical Physics*, 15:320–327, 1988. [cllct-tatdr-88]

3381 J. Cloutier and I. Bennour. Topological characterization of Hwang's optimal Steiner tree. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 157–162, 1993. [cb-tchos-93] *Cites:* gj-rstpi-77, ggj-ccsmt-77, h-sprd-66, h-smtrd-76, p-tncfs-92, s-rgrsm-91, as-escrs-90, bc-arstp-92, crs-ostan-90, hr-stp-92, rs-sphtr-91, p-cstp-88, ZZZ.

J. Cloutier. See also [1615].

3382 R. du Cloux, G. P. J. F. M. Maas, A. J. H. Wachters, R. F. Milsom, and K. J. Scott. Fasterix, an environment for PCB simulation. In *Proc. 11th Internat. Conf. on EMC*, 1993. [cmwms-feps-93]

3383 E. Clufff, R. Burton, and W. A. Barrett. A survey and characterization of multidimensional representation techniques. *J. Imag. Technol.*, 17(4):142–153, 1991. [cbb-scmrt-91] *Keywords:* survey data structuring, d-dimensional.

3384 F. Javier Cobos, J. Carlos Dana, Clara I. Grima, and Alberto Marquez. Diameter of a set on the cylinder. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 164–168, 1997. [cdgm-dsc-97]

3385 F. Javier Cobos, J. Carlos Dana, Clara I. Grima, and Alberto Marquez. The width of a convex set on the sphere. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 159–163, 1997. [cdgm-wcss-97]

Francisco Javier Cobos. See also [2749].

3386 R. Cocan and J. O'Rourke. Polygonal chains cannot lock in 4D. Technical Report 063, Smith College, Northampton, MA, July 1999. Full version LANL arXive cs.CG/9908005 (Revised Feb. 01); to appear in *Comput. Geom. Theory Appl.* [co-pccl4d-99a]

3387 R. Cocan and J. O'Rourke. Polygonal chains cannot lock in 4D. In *Proc. 11th Canad. Conf. Comput. Geom.*, pages 5–8, 1999. [co-pccl4d-99b]

3388 R. Cocan and J. O'Rourke. Polygonal chains cannot lock in 4D. *Comput. Geom. Theory Appl.*, 20:105–129, 2001. [co-pccl4d-01] *Succeeds:* co-pccl4d-99a.

3389 E. J. Cockayne. Computation of minimal length full Steiner trees on the vertices of a convex polygon. *Math. Comput.*, 23:521–531, 1969. [c-cmlfs-69]

3390 E. J. Cockayne. On the efficiency of the algorithm for Steiner minimal trees. *SIAM J. Appl. Math.*, 18:150–159, 1970. [c-easmt-70]

3391 E. J. Cockayne. On the Steiner problem. *Canad. Math. Bull.*, 10:431–450, 1967. [c-sp-67]

3392 E. J. Cockayne and G. W. C. Hall. Plane motion of a particle subject to curvature constraints. *SIAM J. Control*, 13(1):197–220, 1975. [ch-pmpsc-75]

3393 E. J. Cockayne and D. E. Hewgill. Exact computation of Steiner minimal trees in the plane. *Inform. Process. Lett.*, 22(3):151–156, 1986. [ch-ecsmt-86] *Keywords:* Steiner tree.

3394 E. J. Cockayne and D. E. Hewgill. Improved computation of plane Steiner minimal trees. *Algorithmica*, 7:219–229, 1992. [ch-icpsm-92]

3395 E. J. Cockayne and Z. A. Melzak. On Steiner's problem for set-terminals. *Appl. Math.*, 26:213–218, 1968. [cm-spst-68]

3396 E. J. Cockayne and D. G. Schiller. Computation of Steiner minimal trees. In D. J. A. Welsh and D. R. Woodall, editors, *Combinatorics (Conference on Combinatorial Mathematics)*, pages 53–71, Southend-on-Sea, Essex, England, 1972. Institute of Math. and its applications. [cs-csmt-72]

3397 S. T. Coffin. *The Puzzling World of Polyhedral Dissections*. Oxford University Press, 1991. [c-pwpd-91]

3398 E. G. Coffman, Jr. M. R. Garey, D. S. Johnson, and R. E. Tarjan. Performance bounds for level-oriented two-dimensional packing algorithms. *SIAM J. Comput.*, 9:808–826, 1980. [cgjt-pblot-80]

3399 E. G. Coffman and E. N. Gilbert. Paths through a maze of rectangles. *Networks*, 22(4):349–367, July 1992. [cg-ptmr-92] *Keywords:* competitive analysis, shortest paths, online navigation.

3400 E. G. Coffman, Jr. and J. C. Lagarias. Algorithms for packing squares: A probabilistic analysis. *SIAM J. Comput.*, 18:166–185, 1989. [cl-apspa-89]

3401 E. G. Coffman, Jr. and P. W. Shor. A simple proof of the $O(\sqrt{n}\log^{3/4}(n))$ upright matching bound. *SIAM J. Discrete Math.*, 4(1):48–57, 1991. [cjs-spoum-91] *Keywords:* points.

E. G. Coffman, Jr. See also [1301].

A. M. Cohen. See also [2502].

3402 Daniel Cohen. Voxel traversal along a 3D line. In Paul Heckbert, editor, *Graphics Gems IV*, pages 366–369. Academic Press, Boston, MA, 1994. [c-vta3d-94] *Keywords:* digital line drawing, grid traversal, ray tracing, scan conversion. *Annote:* Visits all the voxels along a 3D line segment with integer endpoints, something like a 3D Bresenham's algorithm. This code could be modified to take endpoints with fixed point coordinates. Then the algorithm could be very useful for ray tracing, when a uniform grid is being used as a spatial data structure for optimization, or for volume rendering of grid data. Contains C code.

D. Cohen. See also [7908, 7947].

3403 E. Cohen. A new local basis for designing with tensioned splines. *ACM Trans. Graph.*, 6:81–122, 1987. [c-nlbdt-87]

3404 E. Cohen. Fast algorithms for constructing t-spanners and paths with stretch t. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, 1993. [c-facts-93]

3405 E. Cohen. Fast algorithms for constructing t-spanners and paths with stretch t. *SIAM J. Comput.*, 28:210–236, 1998. [c-facts-98]

3406 E. Cohen, T. Lyche, and R. Riesenfeld. Discrete B-splines and subdivison techniques in computer-aided geometric design and computer graphics. *Comput. Graph. Image Process.*, 14(2):87–110, 1980. [clr-dbsst-80]

3407 E. Cohen, T. Lyche, and L. L. Schumaker. Algorithms for degree-raising of splines. *ACM Trans. Graph.*, 4:171–181, 1985. [cls-adrs-85]

3408 E. Cohen and N. Megiddo. Improved algorithms for linear inequalities with two variables per inequality. In *Proc. 23th Annu. ACM Sympos. Theory Comput.*, pages 145–155, 1991. [cm-ialit-91] *Keywords:* linear programming, Monte Carlo.

3409 E. Cohen and N. Megiddo. Maximizing concave functions in fixed dimension. In P. Pardalos, editor, *Complexity in Numeric Computation*, pages 74–87. World Scientific, Singapore, 1993. [cm-mcffd-93]

3410 E. Cohen and N. Megiddo. Strongly polynomial time and NC algorithms for detecting cycles in dynamic graphs. In *Proc. 21st Annu. ACM Sympos. Theory Comput.*, pages 523–534, 1989. [cm-sptna-89]

E. Cohen. See also [4848].

3411 J. Cohen and T. Hickey. Two algorithms for determining volumes of convex polyhedra. *J. ACM*, 26:401–414, 1979. [ch-tadvc-79]

3412 J. Cohen, D. Manocha, and M. Olano. Simplifying polygonal models using successive mappings. In *Proc. IEEE Visualization '97*, pages 395–402, 1997. [cmo-spmusm-97]

3413 J. Cohen, M. Olano, and D. Manocha. Appearance-preserving simplification. In *Proc. SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, pages 115–122, July 1998. [com-aps-98]

3414 J. Cohen, A. Varshney, D. Manocha, G. Turk, H. Weber, Pankaj Agarwal, F. P. Brooks, Jr., and W. V. Wright. Simplification envelopes. In *Proceedings of SIGGRAPH '96 (New Orleans, LA, August 4–9, 1996)*, Computer Graphics Proceedings, Annual Conference Series, pages 119–128. ACM SIGGRAPH, ACM Press, August 1996. [cvmtwabw-se-96]

J. Cohen. See also [7192].

3415 J. D. Cohen, M. C. Lin, D. Manocha, and M. K. Ponamgi. Exact collision detection for interactive environments. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 391–392, 1994. [clmp-ecdie-94] *Keywords:* video review. *Cites:* clmp-iecdl-94, l-ecdar-93, ZZZ.

3416 J. D. Cohen, M. C. Lin, D. Manocha, and M. K. Ponamgi. I-collide: An interactive and exact collision detection system for large-scale environments. In *Proc. ACM Interactive 3D Graphics Conf.*, pages 189–196, 1995. [clmp-iciec-95] *Succeeds:* clmp-iecdl-94.

3417 J. D. Cohen, M. C. Lin, D. Manocha, and M. K. Ponamgi. Interactive and exact collision detection for large-scaled environments. Technical Report TR94-005, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, 1994. [clmp-iecdl-94] *Precedes:* clmp-iciec-95.

L. Cohen. See also [1198].

3418 M. Cohen and S. Grossberg. Absolute stability of global pattern formation and parallel memory storage by competitive neural networks. *IEEE Trans. Syst. Man Cybern.*, 13:815–825, 1983. [cg-asgpf-83]

3419 M. Cohen and J. Wallace. *Radiosity and Realistic Image Synthesis*. Academic Press, 1993. [cw-rris-93]

3420 M. F. Cohen, D. R. Baum, J. R. Wallace, and D. P. Greenberg. The back-buffer algorithm: An extension of the radiosity method to dynamic environments. *Visual Comput.*, 2(5):298–306, September 1986. [cbwg-bbaer-86]

3421 M. F. Cohen and D. P. Greenberg. The hemicube: a radiosity solution for complex environments. *Comput. Graph.*, 19(3):31–40, 1985. Proc. SIGGRAPH '85. [cg-hrsce-85]

3422 D. Cohen-Or, G. Fibich, D. Halperin, and E. Zadicario. Conservative visibility and strong occlusion for viewspace partitioning of densely occluded scenes. *Comput. Graph. Forum*, 17:C243–C253, 1998. Eurographics '98. [cfhz-cvsov-98]

3423 R. F. Cohen, G. Di Battista, A. Kanevsky, and R. Tamassia. Reinventing the wheel: an optimal data structure for connectivity queries. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 194–200, 1993. [cdkt-rwods-93]

3424 R. F. Cohen, G. Di Battista, R. Tamassia, and I. G. Tollis. Dynamic graph drawings: Trees, series-parallel digraphs, and planar *ST*-digraphs. *SIAM J. Comput.*, 24(5):970–1001, 1995. [cdtt-dgdts-95] *URL:* http://www.cs.brown.edu/cgc/papers/cdtt-dgdts-95.ps.gz. *Keywords:* graph drawing, dynamic, planar, trees, series-parallel. *Succeeds:* cdttb-fdgd-92.

3425 R. F. Cohen, G. Di Battista, R. Tamassia, I. G. Tollis, and P. Bertolazzi. A framework for dynamic graph drawing. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 261–270, 1992. [cdttb-fdgd-92] *Keywords:* graph drawing. *Cites:* bst-bst-85, bdudttd-91, bdtt-hdspd-91, cnao-laepg-85, ct-detta-91, dt-aprad-88, dt-ipt-89, dtt-arsdd-89, dlt-pepg-84, el-hddg-89, et-adgab-89, egs-oplms-86, eittwy-mmsfd-92, fhhklsww-dgphr-90i, fpp-hdpgg-90, gt-dtdpl-91, gy-tsr-83, hl-updss-91, lec-aptg-67, m-ddt-90, o-agta-87, pt-fdplm-89, rt-tdt-81, rt-rplbo-86, s-epgg-90, st-dsdt-83, stt-mvuhs-81, sr-cdtn-83, t-eggmn-87, t-ddspg-88, tp-dmpda-90, tt-uavrp-86, tt-pgelt-89, tt-trpg-89, tt-rgc-91, tv-ptcpl-91, t-paog-89, vtl-rspd-82, kw-wvgbr-89, ZZZ.

3426 R. F. Cohen, P. Eades, T. Lin, and F. Ruskey. Three-dimensional graph drawing. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 1–11. Springer-Verlag, 1995. [celr-tdgd-95] *Keywords:* graph drawing, 3D. *Precedes:* celr-tdgd-96.

3427 R. F. Cohen, P. Eades, T. Lin, and F. Ruskey. Three-dimensional graph drawing. *Algorithmica*, 17:199–208, 1997. [celr-tdgd-96] *Succeeds:* celr-tdgd-95.

3428 R. F. Cohen, S. Sairam, R. Tamassia, and J. S. Vitter. Dynamic algorithms for optimization problems in bounded tree-width graphs. In *Proc. of the Third Conference on Integer Programming and Combinatorial Optimization*, pages 99–112, 1993. [cstv-daopb-93]

3429 R. F. Cohen and R. Tamassia. Combine and conquer. Report CS-92-19, Comput. Sci. Dept., Brown Univ., Providence, RI, 1992. [ct-cc-92]

3430 Robert F. Cohen and Roberto Tamassia. Combine and conquer. *Algorithmica*, 18:342–362, 1997. [ct-cc-97] *Succeeds:* ct-ccgtd-93.

3431 Robert F. Cohen and Roberto Tamassia. Combine and conquer: A general technique for dynamic algorithms. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 97–108. Springer-Verlag, 1993. [ct-ccgtd-93]

3432 R. F. Cohen and R. Tamassia. Dynamic expression trees. *Algorithmica*, 13:245–265, 1995. [ct-det-95] *URL:* http://www.cs.brown.edu/cgc/papers/ct-det-95.ps.gz. *Succeeds:* ct-detta-91.

3433 R. F. Cohen and R. Tamassia. Dynamic expression trees and their applications. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 52–61, 1991. [ct-detta-91]

R. F. Cohen. See also [1855–1857,1925, 4571,10929,10930].

3434 S. D. Cohen and Leonidas J. Guibas. Partial matching of planar polylines under similarity transformations. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 777–786, January 1997. [cg-pmpps-97]

3435 David Cohen-Steiner, Eric Colin de Verdière, and Mariette Yvinec. Conforming Delaunay triangulations in 3d. In *Proc. 18th Annu. ACM Sympos. Comput. Geom.*, 2002. [ccy-cdt3-02]

S. Cohn-Vossen. See also [6914].

J. Cohon. See also [10956].

3436 J. P. Cohoon, D. S. Richards, and J. S. Salowe. An optimal Steiner tree algorithm for a net whose terminals lie on the perimeter of a rectangle. *IEEE Trans. Comput.-Aided. Design Integr. Circuits Syst.*, 9(4):398–407, 1990. [crs-ostan-90] *Keywords:* Steiner tree.

J. P. Cohoon. See also [5735–5737].

C. J. Colbourn. See also [3322,13322].

3437 A. C. F. Colchester, G. P. Robinson, and L. D. Griffin. A unified approach to the segmentation of grey-level and dot-pattern. In *Proc. 11th IEEE Internat. Conf. Pattern Recogn.*, pages 319–322, 1992. [crg-uasgl-92]

3438 A. J. Cole. A note on spacefilling curves. *Softw. – Pract. Exp.*, 13(12):1181–1189, 1983. [c-nsc-83]

3439 R. Cole. An optimally efficient selection algorithm. *Inform. Process. Lett.*, 26:295–299, 1987. [c-oesa-87]

3440 R. Cole. Parallel merge sort. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 511–516, 1986. [c-pms-86]

3441 R. Cole. Parallel merge sort. *SIAM J. Comput.*, 17(4):770–785, 1988. [c-pms-88]

3442 R. Cole. Partitioning point sets in 4 dimensions. In *Proc. 12th Internat. Colloq. Automata Lang. Program.*, volume 194 of *Lecture Notes Comput. Sci.*, pages 111–119. Springer-Verlag, 1985. [c-pps4d-85] *Keywords:* data structuring, 4-dimensional, points, counting. *Succeeds:* c-ppsad-?? *Precedes:* c-ppsad-87.

3443 R. Cole. Partitioning point sets in arbitrary dimensions. Report 184, Dept. Comput. Sci., New York Univ., New York, NY, ?? [c-ppsad-??] *Keywords:* data structuring, d-dimensional, points, counting. *Precedes:* c-pps4d-85.

3444 R. Cole. Partitioning point sets in arbitrary dimensions. *Theoret. Comput. Sci.*, 49:239–265, 1987. [c-ppsad-87] *Keywords:* data structuring, d-dimensional, points, counting. *Succeeds:* c-pps4d-85.

3445 R. Cole. Searching and storing similar lists. Technical Report 88, New York Univ., October 1983. [c-sssl-83] *Precedes:* c-sssl-86.

3446 R. Cole. Searching and storing similar lists. *J. Algorithms*, 7:202–220, 1986. [c-sssl-86] *Keywords:* searching, data structuring, point location. *Succeeds:* c-sssl-83.

3447 R. Cole. Slowing down sorting networks to obtain faster sorting algorithms. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 255–260, 1984. [c-sdsno-84] *Keywords:* parallel computation, network algorithms, sorting, searching, design of algorithms. *Precedes:* c-sdsno-87.

3448 R. Cole. Slowing down sorting networks to obtain faster sorting algorithms. *J. ACM*, 34(1):200–208, 1987. [c-sdsno-87] *Succeeds:* c-sdsno-84.

3449 R. Cole and M. T. Goodrich. Optimal parallel algorithms for polygon and point-set problems. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 201–210, 1988. [cg-opapp-88] *Precedes:* cg-opapp-92. *Cites:* acgoy-pcg-85, acg-cdctd-87, ag-epssg-86, ag-pasft-88, bs-dcms-76, bn-absop-86, c-pagp-80, c-pms-86, g-eptcg-87, g-fchsp-87, grs-kfcg-83, krs-ppp-85, lf-ppc-80, lp-annpc-78, lp-oafkp-79, pm-finhs-79, s-gc-75, t-sgprc-83, w-opach-85, ZZZ.

3450 R. Cole and M. T. Goodrich. Optimal parallel algorithms for polygon and point-set problems. *Algorithmica*, 7:3–23, 1992. [cg-opapp-92] *Succeeds:* cg-opapp-88.

3451 R. Cole, M. T. Goodrich, and C. Ó'Dúnlaing. A nearly optimal deterministic parallel Voronoi diagram algorithm. *Algorithmica*, 16:569–617, 1996. [cgo-anodp-96]

3452 R. Cole, M. T. Goodrich, and C. Ó'Dúnlaing. Merging free trees in parallel for efficient Voronoi diagram construction. In *Proc. 17th Internat. Colloq. Automata Lang. Program.*, volume 443 of *Lecture Notes Comput. Sci.*, pages 432–445. Springer-Verlag, 1990. [cgo-mftpe-90]

3453 R. Cole, J. Salowe, W. Steiger, and E. Szemerédi. An optimal-time algorithm for slope selection. *SIAM J. Comput.*, 18(4):792–810, 1989. [csss-otass-89] *Keywords:* arrangements, d-dimensional, points, counting, parametric search technique.

3454 R. Cole, J. Salowe, W. Steiger, and E. Szemerédi. Optimal slope selection. In *??*, volume 318 of *Lecture Notes Comput. Sci.*, pages 133–146. 1988. [csss-oss-88]

3455 R. Cole and Micha Sharir. Visibility problems for polyhedral terrains. Technical Report 266, ??, December 1986. [cs-vppt-86]

3456 R. Cole and Micha Sharir. Visibility problems for polyhedral terrains. *J. Symbolic Comput.*, 7:11–30, 1989. [cs-vppt-89] *Keywords:* locus approach, decomposition, searching, rays, visibility, three-dimensional, polyhedra, polyhedral terrain.

3457 R. Cole, Micha Sharir, and C. K. Yap. On k-hulls and related problems. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 154–166, 1984. [csy-khrp-84] *Precedes:* csy-khrp-87.

3458 R. Cole, Micha Sharir, and C. K. Yap. On k-hulls and related problems. *SIAM J. Comput.*, 16:61–77, 1987. [csy-khrp-87] *Keywords:* design of algorithms, searching, two-dimensional, three-dimensional. *Succeeds:* csy-khrp-84.

3459 R. Cole and A. Siegel. River routing every which way, but loose. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 112–121, November 1983. [cs-rreww-83]

3460 R. Cole and A. Siegel. River routing every which way, but loose. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 65–73, 1984. [cs-rreww-84]

3461 R. Cole and U. Vishkin. Approximate and exact parallel scheduling with applications to list, tree, and graph problems. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 478–491, 1986. [cv-aepsa-86]

3462 R. Cole and U. Vishkin. Approximate parallel scheduling, part i: the basic technique with applications to optimal parallel list ranking in logarithmic time. *SIAM J. Comput.*, 17(1):128–142, 1988. [cv-apsp1-88]

3463 R. Cole and U. Vishkin. Deterministic coin tossing and accelerating cascades: Micro and macro techniques for designing parallel algorithms. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 206–219, 1986. [cv-dctac-86i]

3464 R. Cole and U. Vishkin. Deterministic coin tossing with applications to optimal list ranking. *Inform. Control*, 1:153–174, 1986. [cv-dctao-86]

3465 R. Cole and U. Vishkin. Faster optimal parallel prefix sums and list ranking. *Inform. Comput.*, 81(3):334–352, June 1989. [cv-fopps-89]

3466 R. Cole and U. Vishkin. The accelerated centroid decomposition technique for optimal parallel tree evaluation in logarithmic time. *Algorithmica*, 3:329–346, 1988. [cv-acdto-88]

3467 R. Cole and C. K. Yap. Geometric retrieval problems. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 112–121, 1983. [cy-grp-83] *Precedes:* cy-grp-84.

3468 R. Cole and C. K. Yap. Geometric retrieval problems. *Inform. Control*, 63:39–57, 1984. [cy-grp-84] *Keywords:* locus approach, reporting, subdivisions, points. *Succeeds:* cy-grp-83.

3469 R. Cole and C.-K. Yap. Shape from probing. Technical Report 15, Courant Inst. Math. Sci., New York Univ., New York, NY, December 1983. [cy-sp-83]

3470 R. Cole and C. K. Yap. Shape from probing. *J. Algorithms*, 8(1):19–38, March 1987. [cy-sp-87] *Keywords:* detection, probing, two-dimensional, worst-case analysis, lower bounds.

3471 R. Cole and O. Zajicek. An optimal parallel algorithm for building a data structure for planar point location. *J. Parallel Distrib. Comput.*, 8:280–285, 1990. [cz-opabd-90]

3472 R. Cole and O. Zajicek. The APRAM: Incorporating asynchrony into the PRAM model. In *Proc. 1st ACM Sympos. Parallel Algorithms Architect.*, pages 169–178, 1989. [cz-aiapm-89]

3473 R. Cole and O. Zajicek. The expected advantage of asynchrony. In *Proc. 2nd ACM Sympos. Parallel Algorithms Architect.*, pages 85–94, 1990. [cz-eaa-90]

R. Cole. See also [1023–1025, 2939, 2940, 3356–3358, 12074].

3474 G. Coleman and H. Andrews. Image segmentation by clustering. In *Proceedings of the IEEE.*, pages 773–785, 1979. [ca-isc-79]

Eric Colin de Verdière. See also [3435].

3475 Narcis Coll and Joan Antoni Sellarès. Planar shape reconstruction from random sections. In *Abstracts 17th European Workshop Comput. Geom.*, pages 121–124. Freie Universität Berlin, 2001. [cs-psrrs-01]

3476 P. Colley. Visibility graphs of uni-monotone polygons. Master's thesis, Univ. Waterloo, 1991. [c-vgump-91] *Keywords:* master thesis.

3477 P. Colley, A. Lubiw, and J. Spinrad. Visibility graphs of towers. *Comput. Geom. Theory Appl.*, 7:161–172, 1997. [cls-vgt-97]

3478 Paul Colley, Hank Meijer, and David Rappaport. Motivating lazy guards. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 121–126, 1995. [cmr-mlg-95]

3479 P. Colley, H. Meijer, and D. Rappaport. Optimal nearly-similar polygon stabbers of convex polygons. Technical Report CISC-94-357, Queen's University, 1994. [cmr-onsps-94t] *Precedes:* cmr-onsps-94.

3480 P. Colley, H. Meijer, and D. Rappaport. Optimal nearly-similar polygon stabbers of convex polygons. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 269–274, 1994. [cmr-onsps-94] *Succeeds:* cmr-onsps-94t. *Cites:* abeact-87, ad-ahdsp-87, bcetsu-csts-91, mkb-caocp-93, cmr-onsps-94t, e-acg-87, emprww-sls-82, ew-spdtl-89, gpw-gtt-91, mr-mpcpl-90, o-olafs-81, r-mptls-92, aw-plts-88, e-ftssg-85, ZZZ.

3481 P. A. Colley. Recognizing visibility graphs of uni-monotone polygons. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 29–34, 1992. [c-rvgum-92] *Cites:* ae-vgspu-91, aek-rvgsp-91, ahu-daca-74, c-vgump-91, e-vgr-90, ht-dgtc-73, ps-coac-82, o-agta-87, ZZZ.

3482 G. Collins. The calculation of multivariate polynomial resultants. *J. ACM*, 18(4):515–532, 1971. [c-cmpr-71]

G. Collins. See also [2563].

3483 G. E. Collins. Quantifier elimination for real closed fields by cylindrical algebraic decomposition. In *Proc. 2nd GI Conference on Automata Theory and Formal Languages*, volume 33 of *Lecture Notes Comput. Sci.*, pages 134–183. Springer-Verlag, 1975. [c-qercf-75]

3484 G. E. Collins and E. Horowitz. The minimum root separation of a polynomial. *Math. Comput.*, 28:589–597, 1974. [ch-mrsp-74]

3485 G. E. Collins and R. Loos. Real zeros of polynomials. In B. Buchberger, G. E. Collins, and R. Loos, editors, *Computer Algebra: Symbolic and Algebraic Computation*, pages 83–94. Springer-Verlag, New York, NY, 1982. [cl-rzp-82]

G. E. Collins. See also [820–822, 2564, 2565].

M. Collins. See also [9851].

R. L. Collins. See also [1462].

3486 C. Colombo, M. Rucci, and P. Dario. Integrating selective attention and space-variant sensing in machine vision. In J. L. C. Sanz, editor, *Image Technology: Advances in Image Processing, Multimedia and Machine Vision*, pages 109–128. Springer-Verlag, 1996. [crd-isasv-96]

3487 P. G. Comba. A procedure for detecting intersections of three-dimensional objects. *J. ACM*, 15:354–366, 1968. [c-pditd-68]

3488 D. Comer. The ubiquitous B-tree. *ACM Comput. Surv.*, 11:121–137, 1979. [c-ubt-79]

3489 D. Comer and M. J. O'Donnell. Geometric problems with applications to hashing. *SIAM J. Comput.*, 11:217–226, 1982. [co-gpah-82]

A. R. Condal. See also [6008].

J. Cong. See also [4375].

M. Conger. See also [501, 502].

3490 M. A. Conger. *Energy-minimizing networks in R^n*. PhD thesis, Williams College, 1989. Honors thesis. [c-emnr-89] *Keywords:* doctoral thesis.

3491 H. Conn. *Some polygon decomposition problems*. Ph.D. thesis, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1990. [c-spdp-90] *Keywords:* doctoral thesis.

3492 H. Conn and J. O'Rourke. Some restricted rectangle covering problems. Technical Report JHU 87-13, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1987. [co-srrcp-87] *Keywords:* covering, rectangles, NP-completeness. *Precedes:* co-srrcp-87i.

3493 H. E. Conn and J. O'Rourke. Minimum weight quadrilaterization in $O(n^3 \log n)$ time. In *Proc. 28th Allerton Conf. Commun. Control Comput.*, pages 788–797, October 1990. [co-mwqot-90] *Keywords:* partitioning.

3494 H. E. Conn and J. O'Rourke. Some restricted rectangular covering problems. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 898–907, 1987. [co-srrcp-87i] *Keywords:* covering, rectangles, NP-completeness, isothetic. *Succeeds:* co-srrcp-87.

H. E. Conn. See also [1079].

3495 R. Connelly. A new proof of Brown's collaring theorem. *Proc. Amer. Math. Soc.*, 27:180–182, 1971. [c-npbct-71]

3496 R. Connelly. On generic global rigidity. In P. Gritzman and B. Sturmfels, editors, *Applied Geometry and Discrete Mathematics: The Victor Klee Festschrift*, volume 4 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 147–155. AMS Press, 1991. [c-ggr-91] *Keywords:* geometric graphs, d-dimensional, rigidity.

3497 R. Connelly. Rigidity and energy. *Invent. Math.*, 66:11–33, 1982. [c-re-82] *Keywords:* graph drawing.

3498 Robert Connelly, Erik D. Demaine, and Günter Rote. Every polygon can be untangled. In *Abstracts 16th European Workshop Comput. Geom.*, pages 62–65. Ben-Gurion University of the Negev, 2000. [cdr-epcbu-00]

3499 R. Connelly, E. D. Demaine, and G. Rote. Straightening polygonal arcs and convexifying polygonal cycles. In *Proc. 41st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 432–442. IEEE, November 2000. [cdr-spacp-00]

3500 R. Connelly and R. Freimer. Covering a triangle with disks centered on its boundary. Technical Report TR 91-1242, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, November 1991. [cf-ctdci-91] *Keywords:* covering, disks, triangles.

3501 R. Connelly and W. Whiteley. Second-order rigidity and pre-stress stability. Technical Report, Dept. of Math, Cornell Univ, January 1990. [cw-sorps-90]

R. Connelly. See also [766].

3502 J. F. Connett. Trapped reflections? *Amer. Math. Monthly*, 99:178–179, 1992. [c-tr-92]

3503 M. Connolly. Molecular surfaces: A review. *Network Science*, ??, 1996. [c-msr-96] *URL:* http://www.awod.com/netsci/Issues/Apr96/feature1.html.

3504 M. L. Connolly. ?? *J. Appl. Cryst.*, 18:499–505, 1985. [c--85]

3505 M. L. Connolly. ?? *J. Mol. Graphics*, 11:139–141, 1993. [c--93]

3506 M. L. Connolly. Analytical molecular surface calculation. *J. Appl. Cryst.*, 16:548–558, 1983. [c-amsc-83]

3507 M. L. Connolly. Solvent-accessible surfaces of proteins and nucleic acids. *Science*, 221:709–713, 1983. [c-saspn-83]

3508 T. H. Connolly. Molecular interstitial skeleton. *Computer Chem.*, 15:37–45, 1991. [c-mis-91]

3509 Joel Conraud. Lazy constrained tetrahedralization. In *Proc. 4th International Meshing Roundtable*, pages 15–27, Albuquerque, NM, 1995. Sandia National Laboratories. [c-lct-95]

3510 M. P. Consens, F. C. Eigler, M. Z. Hasan, A. O. Mendelzon, E. G. Noik, A. G. Ryman, and D. Vista. Architecture and applications of the HY+ visualization system. *IBM Syst. J.*, 33:458–476, 1994. [cehmnrv-aahvs-94] *Keywords:* graph drawing, system.

3511 M. P. Consens, A. O. Mendelzon, and A. G. Ryman. Visualizing and querying software structures. In *Proc. 14th Intl. Conference on Software Engineering*, pages 138–156, 1992. [cmr-vqss-92] *Keywords:* graph drawing.

3512 S. D. Conte and C. de Boor. *Elementary Numerical Analysis: An Algorithmic Approach*. McGraw-Hill, New York, 3rd edition, 1980. [cb-enaaa-80]

3513 J. H. Conway, R. H. Hardin, and N. J. A. Sloane. Packing lines, planes, etc.: Packings in Grassmannian spaces. *Experimental Math.*, 5:139–159, 1996. [chs-plppgs-96]

3514 J. H. Conway and N. J. A. Sloane. *Sphere Packings, Lattices and Groups*. Springer-Verlag, New York, NY, 1st edition, 1988. [cs-splg-88]

3515 J. H. Conway and N. J. A. Sloane. *Sphere Packings, Lattices and Groups*. Springer-Verlag, New York, NY, 2nd edition, 1993. [cs-splg-93]

L. Conway. See also [9396].

3516 L. T. Cook, P. N. Cook, K. R. Lee, S. Batnitzky, B. Y. S. Wong, S. L. Fritz, J. Ophir, S. J. Dwyer, III, L. R. Bigongiari, and A. W. Tempelton. An algorithm for volume estimation based on polyhedral approximation. *IEEE Trans. Biomedical Engineering*, 27:493–500, 1980. [cclbwfodbt-avebp-80]

L. T. Cook. See also [1516].

P. N. Cook. See also [1516, 3516].

3517 R. L. Cook. Stochastic sampling in computer graphics. *ACM Trans. Grpah.*, 5:51–72, 1986. [c-sscg-86]

3518 R. L. Cook, T. Porter, and L. Carpenter. Distributed ray tracing. *Comput. Graph.*, 18:137–145, 1984. [cpc-drt-84]

Robert L. Cook. See also [5975].

3519 S. A. Cook, C. Dwork, and R. Reischuk. Upper and lower time bounds for parallel random access machines without simultaneous writes. *SIAM J. Comput.*, 15:87–97, 1986. [cdr-ultbp-86]

S. A. Cook. See also [4565].

3520 W. Cook, M. Hartman, R. Kannan, and C. McDiarmid. On integer points in polyhedra. *Combinatorica*, 12, 1992. [chkm-ipp-92]

3521 W. Cook, T. Rugherford, H. E. Scarf, and D. Shallcross. An implementation of the generalized basis reduction algorithm for integer programming. Technical Report 990, Yale University, August 1991. Cowles Foundation Discussion Paper. [crss-igbra-91]

3522 G. E. Cooke and R. L. Finney. *Homology of cell complexes*. Princeton University Press, 1967. [cf-hcc-67]

3523 S. A. Coons. Surfaces for computer aided design of space forms. Technical Report MAC-TR-41, Massachusetts Inst. Tech., Cambridge, MA, June 1967. [c-scads-67]

S. A. Coons. See also [346].

James W. Cooper. See also [13061].

3524 S. Coorg and S. Teller. A spatially and temporally coherent object space visibility algorithm. Technical Report TM-546, Laboratory of Computer Science, MIT, 1996. [ct-stcos-96]

3525 S. Coorg and S. Teller. Real-time occlusion culling for models with large occluders. In *Proc. 1997 Sympos. Interactive 3D Graphics*, 1997. [ct-rtocm-97]

3526 Satyan Coorg and Seth Teller. Temporally coherent conservative visibility. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 78–87, 1996. [ct-tccv-96]

3527 D. Coppersmith, D. T. Lee, and C. K. Wong. An elementary proof of nonexistence of isometries between L_p and L_q. *IBM J. Res. Develop.*, 23(6):696–699, 1979. [clw-epnib-79] *Keywords:* L_p-metric.

3528 D. Coppersmith and S. Winograd. Matrix multiplication via arithmetic progressions. In *Proc. 9th Annu. ACM Sympos. Theory Comput.*, pages 1–6, 1987. [cw-mmap-87]

3529 D. Coppersmith and S. Winograd. Matrix multiplication via arithmetic progressions. *J. Symbolic Comput.*, 9:251–280, 1990. [cw-mmap-90]

D. Coppersmith. See also [284, 285].

3530 A. J. Coppola and J. Nave. Implementing a fast Voronoi diagram algorithm for theoretical experimentation. Report ??, Intel Corporation, Hillsboro, NJ, 1985. [cn-ifvda-85]

S. Coquillart. See also [10266].

3531 A. G. Corbalan, Marisa Mazon, and Tomas Recio. About Voronoi diagrams for strictly convex distances. In *Abstracts 9th European Workshop Comput. Geom.*, pages 17–22. FernUniversität Hagen, 1993. [cmr-avdsc-93]

3532 A. G. Corbalan, M. Mazon, and T. Recio. Geometry of bisectors for strictly convex distances. *Internat. J. Comput. Geom. Appl.*, 6:45–58, 1996. [cmr-gbscd-96]

3533 A. G. Corbalan, M. Mazon, T. Recio, and F. Santos. On the topological shape of planar Voronoi diagrams. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 109–115, 1993. [cmrs-tspvd-93] *Cites:* cmrs-tspvd-93c, ab-rdt-85, ab-gdt-86, cd-vdbcd-85, gs-pmgsc-85, k-cavd-89, k-tvs1-69, l-tdvdl-80, m-ddvec-92, ZZZ.

3534 A. G. Corbalan, Marisa Mazon, Tomas Recio, and Francisco Santos. On the topological shape of planar Voronoi diagrams. In *Abstracts 9th European Workshop Comput. Geom.*, pages 23–25. FernUniversität Hagen, 1993. [cmrs-tspvd-93c] *Precedes:* cmrs-tspvd-93. *Cites:* ab-rdt-85, ab-gdt-86, cd-vdbcd-85, gs-pmgsc-85, k-cavd-89, k-tvs1-69, l-tdvdl-80, m-ddvec-92, ZZZ.

3535 J. Corbett. Topological principles in cartography. Technical Paper 48, Bureau of the Census, Washington, DC, 1979. [c-tpc-79]

L. Cordella. See also [725].

3536 L. P. Cordella and G. Dettori. An $O(n)$ algorithm for polygonal approximation. *Pattern Recogn. Lett.*, 3(2):93–97, 1985. [cd-oapa-85] *Keywords:* polygon, fitting.

L. P. Cordella. See also [12255].

3537 C. Cordes and K. B. Reid. Largest polygons with vertices in a given finite set. *Discrete Appl. Math.*, 14(3):255–262, 1986. [cr-lpvgf-86] *Keywords:* extremal figures, polygon, points.

3538 R. Cordovil. Oriented matroids and geometric sorting. *Canad. Math. Bull.*, 26(3):51–354, 1983. [c-omgs-83] *Keywords:* sorting, oriented matroids.

3539 R. Cordovil. Sur un théoreme de séparation des matroides orientés de rang trois. *Discrete Math.*, 40:163–169, 1982. [c-sutds-82]

3540 R. Cordovil. The directions determined by n points in the plane: a matroidal generalization. *Discrete Math.*, 43:131–137, 1983. [c-ddnpp-83]

3541 R. Cordovil, R. Dilão, and A. N. da Costa. Periodic orbits for additive cellular automata. *Discrete Comput. Geom.*, 1:277–288, 1986. [cdc-poaca-86]

3542 R. Cordovil, M. Las Vergnas, and A. Mandel. Euler's relation, Möbius functions, and matroid identities. *Geom. Dedicata*, 12:147–162, 1982. [clm-ermfm-82]

3543 R. Cori. Un code pour les graphes planaires et ses applications. *Astérisque*, 27, 1975. [c-ucplg-75]

3544 B. T. Corkum and J. A. Wyllie. Program for insidepolytope. Newsgroup comp.graphics, 1990. Message 1990Oct3.121706.11932 jarvis.csri.toronto.edu. [cw-pi-90]

3545 Robert M. Corless, Gaston H. Gonnet, D. E. G. Hare, and David J. Jeffrey. Lambert's W function in Maple. *The Maple Techical Newsletter*, Issue 9:12–22, 1993. [cghj-lwfm-93]

S. Cormack. See also [5995].

3546 T. H. Cormen. Asymptotically tight bounds for performing BMMC permutations on parallel disk systems. In *Proc. 5th ACM Sympos. Parallel Algorithms Architect.*, pages 130–139, 1993. [c-atbpb-93]

3547 T. H. Cormen. Fast permuting on disk arrays. *J. Parallel Distrib. Comput.*, 17:41–57, 1993. [c-fpda-93]

3548 T. H. Cormen, C. E. Leiserson, and R. L. Rivest. *Introduction to Algorithms*. MIT Press, Cambridge, MA, 1990. [clr-ia-90]

3549 T. H. Cormen, C. E. Leiserson, R. L. Rivest, and C. Stein. *Introduction to Algorithms*. MIT Press, Cambridge, MA, 2nd edition, 2001. [clrs-ia-01]

D. Corneil. See also [654].

D. G. Corneil. See also [811, 5076, 5077].

J. Fredrick Cornhill. See also [12094].

3550 G. Cornuejol and G. L. Nemhauser. Tight bounds for Christofides' traveling salesman heuristic. *Math. Program.*, 14:116–121, 1978. [cn-tbcts-78]

3551 J. G. von der Corput. Verschärfung der Abschätzung beim Teilerproblem. *Math. Annalen*, 87:39–65, 1922. [c-vdabt-22]

3552 Y. Correc and E. Chapuis. Fast computation of Delaunay triangulations. *Adv. Eng. Softw.*, 9(2):77–83, 1987. [cc-fcdt-87] *Annote:* Claims $O(n \log n)$ measured performance. Points are sorted by one coordinate and a Lawson style incremental algorithm is used. Triangle list is maintained in sorted by one coordinate of barycentre.

3553 Carmen Cortés, Clara I. Grima, Ferran Hurtado, Alberto Márquez, Francisco Santos, and Jesús Valenzuela. Transforming triangulations of polygons on non planar surfaces. In *Abstracts 17th European Workshop Comput. Geom.*, pages 31–34. Freie Universität Berlin, 2001. [cghmsv-ttpnp-01]

3554 Carmen Cortés, Clara I. Grima, and Alberto Márquez. Flipping edges in triangulations on the cylinder. In *Abstracts 15th European Workshop Comput. Geom.*, pages 77–79. INRIA Sophia-Antipolis, 1999. [cgm-fetc-99]

3555 C. Cortés, F. Hurtado, A. Márquez, and A. Nakamoto. Edge flipping on triangulations of surfaces. In *Abstracts 14th European Workshop Comput. Geom.*, pages 59–60. Universitat Polytènica de Catalunya, Barcelona, 1998. [chmn-efts-98]

Carmen Cortés. See also [379].

3556 M. Corthout and H. Jonkers. A formal framework for discrete geometry: theory and graphics applications. Report ??, Philips Lab., Briarcliff Manor, NY, 1985. [cj-ffdgt-85]

3557 M. E. Corthout and H. B. M. Jonkers. The transformational development of a new point containment algorithm. *Philips J. Res. Devel.*, 41:83–174, 1986. [cj-tdnpc-86] *Keywords:* point location.

3558 D. Cortolezzis. The virtual floating grid file. In *??*, volume 381 of *Lecture Notes Comput. Sci.*, pages 116–127. 1989. [c-vfgf-89] *Keywords:* data structuring.

S. Cosmadakis. See also [1933].

3559 M. Cosnard, J. Duprat, and A. G. Ferreira. Complexity of selection in $x + y$. *Theoret. Comput. Sci.*, 67(1):115–120, 1989. [cdf-csxy-89] *Keywords:* lower bounds, searching.

3560 M. Cosnard, J. Duprat, and A. G. Ferreira. The complexity of searching in $x + y$ and other multisets. *Inform. Process. Lett.*, 34(2):103–109, 1990. [cdf-csxyo-90] *Keywords:* lower bounds, searching.

3561 M. Cost and M. F. Roy. Thom's lemma, the coding of real algebraic numbers and the computation of the topology of semialgebraic sets. *J. Symbolic Comput.*, 5:121–129, 1988. [cr-tlcra-88]

3562 S. Cost and S. Salzberg. A weighted nearest neighbor algorithm for learning with symbolic features. *Machine Learning*, 10:57–67, 1993. [cs-wnnal-93]

A. N. da Costa. See also [3541].

3563 M. Coste. Effective semialgebraic geometry. In *??*, volume 391 of *Lecture Notes Comput. Sci.*, pages 1–27. 1989. [c-esg-89] *Keywords:* algebraic geometry, motion planning.

M. Coste. See also [2123].

Craig Cotsman. See also [8369].

3564 H. L. de Cougny and M. S. Shephard. Surface meshing using vertex insertion. In *Proc. 5th International Meshing Roundtable*, pages 243–256, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [cs-smuvi-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

3565 C. Coullard and A. Lubiw. Distance visibility graphs. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 289–296, 1991. [cl-dvg-91] *Keywords:* visibility, geometric graphs. *Cites:* acp-cfekt-87, ap-crp3t-86, c-tsplt-90i, ec-rvgsp-90, e-hdpa-85, g-rcvgs-88, h-fvgsp-87, ht-dgtc-73, o-agta-87, o-rcvg-90, ow-nmcvg-88, ps-cgi-85, rs-gm2aa-86, s-tpgep-80, t-ktgtc-89, ty-sltat-84, y-edp-81, y-stapl-79, ZZZ.

3566 C. Coullard and A. Lubiw. Distance visibility graphs. *Internat. J. Comput. Geom. Appl.*, 2(4):349–362, 1992. [cl-dvg-92] *Keywords:* visibility, geometric graphs. *Succeeds:* cl-dvg-91.

3567 J. L. Coulomb, Y. Du Terrail, and G. Meunier. Flux3d: A finite element package for magnetic computation. *IEEE Trans. Magn.*, MAG-21(6):2499–2502, November 1985. [cdm-ffepm-85] *Keywords:* computer program flux3d. *Annote:* Uses 3D DT by insertion. *Abstract:* A finite element package for the computation of three-dimensional magnetostatic field is described. The finite element mesh is automatically built in two steps using a Delaunay tetrahedrization. In step 1, the user gives interactively a first set of nodes located on interfaces and boundaries, and the program computes a coarse tetrahedral mesh. In step 2, the program adds new nodes automatically to refine the initial mesh and regularizes it. The implemented finite element formulations use either scalar or vector potential. The postprocessor allows interactive computation and visualization of any local or global quantities given by closed formulas. 9 refs.

3568 R. Courant. *Differential and integral calculus*, volume 2. Interscience Publishers, New York, NY, 1936. [c-dic-36]

3569 S. M. Courter and J. A. Brewer III. Automated conversion of curvilinear wire-frame models to surface boundary models. *Comput. Graph.*, 20(4):171–178, August 1986. Proc. SIGGRAPH '86. [cb-accwf-86]

3570 T. M. Cover and P. E. Hart. Nearest neighbor pattern classification. *IEEE Trans. Inform. Theory*, 13:21–27, 1967. [ch-nnpc-67]

3571 T. M. Cover and J. A. Thomas. *Elements of Information Theory.* Wiley-Interscience, New York, NY, 1991. [ct-eit-91]

L. Cowen. See also [1195].

J. Cowles. See also [1227].

L. Cowsar. See also [8582].

3572 D. Cox, J. Little, and D. O'Shea. *Ideals, Varieties, and Algorithms.* Springer-Verlag, New York, NY, 1992. [clo-iva-92] *Keywords:* book.

3573 J. Cox and C. Yap. On-line motion planning: Moving a planar arm by probing an unknown environment. Manuscript, 1989. [cy-olmpm-89]

3574 M. G. Cox and P. M. Harris. An algorithm for loop detection in cursive script recognition. Report 120, Div. Inf. Techn. and Comput., Nat. Phys. Lab., 1988. [ch-aldcs-88] *Keywords:* intersection.

3575 P. Cox, H. Maitre, M. Minoux, and C. Ribeiro. Optimal matching of convex polygons. *Pattern Recogn. Lett.*, 9(5):327–334, 1989. [cmmr-omcp-89] *Keywords:* convex polygon, similarity.

3576 H. S. M. Coxeter. A classification of zonohedra by means of projective diagrams. *J. Math. Pure Appl.*, 41:137–156, 1962. [c-czmpd-62]

3577 H. S. M. Coxeter. *Introduction to Geometry.* John Wiley & Sons, New York, NY, 1st edition, 1961. [c-ig-61]

3578 H. S. M. Coxeter. *Introduction to Geometry.* John Wiley & Sons, New York, 2nd edition, 1969. [c-ig-69]

3579 H. S. M. Coxeter. Orthogonal trees. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 89–97, 1991. [c-ot-91] *Cites:* b-geadl-68, cs-splg-88, c-rp-73, c-rsrp-88, c-to-89, ZZZ.

3580 H. S. M. Coxeter. Regular and semi-regular polytopes, 3. *Math. Z.*, 200:3–45, 1988. [c-rsrp-88]

3581 H. S. M. Coxeter. *Regular Complex Polytopes.* Cambridge University Press, Cambridge, England, 2nd edition, 1991. [c-rcp-91]

3582 H. S. M. Coxeter. *Regular Polytopes.* Dover, New York, NY, 2nd edition, 1973. [c-rp-73]

3583 H. S. M. Coxeter. Self-dual configurations and regular graphs. *Bull. Amer. Math. Soc.*, 56:413–455, 1950. [c-sdcrg-50]

3584 H. S. M. Coxeter. *The real projective plane.* McGraw-Hill, 1949. [c-rpp-49]

3585 H. S. M. Coxeter. Trisecting an orthoscheme. *Comput. Math. Appl.*, 17:59–71, 1989. [c-to-89]

3586 H. S. M. Coxeter, R. Frucht, and D. L. Powers. *Zero Symmetric Graphs.* Academic Press, 1981. [cfp-zsg-81]

3587 H. S. M. Coxeter and S. L. Greitzer. *Geometry Revisited.* Mathematical Association of America, Washington, DC, 1967. [cg-gr-67]

3588 H. S. M. Coxeter and W. O. J. Moser. *Generators and Relations for Discrete Groups.* Springer-Verlag, 3rd edition, 1972. [cm-grdg-72] *Precedes:* cm-grdg-80.

3589 H. S. M. Coxeter and W. O. J. Moser. *Generators and Relations for Discrete Groups.* Springer-Verlag, 1980. [cm-grdg-80] *Succeeds:* cm-grdg-72.

Edward J. Coyle. See also [1286].

3590 I. K. Crain. Monte-Carlo simulation of the random Voronoi polygons: Preliminary results. *Search*, 3:220–221, 1972. [c-mcsrv-72] *Annote:* Measures various statistics for random Voronoi polygons.

3591 I. K. Crain. The Monte-Carlo generation of random polygons. *Comput. Geosci.*, 4:131–141, 1978. [c-mcgrp-78] *Annote:* Statistics on 46000 random Voronoi polygons. Simple method to determine 1 polygon. Closest point gives initial side—intersection with all other bisectors gives endpoints. Then walk around boundary.

3592 C. Crane. Linear lists and priority queues as balanced binary trees. Technical Report CS-72-259, Dept. of Computer Science, Stanford University, CA, 1972. [c-llpqb-72]

3593 H. Crapo. Structural rigidity. *Structural Topology*, 1:26–45, 1979. [c-sr-79]

3594 H. Crapo, T. F. Havel, B. Sturmfels, W. Whiteley, and N. L. White. Symbolic computations in geometry. IMA Preprint Series 389, Inst. Math. Appl., Univ. Minnesota, Minneapolis, MN, 1988. [chsww-scg-88]

3595 H. Crapo and J. P. Laumond. Hamiltonian cycles in Delaunay complexes. In *??*, volume 1416 of *Lect. Notes in Comp. Sci.* 1988. [cl-hcdc-88]

3596 Henry Crapo and Jean-Paul Laumond. Hamiltonian cycles in Delaunay complexes. In *Proc. of the Workshop on Geometry and Robotics*, volume 391 of *Lecture Notes Comput. Sci.*, pages 292–305. Springer-Verlag, 1989. [cl-hcdc-89]

3597 H. Crapo and J. Ryan. Scene analysis and geometric homology. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 125–132, 1986. [cr-sagh-86] *Cites:* b-j-79, c-sr-79, cr-srls-86, cw-sfmps-82, c-gs-90, c-gs-66, drs-fctcm-74, dh-pcsa-73, dh-pcsa-73, h-dcaps-77, m-orfdf-64, s-msldp-81, t-rprbj-83, tw-rdgrs-84, w-rp-79, ZZZ.

3598 H. Crapo and J. Ryan. Spatial realizations of linear scenes. *Structural Topology*, 13:33–68, 1986. [cr-srls-86]

3599 H. Crapo and W. Whiteley. Plane stresses and projected polyhedra. Technical Report, Univ. Montreal, Montreal, PQ, 1986. [cw-pspp-86] *Succeeds:* w-tapp-86.

3600 H. Crapo and W. Whitely. Statics of frameworks and motions of panel structures, a projective geometric introduction. *Structural Topology*, 6:42–82, 1982. [cw-sfmps-82] *Keywords:* graph drawing.

Henry Crapo. See also [986].

3601 D. Crass, I. Suzuki, and M. Yamashita. Searching for a mobile intruder in a corridor: the open edge variant of the polygon search problem. *Internat. J. Comput. Geom. Appl.*, 5:397–412, 1995. [csy-smico-95] *Keywords:* geometry, visibility, search.

3602 A. Crauser, P. Ferragina, K. Mehlhorn, U. Meyer, and E. Ramos. Randomized external-memory algorithms for some geometric problems. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 269–268, 1998. [cfmmr-remas-98]

3603 A. Crauser, P. Ferragina, K. Mehlhorn, U. Meyer, and E. A. Ramos. Randomized external-memory algorithms for line segment intersection and other geometric problems. *Internat. J. Comput. Geom. Appl.*, 11:305–337, 2001. [cfmmr-remal-01]

R. Crawfis. See also [1924, 9331].

3604 C. Crawford. Aspect graphs and robot vision. In *Proc. IEEE Internat. Conf. Comput. Vision Pattern. Recogn.*, pages 382–384, 1985. [c-agrv-85]

C. R. Crawford. See also [3380].

3605 J. Cremona and S. Landau. Shrinking lattice polyhedra. *SIAM J. Discrete Math.*, 3(3):338–348, 1990. [cl-slp-90a] *Keywords:* discrete geometry, d-dimensional, polyhedra, similarity. *Succeeds:* cl-slp-90i.

3606 J. Cremona and S. Landru. Shrinking lattice polyhedra. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 188–193, 1990. [cl-slp-90i] *Precedes:* cl-slp-90a.

3607 L. Cremona. *Graphical Statics.* Oxford University Press, London, 1890. [c-gs-90]

3608 P. Crescenzi, G. Di Battista, and A. Piperno. A note on optimal area algorithms for upward drawings of binary trees. Technical Report 11.91, Dipartimento di Informatica e Sistemistica, Univ. di Roma "La Sapienza", 1991. [cdp-noaau-91] *Keywords:* graph drawing. *Precedes:* cdp-noaau-92.

3609 P. Crescenzi, G. Di Battista, and A. Piperno. A note on optimal area algorithms for upward drawings of binary trees. *Comput. Geom. Theory Appl.*, 2:187–200, 1992. [cdp-noaau-92] *Keywords:* graph drawing. *Succeeds:* cdp-noaau-91.

3610 Pierluigi Crescenzi and Paolo Penna. Minimum-area *h-v* drawings of complete binary trees. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 371–382. Springer-Verlag, 1997. [cp-mahvd-97] *Keywords:* graph drawing.

3611 P. Crescenzi, P. Penna, and A. Piperno. Linear-area upward drawings of AVL trees. *Comput. Geom. Theory Appl.*, 9:25–42, 1998. (special issue on Graph Drawing, edited by G. Di Battista and R. Tamassia). [cpp-lauda-98] *Succeeds:* cp-oauda-95.

3612 P. Crescenzi and A. Piperno. Optimal-area upward drawings of AVL trees. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 307–317. Springer-Verlag, 1995. [cp-oauda-95] *Keywords:* graph drawing, planar, upward, trees.

3613 T. Creutzburg, A. Hübler, and O. Sykora. Geometric methods for on-line recognition of digital straight line segments. *Computers Artif. Intel.*, 7(3):253–276, 1988. [chs-gmolr-88] *Keywords:* digital geometry.

3614 G. Crippen and T. Havel. *Distance Geometry and Molecular Conformation*. Research Studies Press, Letchworth, UK, 1988. [ch-dgmc-88]

3615 G. M. Crippen and T. F. Havel. *Distance Geometry and Molecular Conformation*. John Wiley & Sons, 1988. [ch-dgmc-88b]

D. Crockett. See also [1902].

3616 H. P. Croft, K. J. Falconer, and R. K. Guy. *Unsolved Problems in Geometry*. Springer-Verlag, 1990. [cfg-upg-90]

3617 R. G. Cromley. A vertex substitution approach to numerical line simplification. In *Proc. 3rd Internat. Sympos. Spatial Data Handling*, pages 57–64, 1988. [c-vsanl-88]

3618 R. G. Cromley. Calculating bisector skeletons using a Thiessen data structure. In *Proceedings, AUTOCARTO 8*, pages 719–724, 1987. [c-cbsut-87] *Annote:* Vd of simple polygon. Selection algorithm.

3619 R. G. Cromley. *Digital Cartography*. Prentice Hall, Englewood Cliffs, 1992. [c-dc-92]

3620 R. G. Cromley and D. Grogan. A procedure for identifying and storing a Thiessen diagram within a convex boundary. *Geogr. Anal.*, 17(2):167–175, April 1985. [cg-pistd-85] *Annote:* Circumcircle algorithm. Only computes the part of the Vd within a convex polygon.

3621 P. Cromwell. *Polyhedra*. Cambridge University Press, Cambridge, 1997. [c-p-97]

3622 Robert L. Cromwell. Efficient eigenvalues for visualization. In Paul Heckbert, editor, *Graphics Gems IV*, pages 193–198. Academic Press, Boston, MA, 1994. [c-eev-94] *Keywords:* scatterplot, matrix of central moments. *Annote:* Answers the question: if I have a set of points in 3D, from what direction should I view them to get the best view (minimizing bunching in the projection)? Solving this involves the eigenvalues of a 3x3 matrix. Optimized formulas are given for computing the eigenvalues.

3623 A. Crosnier and J. R. Rossignac. Tribox bounds for three-dimensional objects. *Comput. & Graphics*, 23(3):429–437, June 1999. [cr-tbtdo-99]

G. Cross. See also [12229].

3624 F. C. Crow. Shadow algorithms for computer graphics. *Comput. Graph.*, 11(2):242–248, 1977. [c-sacg-77]

3625 R. H. Crowell and R. H. Fox. *Introduction to Knot Theory*. Blaisdell Publishing Co., New York, NY, 1965. [cf-ikt-65]

Isabel Cruz. See also [10004].

3626 I. F. Cruz. DOODLE: A visual language for object-oriented databases. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 71–80, 1992. [c-dvloo-92] *Keywords:* graph drawing.

3627 I. F. Cruz. Using a visual constraint language for data display specification. In P. C. Kanellakis, J.-L. Lassez, and V. Saraswat, editors, *First Workshop on Principles and Practice of Constraint Programming*, April 1993. [c-uvcld-93] *Keywords:* graph drawing.

3628 I. F. Cruz and P. Eades, editors. *Special Issue on Graph Visualization*, volume 6:3 of *J. Visual Lang. Comput.* 1995. [ce-sigv-95] *Keywords:* graph drawing, collection.

3629 I. F. Cruz and A. Garg. Drawing graphs by example efficiently: Trees and planar acyclic digraphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 404–415. Springer-Verlag, 1995. [cg-dgeet-95] *Keywords:* graph drawing, planar, visual language, declarative.

3630 I. F. Cruz, A. Garg, and R. Tamassia. Efficient constraint resolution in visual graph drawing. Manuscript, Dept. of Computer Sci., Brown University, 1996. [cgt-ecrvg-96] *Keywords:* graph drawing.

3631 I. F. Cruz, R. Tamassia, and P. Van Hentenryk. A visual approach to graph drawing. In *Graph Drawing '93 (Proc. ALCOM Workshop on Graph Drawing)*, September 1993. [ctv-vagd-93] *Keywords:* graph drawing.

3632 I. F. Cruz and J. P. Twarog. 3d graph drawing with simulated annealing. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 162–165. Springer-Verlag, 1996. [ct-3gdsa-96] *Keywords:* graph drawing, straight-line, 3D.

Isabel F. Cruz. See also [1309–1313, 11161].

3633 J. Csima and T. A. Ralston. Crossing-free Hamiltonian paths in Euclidean spaces. *Ars Combin.*, 18:87–97, 1984. [cr-cfhpe-84] *Keywords:* geometric graphs, TSP.

3634 J. Csirik and J. B. Frenk. A dual version of bin packing. *Algorithms Rev.*, 1(2):87–95, 1990. [cf-dvbp-90]

3635 J. Csirik, J. B. G. Frenk, M. Labbe, and S. Zhang. On the multi-dimensional bin packing. *Acta Cybern.*, ??:361–369, 1990. [cflz-mdbp-90] *Keywords:* *d*-dimensional, packing, heuristics.

3636 György Csizmadia and G. Tóth. Note on an art gallery problem. *Comput. Geom. Theory Appl.*, 10(1):47–55, 1998. [ct-nagp-98] *Keywords:* visibility.

3637 Lucian Cucu, Mircea Dragan, Tudor Jebelean, and Viorel Negru. Divide-and-conquer Voronoi diagram construction. In *Abstracts 10th European Workshop Comput. Geom.*, pages 5–7. Universidad de Cantabria, Santander, 1994. [cdjn-dcvdc-94]

3638 Lucian Cucu, Mircea Dragan, Tudor Jebelean, and Viorel Negru. Parallel implementation of 3D Delaunay triangulation. In *Abstracts 11th European Workshop Comput. Geom.*, pages 25–28. Universität Linz, 1995. [cdjn-pi3dt-95]

3639 Lucian Cucu, Mircea Dragan, Viorel Negru, and Dorin Mangu. Three dimensional Delaunay triangulation using an uniform grid. In *Abstracts 11th European Workshop Comput. Geom.*, pages 21–23. Universität Linz, 1995. [cdnm-tddtu-95]

K. Cudjoe. See also [9166].

3640 J. Culberson. Sokoban is PSPACE-complete. In N. Santoro E. Lodi, L. Pagli, editor, *Proc. Internat. Conf. Fun with Algorithms*, pages 65–76, Elba, Italy, June 1998. Carelton Scientific. [c-spc-99]

3641 J. Culberson and G. J. E. Rawlins. Turtlegons: generating simple polygons from sequences of angles. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 305–310, 1985. [cr-tgsps-85] *Cites:* fm-nbkck-78, h-srlp-82, p-mccpi-80, s-rcg-84, sh-srppi-72, ZZZ.

3642 Joseph Culberson and Robert Reckhow. A unified approach to orthogonal polygon covering problems via Dent diagrams. report TR 89-6, Department of Computing Science, University of Alberta, Edmonton, Alberta, Canada, February 1989. [cr-uaopc-89] *Succeeds:* cr-dduap-87. *Precedes:* cr-occop-89a.

3643 J. Culberson and R. Reckhow. Dent diagrams: A unified approach to polygon covering problems. Technical report, Dept. Comput. Sci., Univ. Alberta, Edmonton, Alberta, Canada, July 1987. [cr-dduap-87] *Precedes:* cr-uaopc-89.

3644 J. Culberson and R. A. Reckhow. Orthogonally convex coverings of orthogonal polygons without holes. *J. Comput. Syst. Sci.*, 39:166–204, 1989. [cr-occop-89a] *Succeeds:* rc-csopm-87.

J. Culberson. See also [1216, 11085].

3645 J. C. Culberson and R. A. Reckhow. Covering polygons is hard. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 601–611, 1988. [cr-cpih-88] *Keywords:* complexity theory, covering, polygons, rectangles, NP-completeness, two-dimensional. *Comments:* Submitted J. Algorithms.

J. C. Culberson. See also [11066].

3646 K. Culik and D. Wood. A note on some tree similarity measure. *IPL*, 15:39–42, 1982. [cw-nstsm-82]

3647 D. E. Culler, R. M. Karp, D. A. Patterson, A. Sahay, K. E. Schauser, E. Santos, R. Subramonian, and T. von Eicken. LogP: Towards a realistic model of parallel computation. In *Proc. 4th ACM SIGPLAN Symp. on Princ. and Practice of Parallel Programming*, pages 1–12, 1993. [ckpssssv-ltrmp-93]

R. K. Culley. See also [2667].

A. Cullum. See also [13230].

3648 C. Culmann. *Graphische Statik*. Mayer and Zeller, Zürich, 1866. [c-gs-66]

Tim Culver. See also [7003].

3649 W. Cunningham. Optimal attack and reinforcement of a network. *J. ACM*, 32, 1985. [c-oarn-85]

W. H. Cunningham. See also [724].

3650 W. Cunto and V. Yriarte. GKD-trees: Binary trees that combine multi-dimensional data handling, node size and fringe reorganization. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 192–211. Springer-Verlag, 1992. [cy-gtbtt-92]

3651 J. E. Cuny, D. A. Bayley, J. W. Hagerman, and A. A. Hough. The simple simon programming environment: A status report. Technical Report 87-22, Department of Computer and Information Science, University of Massachusetts, May 1987. [cbhh-sspes-87] *Keywords:* graph drawing.

3652 R. Curant and H. Robbins. *What is Mathematics?* Oxford University Press, 1941. [cr-wim-41]

3653 B. Curless and M. Levoy. A volumetric method for building complex models from range images. In *Proc. SIGGRAPH 96*, pages 303–312, 1996. [cl-vmbcm-96]

B. Currin. See also [12344].

3654 D. B. Curtis, R. P. Burton, and D. M. Campbell. An n-dimensional line intersection algorithm. *J. Imag. Technol.*, 17(4):175–177, 1991. [cbc-ndlia-91] *Keywords:* d-dimensional, intersection.

3655 D. B. Curtis, R. P. Burton, and D. M. Campbell. Parallel axis geometry for n-dimensional computer graphics. *J. Imag. Technol.*, 17(4):168–175, 1991. [cbc-pagnd-91] *Keywords:* d-dimensional, data structuring.

3656 M. Cutkosky. *Robotic grasping and fine manipulation.* Kluwer Academic Publishers, 1985. [c-rgfm-85]

3657 L. J. Cutrona, E. N. Leight, C. J. Palermo, and L. J. Porcello. Optical data processing and filtering systems. *IEEE Trans. Inform. Theory*, 6(3):386–400, June 1960. [clpp-odpfs-60]

3658 D. R. Cutting, D. R. Karger, and J. O. Pedersen. Constant interaction-time scatter/gather browsing of very large document collections. In *Proc. 16th Annu. Internat. ACM SIGIR Conf. Research and Develop. in Inform. Retrieval*, pages 126–134, 1993. [ckp-citsg-93]

3659 D. R. Cutting, D. R. Karger, J. O. Pedersen, and J. W. Tukey. Scatter/gather: A cluster-based approach to browsing large document collections. In *Proc. 16th Annu. Internat. ACM SIGIR Conf. Research and Develop. in Inform. Retrieval*, pages 318–329, 1992. [ckp-sgcba-92]

3660 G. Cybenko, D. W. Krumme, and K. N. Venkataraman. Fixed hypercube embedding. *Inf. Proc. Lett.*, 25:35–39, 1987. [ckv-fhe-87]

3661 Joseph M. Cychosz. Efficient binary image thinning using neighborhood maps. In Paul Heckbert, editor, *Graphics Gems IV*, pages 465–473. Academic Press, Boston, MA, 1994. [c-ebitu-94] *Keywords:* image skeleton, image filter. *Annote:* Provides fast code to thin a bitmap image and find its "skeleton." Image thinning is used for pattern recognition. Contains C code.

3662 Joseph M. Cychosz and Warren N. Waggenspack Jr. Intersecting a ray with a cylinder. In Paul Heckbert, editor, *Graphics Gems IV*, pages 356–365. Academic Press, Boston, MA, 1994. [cw-irc-94] *Keywords:* quadric surface, ray tracing. *Annote:* Geometric method for intersecting a ray with a cylinder. Contains C code.

3663 R. Cypher and C. G. Plaxton. Deterministic sorting in nearly logarithmic time on the hypercube and related computers. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, pages 193–203, 1990. [cp-dsnlt-90]

3664 R. Cypher and J. L. C. Sanz. Cubesort: A parallel algorithm for sorting N data items with S-sorters. *J. Algorithms*, 13:211–234, 1992. [cs-cpasn-92]

3665 R. E. Cypher and C. G. Plaxton. Deterministic sorting in nearly logarithmic time on the hypercube and related computers. *J. Comput. Syst. Sci.*, 47:501–548, 1993. [cp-dsnlt-93]

3666 A. Czumaj. Parallel algorithm for the matrix chain product and the optimal triangulation problems. In *Proc. 10th Sympos. Theoret. Aspects Comput. Sci.*, volume 665 of *Lecture Notes Comput. Sci.*, pages 294–305. Springer-Verlag, 1993. [c-pamcp-93]

3667 Artur Czumaj and Andrzej Lingas. A polynomial time approximation scheme for Euclidean minimum cost k-connectivity. In *Proc. 25th Internat. Colloq. Automata Lang. Prog.*, volume ?? of *Lecture Notes Comput. Sci.*, page ?? Springer-Verlag, 1998. [cl-ptase-98] *Annote:* To appear, July 13-17 in Aalborg, Denmark.

3668 C. Czyzowicz, I. Stojmenović, and J. Urrutia. Immobilizing a shape. Technical Report rr 90/11-18, dept. d'informatique, univ. du québec à hull, 1990. [csu-is-90] *Precedes:* csu-isp-91.

3669 C. Czyzowicz, I. Stojmenović, and J. Urrutia. Immobilizing a shape in the plane. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 41–45, August 1991. [csu-isp-91] *Succeeds:* csu-is-90. *Cites:* bfg-sptf-85, csu-is-90, e-acg-87, k-dwp-90, mnp-ogp-89, mss-esmpg-87, o-cgc9-90, ZZZ.

3670 J. Czyzowicz. Lattice diagrams with few slopes. Technical Report 3, Departement D'Informatique, University of Quebec at Hull, 1987. [c-ldfs-87] *Keywords:* graph drawing.

3671 J. Czyzowicz. Planar lattices and the slope problem. Technical Report 4, Departement D'Informatique, University of Quebec at Hull, 1987. [c-plsp-87] *Keywords:* graph drawing.

3672 J. Czyzowicz, P. Egyed, H. Everett, D. Rappaport, T. Shermer, D. Souvaine, G. Toussaint, and J. Urrutia. The aquarium keeper's problem. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 459–464, January 1991. [ceersstu-akp-91]

3673 J. Czyzowicz, H. Everett, and J.-M. Robert. Separating translates in the plane: Combinatorial bounds and an algorithm. Report DIM-94-2, Université du Québec à Chicoutimi, Chicoutimi, 1994. [cer-stpcba-94] *Precedes:* cer-stpcba-97.

3674 J. Czyzowicz, H. Everett, and J.-M. Robert. Separating translates in the plane: Combinatorial bounds and an algorithm. *Internat. J. Comput. Geom. Appl.*, 7:551–562, 1997. [cer-stpcba-97] *Succeeds:* cer-stpcba-94.

3675 J. Czyzowicz, F. Hurtado, J. Urrutia, and N. Zaguia. On polygons enclosing point sets. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 132–136, 1992. [chuz-peps-92] *Cites:* e-acg-87, ZZZ.

3676 Jurek Czyzowicz, Evangelos Kranakis, Danny Krizanc, and Jorge Urrutia. Discrete realizations of contact and intersection graphs. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 359–370. Springer-Verlag, 1997. [ckku-drcig-97] *Keywords:* graph drawing.

3677 J. Czyzowicz, E. Kranakis, D. Krizanc, and J. Urrutia. Maximal length common non-intersecting paths. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 185–189, 1996. [ckku-mlcni-96]

3678 Jurek Czyzowicz, Evangelos Kranakis, and Jorge Urrutia. Domino tilings and two–by–two squares. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 25–32, 1997. [cku-dttts-97]

3679 J. Czyzowicz, A. Pelc, and I. Rival. Drawing orders with few slopes. Technical Report TR-87-12, Department of Computer Science, University of Ottawa, 1987. [cpr-dofs-87] *Keywords:* graph drawing.

3680 J. Czyzowicz, A. Pelc, and I. Rival. Planar ordered sets of width two. Technical Report TR-87-31, Department of Computer Science, University of Ottawa, 1987. [cpr-poswt-87] *Keywords:* graph drawing.

3681 J. Czyzowicz, A. Pelc, I. Rival, and J. Urrutia. Crooked diagrams with few slopes. Technical Report TR-87-26, Department of Computer Science, University of Ottawa, 1987. [cpru-cdfs-87] *Keywords:* graph drawing.

3682 J. Czyzowicz, I. Rival, and J. Urrutia. Galleries and light matchings: Fat cooperative guards. In R. A. Melter, A. Rosenfeld, and P. Bhattacharya, editors, *Vision Geometry*, volume 119 of *Contemporary Mathematics*, pages 21–28. American Mathematical Society, 1991. [cru-glmfc-91] *Keywords:* visibility, watchman problem.

3683 J. Czyzowicz, I. Rival, and J. Urrutia. Galleries, light matchings and visibility graphs. In F. Dehne, J.-R. Sack, and N. Santoro, editors, *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 316–324. Springer-Verlag, 1989. [cru-glmvg-89]

3684 J. Czyzowicz, E. Rivera-Campo, N. Santoro, J. Urrutia, and J. Zaks. Guarding rectangular art galleries. to appear in Disc. Math. [crsuz-grag] *Succeeds:* crsuz-grag-89.

3685 J. Czyzowicz, E. Rivera-Campo, N. Santoro, J. Urrutia, and J. Zaks. Guarding rectangular art galleries. Technical Report 89-27, Dept. Comput. Sci., Univ. of Ottawa, 1989. to appear in *Discr. Applied Math.* [crsuz-grag-89] *Precedes:* crsuz-grag.

3686 J. Czyzowicz, E. Rivera-Campo, and J. Urrutia. Illuminating rectangles and triangles in the plane. report TR-89-50, Department of Computer Science, University of Ottawa, December 1989. [cru-irtp-89] *Precedes:* cru-irtp-93.

3687 J. Czyzowicz, E. Rivera-Campo, and J. Urrutia. Illuminating rectangles and triangles in the plane. *J. Combin. Theory Ser. B*, 57(1):1–17, 1993. [cru-irtp-93] *Succeeds:* cru-irtp-89.

3688 J. Czyzowicz, E. Rivera-Campo, and J. Urrutia. Optimal floodlight illumination in polynomial time. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 393–398, 1993. [cru-ofipt-93] *Cites:* bglosu-fp-93, c-ctpg-75, cru-irtp-93, crsuz-grag, f-icd-77, o-agta-87, ps-cgi-85, ZZZ.

3689 J. Czyzowicz, E. Rivera-Campo, J. Urrutia, and J. Zaks. Guarding convex sets. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 265–268, 1990. to appear in *Graphs and Combinatorics*. [cruz-gcs-90] *Cites:* b-slcmd-58, crsuz-grag-89, cru-irtp-93, cruz-ilcp-89, f-icd-77, o-agta-87, n-lbcmm-77, t-flg-47, uz-ics-89, ZZZ.

3690 J. Czyzowicz, E. Rivera-Campo, J. Urrutia, and J. Zaks. Illuminating and guarding segments in the plane. Technical Report RR 90/09-13, Dept. d'informatique, Univ. du Québec à Hull, 1990. to appear in *Geometriae Dedicata* [This is wrong!-JOR]. [cruz-igsp-90]

3691 J. Czyzowicz, E. Rivera-Campo, J. Urrutia, and J. Zaks. Illuminating and guarding segments in the plane. *Discrete Math.*, 137:147–153, 1995. [cruz-igsp-95]

3692 J. Czyzowicz, E. Rivera-Campo, J. Urrutia, and J. Zaks. Illuminating lines and circles in the plane. Technical Report 89-49, Univ. Ottawa, Ottawa, Canada, December 1989. [cruz-ilcp-89]

3693 J. Czyzowicz, E. Rivera-Campo, J. Urrutia, and J. Zaks. Separating convex sets in the plane. *Discrete Comput. Geom.*, 7:189–195, 1992. [cruz-scsp-92] *Succeeds:* cruz-scsp-90.

3694 J. Czyzowicz, E. Rivera-Campo, J. Urrutia, and J. Zaks. Separating convex sets on the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 50–54, 1990. [cruz-scsp-90] *Precedes:* cruz-scsp-92. *Cites:* akp-cddsl-89, ers-ccsno-90, hk-spcs-90, t-sppcs-79, uz-ics-89, ZZZ.

3695 J. Czyzowicz, I. Stojmenovic, and T. Szymacha. On a problem of immobilizing polygons. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 283–288, 1996. [css-pip-96]

3696 J. Czyzowicz, I. Stojmenović, and J. Urrutia. Immobilizing a polytope. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 214–227. Springer-Verlag, 1991. [csu-ip-91] *Keywords:* polytopes.

J. Czyzowicz. See also [1586, 1938–1940, 2171–2177, 2300].

D. See also [1604].

Frank Da. See also [2157].

3697 N. Dadoun. Hierarchical approaches to the hidden surface problem. Master's thesis, Univ. British Columbia, Vancouver, BC, December 1982. [d-hahsp-82] *Keywords:* master thesis.

3698 N. Dadoun and D. G. Kirkpatrick. Cooperative subdivision search algorithms with applications. In *Proc. 27th Allerton Conf. Commun. Control Comput.*, pages 538–547, 1989. [dk-cssaa-89]

3699 N. Dadoun and D. G. Kirkpatrick. Parallel construction of subdivision hierarchies. *J. Comput. Syst. Sci.*, 39:153–165, 1989. [dk-pcsh-89] *Succeeds:* dk-ppess-87.

3700 N. Dadoun and D. G. Kirkpatrick. Parallel processing for efficient subdivision search. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 205–214, 1987. [dk-ppess-87] *Keywords:* parallel computation, graph theory, searching, point location, subdivisions. *Precedes:* dk-pcsh-89. *Cites:* acgoy-pcg-85, acgoy-pcg-88, ag-epsp-86i, cdh-p5cpg-87, cv-dctac-86i, dk-fdpi-82, dk-fdpi-83, dk-ladsc-85, dk-fappi-, eka-nplai-84, kw-fpami-84, k-osps-83, lm-bmcpg-78, l-spami-85, mr-ptcia-85, ph-chfsp-77, sh-cpp-75, ZZZ.

3701 N. Dadoun, D. G. Kirkpatrick, and J. P. Walsh. Hierarchical approaches to hidden surface testing. In *Proc. Graphics Interface '82*, pages 49–56, 1982. [dkw-hahst-82] *Keywords:* data structuring, detection, visibility, hidden line/surface elimination, computer graphics.

3702 N. Dadoun, D. G. Kirkpatrick, and J. P. Walsh. Hierarchical methods for beam tracing. Technical report, ??, 1985. In Preparation. [dkw-hmbt-85]

3703 N. Dadoun, D. G. Kirkpatrick, and J. P. Walsh. The geometry of beam tracing. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 55–61, 1985. [dkw-gbt-85] *Keywords:* design of algorithms, computer graphics, intersection, hidden line/surface elimination, hierarchical representations. *Cites:* a-rtc-84, cd-diec-80, c-hgmvs-76, d-hahsp-82, dkw-hahst-82, dkw-hmbt-85, dk-fdpi-83, fkn-vsgpt-80, fag-nrtsd-83, g-ssfrt-84, hh-btpo-84, k-osps-83, ph-chfsp-77, r-rcms-82, rw-3drfr-80, sh-rpc-74, sss-cthsa-74, w-sdssr-79, wd-ddgsr-81, wd-wawwd-82, w-pcugr-80, wa-hsrup-77, w-iimsd-80, ZZZ.

N. Dadoun. See also [69,13336,13337].

3704 Ovidiu Daescu. From experiments to theory: Optimal weighted links. In *Abstracts 17th European Workshop Comput. Geom.*, pages 158–161. Freie Universität Berlin, 2001. [d-fetow-01]

Ovidiu Daescu. See also [3045, 3046].

3705 P. Dagum, M. Luby, M. Mihal, and U. Vazirani. Polytopes, permanents and graphs with large factors. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 412–421, 1988. [dlmv-ppglf-88] *Comments:* To appear in Combinatorica as two papers.

E. Dahlhaus. See also [10869].

3706 G. Dahlquist, A. Björk, and N. Anderson. *Numerical Methods.* Prentice Hall, 1974. [dba-nm-74]

3707 W. Dahmen. Smooth piecewise quadratic surfaces. In T. Lyche and L. Schumaker, editors, *Mathematical Methods in CAGD.* ??, ?? [d-spqs-]

3708 W.-M. Dai, Te. Asano, and E. S. Kuh. Routing region definition and ordering scheme for building block layout. *IEEE Trans. Comput.-Aided. Design Integr. Circuits Syst.*, 4:189–197, 1985. [dak-rrdos-85] *Keywords:* VLSI design, plane-sweep, design of algorithms, plane graph representation.

3709 W. W.-M. Dai, R. Kong, and M. Sata. Routability of a rubber-band sketch. In *Proc. 28th ACM-IEEE Design Automation Conf.*, pages 45–48, 1991. [dks-rrbs-91]

W. W.-M. Dai. See also [13842,13843].

3710 Y. Dai, N. Katoh, and S.-W. Cheng. LMT-skeleton heuristics for several classes of optimal triangulations. *Comput. Geom. Theory Appl.*, 17:51–68, 2000. [dkc-lmtsh-00]

René van Dal. See also [2592, 3939, 3940].

L. K. Dale. See also [616].

3711 Paul Dale, Peter Eades, Xuemin Lin, and Nicolas C. Wormald. Measuring motion planning strategies. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 8, 1989. [delw-mmps-89]

A. van Dam. See also [1539, 5354–5356].

3712 P. Damaschke. The Hamiltonian circuit problem for circle graphs is NP-complete. *Inform. Process. Lett.*, 32(1):1–2, 1989. [d-gcpcg-89] *Keywords:* geometric graphs, NP-completeness.

3713 F. d'Amore and P. G. Franciosa. On the optimal binary plane partition for sets of isothetic rectangles. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 1–5, 1992. [df-obpps-92p] *Precedes:* df-obpps-92j. *Cites:* fkn-vsgpt-80, m-pst-85, py-bpahs-89, py-obspo-90t, ps-cgi-85, vw-rlsil-82, ZZZ.

3714 F. d'Amore and P. G. Franciosa. On the optimal binary plane partition for sets of isothetic rectangles. *Inform. Process. Lett.*, 44:255–259, 1992. [df-obpps-92j] *Succeeds:* df-obpps-92p.

3715 F. d'Amore and P. G. Franciosa. Separating sets of hyperrectangles. In *Proc. 15th Internat. Sympos. Math. Found. Comput. Sci.*, volume 452 of *Lecture Notes Comput. Sci.*, pages 165–172. Springer-Verlag, 1990. [df-ssh-90] *Keywords:* *d*-dimensional, hyperrectangle, separation. *Precedes:* df-ssh-93.

3716 F. d'Amore and P. G. Franciosa. Separating sets of hyperrectangles. *Internat. J. Comput. Geom. Appl.*, 3(2):155–165, 1993. [df-ssh-93] *Keywords:* rectangles, separator, binary space partition. *Succeeds:* df-ssh-90. *Annote:* Pictures are missing. They appeared on Internat. J. Comput. Geom. Appl., volume 3, number 3, 1993, page 345.

3717 F. d'Amore, P. G. Franciosa, R. Giaccio, and M. Talamo. Maintaining maxima under boundary updates. In *Algorithms and Complexity (Proc. CIAC' 97)*, volume 1203 of *Lecture Notes Comput. Sci.*, pages 100–109. Springer-Verlag, 1997. [afgt-mmbu-97]

3718 F. d'Amore, P. G. Franciosa, and G. Liotta. A robust region approach to the computation of geometric graphs. In G. Bilardi, G. F. Italiano, A. Pietracaprina, and G. Pucci, editors, *Algorithms – ESA '98*, volume 1461 of *Lecture Notes Comput. Sci.*, pages 175–186. Springer-Verlag, 1998. [afl-rracg-98] *Succeeds:* dfl-rcems-98.

3719 Fabrizio d'Amore, Paolo G. Franciosa, and Guiseppe Liotta. Robust computation of Euclidean minimum spanning trees. In *Abstracts 14th European Workshop Comput. Geom.*, pages 29–31. Universitat Polytènica de Catalunya, Barcelona, 1998. [dfl-rcems-98]

3720 J. C. Dana, C. I. Grima, F. Hurtado, and A. Márquez. More results on computational geometry on the cylinder. In *Abstracts 14th European Workshop Comput. Geom.*, pages 61–63. Universitat Polytènica de Catalunya, Barcelona, 1998. [dghm-mrcgc-98]

3721 J. C. Dana, C. I. Grima, and A. Márquez. Convex hull in non-planar surfaces. In *Abstracts 13th European Workshop Comput. Geom.*, pages 39–41. Universität Würzburg, 1997. [dgm-chnps-97]

J. Carlos Dana. See also [2749, 3384, 3385].

E. Danaher. See also [9215].

3722 J. Danaraj and V. Klee. A representation of two-dimensional pseudo-manifolds and its use in the design of a linear time sheling algorithm. *Ann. Discrete Math.*, 2, 1978. [dk-rtdpm-78]

3723 J. Dangermond. A review of digital data commonly available and some of the practical problems of entering them into a gis. In D. J. Peuquet and D. F. Marble, editors, *Introductory Readings in Geographic Information Systems*, pages 222–232. Tayler & Francis, London, 1990. [d-rddca-90]

3724 K. Daniels. *Containment algorithms for nonconvex polygons with applications to layout.* Ph.D. thesis, Harvard University, Cambridge, MA, 1995. [d-canpa-95] *URL:* ftp://deas-ftp.harvard.edu/techreports/tr-1995.html. *Keywords:* doctoral thesis, concave, polygons, packing, nesting, placement, optimization, enclosure, Minkowski sum, configuration space. *Comments:* is also Harvard DAS TechReport number: 12-95.

3725 K. Daniels and V. Milenkovic. Column-based strip packing using ordered and compliant containment. In *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, pages 33–38, 1996. [dm-cbspu-96] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* layout, nesting, placement, Minkowski sum, configuration space. *Comments:* to appear in Lecture Notes in Computer Science; submitted to Internat. J. Comput. Geom. Appl.

3726 K. Daniels and V. Milenkovic. Limited gaps. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 225–230, 1994. [dm-lg-94] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* layout, packing, nesting, placement, reachability, Minkowski sum, configuration space, decomposition. *Cites:* dmr-fmaap-93, f-savd-87, l-tdvdl-80, lm-ccp-93, ZZZ.

3727 Karen Daniels and Victor Milenkovic. Multiple translational containment: Approximate and exact algorithms. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 205–214, 1995. [dm-mtcae-95] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* packing, layout, placement, nesting, Minkowski sum, configuration space.

3728 K. Daniels, V. Milenkovic, and Z. Li. Multiple containment methods. Technical Report 12-94, Center for Research in Computing Technology, Division of Applied Sciences, Harvard University, Cambridge, MA, 1994. [dml-mcm-94] *URL:* ftp://deas-ftp.harvard.edu/techreports/tr-1995.html. *Keywords:* polygons, concave, packing, layout, nesting, placement, mixed integer programming, Minkowski sum, configuration space.

3729 K. Daniels, V. Milenkovic, and D. Roth. Finding the largest area axis-parallel rectangle in a polygon. *Comput. Geom. Theory Appl.*, 7:125–148, 1997. [dmr-flaap-97] *URL:* http://www.cs.bc.edu/~daniels. *Keywords:* optimization, monotone matrices, polygons, inclusion. *Succeeds:* dmr-fmaap-93.

3730 K. Daniels, V. Milenkovic, and D. Roth. Finding the largest rectangle in several classes of polygons. Technical Report 22-95, Center for Research in Computing Technology, Division of Applied Sciences, Harvard University, Cambridge, MA, 1995. [dmr-flrsc-95] *URL:* ftp://deas-ftp.harvard.edu/techreports/tr-1995.html. *Keywords:* optimization, monotone matrices, polygons, inclusion. *Comments:* to appear in Computational Geometry, Theory and Applications.

3731 K. Daniels, V. Milenkovic, and D. Roth. Finding the maximum area axis-parallel rectangle in a polygon. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 322–327, 1993. [dmr-fmaap-93] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* optimization, monotone matrices, polygons, inclusion. *Precedes:* dmr-flaap -97. *Cites:* akmsw-gamsa-87, as-facle-87, aw-cg-88, c-tsplt-90i, cdl-cler-86, kk-altag-90, mos-fmrio-85, mdl-amm-91, mdl-pcnpc-92, ow-rv-88, ps-cgi-85, srw-gsv-cccg-91, nhl-merp-84, wy-ocsp-88, ZZZ.

3732 K. Daniels and V. J. Milenkovic. Distance-based subdivision for translational LP containment. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 196–201, 1996. [dm-dbstl-96] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* concave, polygons, decomposition.

3733 K. Daniels and V. J. Milenkovic. Multiple translational containment, part i: An approximate algorithm. *Algorithmica*, 19(1–2):148–182, September 1997. [dm-mtcp1-97]

K. Daniels. See also [9587–9589].

3734 M. E. Daniels. The covering circle of a sample from 2 circular normal distribution. *Biometrika*, 39:137–143, 1952. [d-ccs2c-52]

W. Dankwort. See also [7129].

3735 H. H. Dannelongue and P. A. Tanguy. Efficient data-structures for adaptive remeshing with the FEM. *J. Comput. Phys.*, 91(1):94–109, 1990. [dt-edsar-90] *Annote:* Advancing front method. To build a new triangle on an edge, find closest point to the third vertex of an equilateral triangle. x and y binary trees are used to speed the search.

3736 John Danskin and Pat Hanrahan. Fast algorithms for volume ray tracing. In *1992 Workshop on Volume Visualization*, pages 91–98, 1992. [dh-favrt-92]

3737 G. B. Dantzig. *Linear Programming and Extensions.* Princeton University Press, Princeton, NJ, 1963. [d-lpe-63]

3738 G. B. Dantzig, A. Orden, and P. Wolfe. The generalized simplex method for minimizing a linear form under linear inequality restrictions. *Pacific J. Math.*, 5:183–195, 1955. [dow-gsmml-55]

G. B. Dantzig. See also [94, 95].

3739 L. Danzer and B. Grünbaum. Intersection properties of boxes in R^n. *Combinatorica*, 2(3):237–246, 1982. [dg-ipbr-82]

3740 Ludwig Danzer, Branko Grünbaum, and Victor Klee. Helly's theorem and its relatives. In *Convexity*, volume 7 of *Proc. Symp. Pure Math.*, pages 101–180. American Mathematical Society, Providence, 1963. [dgk-htir-63]

3741 L. Danzer, D. Laugwitz, and H. Lenz. Über das Löwnersche Ellipsoid und sein Analogon unter den einem Eikörper eingeschriebenen Ellipsoiden. *Arch. Math.*, 8:214–219, 1957. [dll-udleu-57]

3742 M. Dao, M. Habib, J. Richard, and D. Tallot. CABRI an interactive system for graph manipulation. In G. Tinhofer and G. Schmidt, editors, *Proc. 12th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 246 of *Lecture Notes Comput. Sci.*, pages 58–67. Springer-Verlag, 1987. [dhrt-cisgm-87] *Keywords:* graph drawing.

S. Dao. See also [12231].

3743 F. Darema, S. Kirkpatrick, and V. A. Norton. Parallel algorithms for chip placement by simulated annealing. *IBM J. Res. Develop.*, 31:391–402, 1987. [dkn-pacps-87]

P. Dario. See also [3486].

J. Darnauer. See also [13843].

3744 G. Das. *Approximation schemes in computational geometry.* Ph.D. thesis, University of Wisconsin, 1990. [d-ascg-90] *Keywords:* doctoral thesis.

3745 Gautam Das. The visibility graph contains a bounded-degree spanner. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 70–75, 1997. [d-vgcbd-97]

3746 Gautam Das and Michael T. Goodrich. On the complexity of approximating and illuminating three-dimensional convex polyhedra. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 74–85. Springer-Verlag, 1995. [dg-caitd-95] *Keywords:* graph drawing, 3D, convex, polyhedron.

3747 G. Das and M. T. Goodrich. On the complexity of optimization problems for 3-dimensional convex polyhedra and decision trees. Research Report, Center for Geometric Computing, Johns Hopkins Univ., 1997. [dg-ocop3-97t]

3748 G. Das and M. T. Goodrich. On the complexity of optimization problems for 3-dimensional convex polyhedra and decision trees. *Comput. Geom. Theory Appl.*, 8:123–137, 1997. [dg-ocop3-97a]

3749 G. Das, M. T. Goodrich, and K. Ramayier. Three-dimensional convex graph drawing. Technical Report, Dept. of Computer Sci., Johns Hopkins Univ., 1994. [dgr-tdcgd-94] *Keywords:* graph drawing, 3D, convex, straight-line.

3750 G. Das, D. Gunopulos, and H. Mannila. Finding similar time series. Technical report, ??, 1996. Manuscript. [dgm-fsts-96]

3751 G. Das, P. Heffernan, and G. Narasimhan. Finding all weakly-visible chords of a polygon in linear time. Manuscript, Memphis State University, 1993. [dhn-fwvcp-93] *Precedes:* dhn-fwvcp-94.

3752 G. Das, P. Heffernan, and G. Narasimhan. LR-visibility in polygons. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 303–308, 1993. [dhn-lvp-93] *Precedes:* dhn-lvp-97. *Cites:* at-oadvp-81, c-tsplt-91a, cg-vippg-89, dhn-fwvcp-93, ghlst-ltavs-87, h-oatgp-93, ik-tgp-91, k-dwvsp-88, ss-oadwv-90, tl-tgwsp-93, ZZZ.

3753 G. Das, P. Heffernan, and G. Narasimhan. LR-visibility in polygons. *Comput. Geom. Theory Appl.*, 7:37–57, 1997. [dhn-lvp-97] *Succeeds:* dhn-lvp-93.

3754 G. Das, P. Heffernan, and G. Narasimhan. Optimally sparse spanners in 3-dimensional Euclidean space. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 53–62, 1993. [dhn-oss3d-93] *Cites:* addjs-sswg-93, cdns-nsrgs-92, dj-wtacg-89, ll-tapga-89, ZZZ.

3755 Gautam Das and Paul J. Heffernan. Constructing degree-3 spanners with other sparseness properties. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 11–20. Springer-Verlag, 1993. [dh-cd3so-93]

3756 G. Das and P. J. Heffernan. Constructing degree-3 spanners with other sparseness properties. *Internat. J. Found. Comput. Sci.*, 7:121–135, 1996. [dh-cd3so-96]

3757 G. Das, P. J. Heffernan, and G. Narasimhan. Finding all weakly-visible chords of a polygon in linear time. *Nordic J. Comput.*, 1:433–457, 1994. [dhn-fwvcp-94] *Succeeds:* dhn-fwvcp-93.

3758 G. Das and D. Joseph. Minimum vertex hulls for polyhedral domains. In *Proc. 7th Sympos. Theoret. Aspects Comput. Sci.*, volume 415 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1990. [dj-mvhpd-90] *Precedes:* dj-mvhpd-92.

3759 G. Das and D. Joseph. Minimum vertex hulls for polyhedral domains. *Theoret. Comput. Sci.*, 103:107–135, 1992. [dj-mvhpd-92] *Succeeds:* dj-mvhpd-90.

3760 G. Das and D. Joseph. The complexity of minimum convex nested polyhedra. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 296–301, 1990. [dj-cmcnp-90] *Cites:* abosy-fmcnp-85, cy-psppo-84, dj-mvhpd-90, kl-fstcg-85, l-pftu-82, o-cgc4-88, o-cgc5-88, ZZZ.

3761 G. Das and D. Joseph. Which triangulations approximate the complete graph? In *Proc. International Symposium on Optimal Algorithms*, volume 401 of *Lecture Notes Comput. Sci.*, pages 168–192. Springer-Verlag, 1989. [dj-wtacg-89] *Abstract:* It has been shown in the literature that the Delaunay triangulation and its variants are sparse approximations of the complete graph, in that the shortest distance between two sites within the triangulation is bounded by a constant multiple of their Euclidean separation. The present paper shows that other classical triangulation algorithms, such as the greedy triangulation, and more notably, the minimum weight triangulation, also approximate the complete graph in this sense. It also designs an algorithm for constructing extremely sparse (nontriangular) planar graphs that approximate the complete graph. It defines a sufficiency condition and shows that any Euclidean planar graph constructing algorithm which satisfies this condition always produces good approximations of the complete graph.

3762 G. Das, S. Kapoor, and M. Smid. On the complexity of approximating Euclidean traveling salesman tours and minimum spanning trees. Report TR 96-02, Department of Computer Science, King's College, London, UK, 1996. [dks-ocaet-96t]

3763 G. Das, S. Kapoor, and M. Smid. On the complexity of approximating Euclidean traveling salesman tours and minimum spanning trees. In *Proc. 16th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1180 of *Lecture Notes Comput. Sci.*, pages 64–75. Springer-Verlag, 1996. [dks-ocaet-96i]

3764 G. Das, S. Kapoor, and M. Smid. On the complexity of approximating Euclidean traveling salesman tours and minimum spanning trees. *Algorithmica*, 19:447–460, 1997. [dks-ocaet-97]

3765 G. Das and G. Narasimhan. A fast algorithm for constructing sparse Euclidean spanners. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 132–139, 1994. [dn-facse-94] *Cites:* addjs-sswg-93, ap-sp-90, c-facts-93, cdns-nsrgs-95, dhn-oss3d-93, dh-cd3so-93, ll-tapga-89, s-cmsga-91, s-gs-92, v-sgagc-91, ZZZ.

3766 G. Das and G. Narasimhan. A fast algorithm for constructing sparse Euclidean spanners. *Internat. J. Comput. Geom. Appl.*, 7:297–315, 1997. [dn-facse-97]

3767 G. Das and G. Narasimhan. Geometric searching and link distances. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 261–272. Springer-Verlag, 1991. [dn-gsld-91] *Keywords:* distance.

3768 G. Das and G. Narasimhan. Optimal linear-time algorithm for the shortest illuminating line segment in a polygon. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 259–266, 1994. [dn-oltas-94] *Keywords:* visibility. *Cites:* at-oadvp-81, bmt-ltacs-91, c-tsplt-91a, ghlst-ltavs-87, c-ocswv-92, cn-wrsp-91, dhn-lvp-93, dhn-fwvcp-93, dc-advsp-93, h-oatgp-93, ik-tgp-92, k-dwvsp-88, lp-oafkp-79, n-wrlv-92, o-cgc18-93, kv-swtwv-93, ss-oadwv-90, st-pplup-86, tl-tgwsp-93, ZZZ.

3769 Gautam Das and Giri Narasimhan. Short cuts in higher dimensional space. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 103–108, 1995. [dn-schds-95]

3770 Gautam Das, Giri Narasimhan, and Jeffrey Salowe. A new way to weigh malnourished Euclidean graphs. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 215–222, 1995. [dns-nwwme-95] *Keywords:* Steiner trees, t-spanners.

3771 G. Das and M. Smid. A lower bound for approximating the geometric minimum weight matching. *Inform. Process. Lett.*, 74:253–255, 2000. [ds-lbagm-00]

G. Das. See also [608, 609, 753, 903, 2244, 2823, 2824, 3047–3049].

P. Das. See also [2870].

3772 P. P. Das. Characterization of metricity preserving transformations. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 31, 1989. [d-cmpt-89]

3773 P. P. Das, P. P. Chakrabarti, and B. N. Chatterji. Distance functions in digital geometry. *Inform. Sci.*, 42(2):113–136, 1987. [dcc-dfdg-87] *Keywords:* distance, digital geometry.

3774 P. P. Das, P. P. Chakrabarti, and B. N. Chatterji. Generalized distances in digital geometry. *Inform. Sci.*, 42:51–67, 1987. [dcc-gddg-87]

3775 P. P. Das and B. N. Chatterji. Hyperplanes in digital geometry. *Inform. Sci.*, 50(1):73–91, 1990. [dc-hdg-90] *Keywords:* digital geometry, hyperplanes, d-dimensional.

P. P. Das. See also [2871].

3776 S. R. Das, P. Vaidya, L. Patniak, and P. C. Mathias. A systolic algorithm for hidden surface removal. *Parallel Comput.*, 15(1–3):277–290, 1990. [dvpm-sahsr-90] *Keywords:* parallel computation, hidden line/surface elimination.

3777 B. Dasgupta and C. E. Veni Madhavan. An approximate algorithm for the minimal vertex nested polygon problem. *Inform. Process. Lett.*, 33:35–44, 1989. [dv-aamvn-89] *Keywords:* computational geometry, graphs, shortest paths.

B. DasGupta. See also [1774, 1775].

Bhaskar Dasgupta. See also [6476–6478].

B. DasGupta. See also [10560].

C. E. Dasgupta. See also [10561].

3778 P. Dasgupta, P. P. Chakrabarti, and S. C. DeSarkar. A near optimal algorithm for the extended cow-path problem in the presence of relative errors. In *Proc. 15th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1026 of *Lecture Notes Comput. Sci.*, pages 22–36. Springer-Verlag, 1995. [dcd-noaec-95]

3779 P. Dasgupta, P. P. Chakrabarti, and S. C. DeSarkar. A new competitive algorithm for agent searching in unknown streets. In *Proc. 16th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1180 of *Lecture Notes Comput. Sci.*, pages 147–155. Springer-Verlag, 1996. [dcd-ncaas-96]

3780 S. Dasgupta and A. Gupta. An elementary proof of the Johnson-Lindenstrauss lemma. Technical Report TR-99-06, Intl. Comput. Sci. Inst., Berkeley, CA, 1999. [dg-epjll-99]

3781 Mark S. Daskin, editor. *Network and Discrete Location*. John Wiley & Sons, New York, NY, 1995. [d-ndl-95] *ISBN:* 0-471-01897-X.

3782 N. N. Datar, U. G. Gujar, and V. C. Bhavsar. Some methods for generating three-dimensional objects. Report ??, School Comput. Sci., Univ. New Brunswick, Fredericton, NB, 1985. [dgb-smgtd-85]

3783 A. Datta. Efficient algorithms for the largest rectangle problem. *Inform. Sci.*, 64:121–141, 1992. [d-ealrp-92]

3784 A. Datta. Efficient parallel algorithms for geometric k-clustering problems. In *Proc. 11th Sympos. Theoret. Aspects Comput. Sci.*, Lecture Notes Comput. Sci. Springer-Verlag, 1994. [d-epagk-94]

3785 Amitava Datta, Christoph A. Hipke, and Sven Schuierer. Competitive searching in polygons: Beyond generalised streets. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 32–41. Springer-Verlag, 1995. [dhs-cspbg-95]

3786 Amitava Datta and Christian Icking. Competitive searching in a generalized street. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 175–182, 1994. [di-csgs-94] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr191.pdf. *Precedes:* di-csgs-95. *Cites:* bcr-sp-93, brs-nugt-91, dhn-lvp-93, dkp-hlue1-93, ik-tgp-92, k-wusbd-92, k-olssp-94, ls-ppspm-87, py-spwm-91, st-aelup-85, ZZZ.

3787 Amitava Datta and Christian Icking. Competitive searching in a generalized street. Technical Report 191, Department of Computer Science, FernUniversität Hagen, Germany, 1995. [di-csgs-95] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr191.pdf. *Succeeds:* di-csgs-94. *Precedes:* di-csgs-99.

3788 Amitava Datta and Christian Icking. Competitive searching in a generalized street. *Comput. Geom. Theory Appl.*, 13:109–120, 1999. [di-csgs-99] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr191.pdf. *Succeeds:* di-csgs-95. *Cites:* aks-eueo-99, bcr-sp-93, brs-nugt-97, dhn-lvp-97, dhs-cspbg-95, ds-mpupe-99, dkp-hlue1-98, drw-lrmt-98, gs-oolaw-97, gmr-rlp-97, hikk-cslp-97, hikk-pepns-98, ik-tgp-92, ik-csas-95, ik-skpcs-95, ikl-ocsws-99, ilss-ghtus-98, krt-sueor-96, knw-rlti-97, k-wusbd-92, k-olssp-94, lc-tasso-98, lsksc-ncssu-97, l-oltsb-96, ls-ghtus-95, ls-gsr-96, ls-wsf-96, ls-pinos-97, ls-lbsgs-98, ls-ppspm-87, py-spwm-91, s-ersls-97, ss-ossus-99, st-aelup-85, thl-tgwsp-98, ZZZ.

3789 A. Datta and K. Krithivasan. An efficient algorithm for the maximum empty rectangle problem in three dimensions. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 78–83, 1991. [dk-eamer-91] *Cites:* as-facle-87, cdl-cler-86, d-ealrp-92, gno-faded-89, ZZZ.

3790 A. Datta and K. Krithivasan. Efficient algorithms for the maximum empty rectangle problem in shared memory and other architectures. In *Proc. Internat. Conf. Parallel Process.*, volume 3, pages 344–345, 1990. [dk-eamer-90]

3791 A. Datta and K. Krithivasan. Path planning with local information. In *Proc. Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 338 of *Lecture Notes Comput. Sci.*, pages 108–121. Springer-Verlag, December 1988. [dk-ppli-88]

3792 A. Datta, K. Krithivasan, and T. Ottmann. An optimal algorithm for one-separation of a set of isothetic polygons. In *Algorithms and Complexity (Proc. CIAC' 97)*, volume 1203 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1997. [dko-oaoss-97]

3793 A. Datta, H. P. Lenhof, C. Schwarz, and M. Smid. Static and dynamic algorithms for k-point clustering problems. Report MPI-I-93-108, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [dlss-sdakp-93t]

3794 A. Datta, H.-P. Lenhof, C. Schwarz, and M. Smid. Static and dynamic algorithms for k-point clustering problems. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 265–276. Springer-Verlag, 1993. [dlss-sdakp-93i]

3795 A. Datta, H.-P. Lenhof, C. Schwarz, and M. Smid. Static and dynamic algorithms for k-point clustering problems. *J. Algorithms*, 19:474–503, 1995. [dlss-sdakp-95]

3796 A. Datta, A. Maheshwari, and J.-R. Sack. Optimal CREW-PRAM algorithms for direct dominance problems. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 109–120. Springer-Verlag, 1993. [dms-ocpad-93]

3797 A. Datta, A. Maheshwari, and J.-R. Sack. Optimal parallel algorithms for direct dominance problems. *Nordic J. Comput.*, 3:72–88, 1996. [dms-opadd-96]

3798 A. Datta and G. D. S. Ramkumar. On some largest empty orthoconvex polygons in a point set. In *Proc. Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 472 of *Lecture Notes Comput. Sci.*, pages 270–285. Springer-Verlag, December 1990. [dr-sleop-90]

3799 Amitava Datta and Subbiah Soundaralakshmi. Motion planning in an unknown polygonal environment with bounded performance guarantee. In *Proc. 1999 IEEE Internat. Conf. Robot. Autom.*, 1999. [ds-mpupe-99]

3800 A. Datta, R. Srikant, and K. Krithivasan. Fast sequential and parallel algorithms for finding the largest rectangle separating two sets. *Internat. J. Comput. Math.*, 37:49–61, 1990. [dsk-fspaf-90]

A. Datta. See also [8366, 10635].

3801 A. Dattasharma. On the size of a generalized Voronoi diagram for convex polyhedra in d dimensions. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 357–362, 1994. [d-sgvdc-94] *Cites:* dk-tmpcp-93, dk-avr3t-, d-sccgv-, ls-pptmc-87, ksd-ttute-92, ZZZ.

3802 A. Dattasharma. Some qualitative properties of a generalized Voronoi diagram for convex polyhedra in d dimensions. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 134–139, 1994. [d-sqpgv-94] *Cites:* ps-cgi-85, dk-tmpcp-93, dk-avr3t-, d-sccgv-, ls-pptmc-87, ksd-ttute-92, c-vmpmp-85, ZZZ.

3803 A. Dattasharma. *Structure and Computation of a Class of Generalized Voronoi Diagrams with application to Translational Motion Planning*. PhD thesis, Dept. of Computer Science and Automation, Indian Institute of Science, Bangalore, India. [d-sccgv-] *Keywords:* doctoral thesis.

3804 A. Dattasharma and S. Keerthi. Translational motion planning for a convex polyhedron in a 3d polyhedral world using an efficient and new roadmap. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 449–454, 1993. [dk-tmpcp-93] *Cites:* osy-gvdl-87, b-sfppg-83, ls-pptmc-87, cd-svd-88, s-aavd3-91, ksd-ttute-92, ls-pptmc-87, cd-svd-88, s-aavd3-91, c-vmpmp-85, dk-rvrtm-93, bms-plpco-93, m-lpltw-84, c-crmp-87, r-ca-70, ZZZ.

3805 A. Dattasharma and S. S. Keerthi. An augmented Voronoi roadmap for 3D translational motion planning for a convex polyhedron moving amidst convex polyhedral obstacles. to appear. [dk-avr3t-]

3806 A. Dattasharma and S. S. Keerthi. Rectilinear Voronoi like roadmap for translational motion of a convex polyhedron amidst convex polyhedra in a 3d Euclidean world. Technical Report 02-93, Indian Institute of Science, June 1993. [dk-rvrtm-93]

A. Dattasharma. See also [7957].

3807 H. Davenport. A combinatorial problem connected with differential equations II. *Acta Arithmetica*, 17:363–372, 1971. [d-cpcde-71]

3808 H. Davenport. *The Higher Arithmetic: An Introduction to the Theory of Numbers*. Dover Publications, New York, 1983. [d-haitn-83]

3809 H. Davenport and A. Schinzel. A combinatorial problem connected with differential equations. *Amer. J. Math.*, 87:684–689, 1965. [ds-cpcde-65] *Keywords:* Davenport-Schinzel sequences.

3810 J. Davenport. The computerization of algebraic geometry. In *Proc. Internat. Sympos. Symbolic Algebraic Comput.*, volume 72, pages 119–133. Springer-Verlag, 1979. [d-cag-79]

James Davenport. See also [2526, 8536].

3811 J. H. Davenport. A "piano movers" problem. *SIGSAM Bull.*, 20(1–2):15–17, 1986. [d-pmp-86] *Keywords:* motion planning.

3812 J. H. Davenport, Y. Siret, and E. Tournier. *Computer Algebra: systems and algorithms for algebraic computation*. Acacdemic Press, 1988. [dst-casaa-88]

3813 H. A. David. *Order Statistics*. John Wiley & Sons, 1970. [d-os-70]

L. S. David. See also [11683].

E. R. Davidson. See also [9392].

3814 Ron Davidson and David Harel. Drawing graphics nicely using simulated annealing. *ACM Trans. Graph.*, 15(4):301–331, 1996. [dh-dgnus-96] *Keywords:* graph drawing, straight-line, force-directed.

3815 R. Davidson and D. Harel. Drawing graphs nicely using simulated annealing. Technical report, Department of Applied Mathematics and Computer Science, The Weizmann Institute of Science, Rehovot, 1989. [dh-dgnus-89] *Keywords:* graph drawing.

L. S. Davies. See also [12865].

Alan R. Davis. See also [835–838].

B. Davis. See also [1145].

3816 E. Davis. Shape and function of solid objects: some examples. Report TR137, Dept. Comput. Sci., New York Univ., New York, NY, 1984. [d-sfsos-84]

3817 G. Davis. Computing separating planes for a pair of disjoint polytopes. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 8–14, 1985. [d-csppd-85] *Cites:* a-rmli-54, bgm-sma-65, b-mpg-69, c-lp-83, dh-pcsa-73, d-cvem-83, g-cpcli-51, g-spaph-82, g-rmssl-80, ns-picg-79, ph-chfsp-77, w-etcp-50, ZZZ.

3818 J. C. Davis and M. J. McCullagh. *Display and analysis of spatial data*. John Wiley & Sons, New York, NY, 1975. [dm-dasd-75]

3819 L. Davis and M. Benedikt. Computational models of space: isovists and isovist fields. *Comput. Graph. Image Process.*, 11:49–72, 1979. [db-cmsii-79]

L. Davis. See also [12863, 13729].

Larry S. Davis. See also [3030, 7701, 12866, 12867].

M. Davis. See also [11447].

3820 P. J. Davis. *Interpolation and Approximation*. Blaisdell Publishing Co., New York, 1963. [d-ia-63]

3821 P. J. Davis and P. Rabinivitz. *Methods of numerical integration*. Academic Press, New York, NY, 1975. [dr-mni-75]

T. Davis. See also [11318].

W. A. Davis. See also [5961, 8423].

3822 J. R. Davy and P. M. Dew. A note on improving the performance of Delaunay triangulation. In *New Advances in Computer Graphics: Proceedings of Computer Graphics International '89*, pages 209–226, Tokyo, 1989. Springer-Verlag. [dd-nipdt-89] *Annote:* Experiments on coarse grain parallel implementations of Guibas Stolfi divide and conquer algorithm.

J. R. Davy. See also [10061].

3823 R. J. Dawson. On removing a ball without disturbing the others. *Math. Mag.*, 57:27–30, 1984. [d-rbwdo-84]

3824 A. M. Day. Planar convex hull algorithms in theory and practice. *Comput. Graph. Forum*, 7(3):177–193, 1988. [d-pchat-88] *Keywords:* convex hull.

3825 A. M. Day. The implementation of a 2D convex hull algorithm using pertubation. *Comput. Graph. Forum*, 9(4):309–316, December 1990. [d-i2dch-90]

3826 A. M. Day. The implementation of an algorithm to find the convex hull of a set of 3-d points. *ACM Trans. Graph.*, 9(1):105–132, 1990. [d-iafch-90] *Keywords:* implementing algorithms, three-dimensional, convex hull, points. *Cites:* ph-chfsp-77.

A. M. Day. See also [3321, 7471].

3827 W. H. E. Day and H. Edelsbrunner. Efficient algorithms for agglomerative hierarchical clustering methods. Report F122, Inst. Informationsverarb., Univ. Graz, Graz, Austria, 1983. [de-eaahc-83]

3828 W. H. E. Day and H. Edelsbrunner. Efficient algorithms for agglomerative hierarchical clustering methods. *J. Classif.*, 1:7–24, 1984. [de-eaahc-84] *Keywords:* design of algorithms, cluster analysis, discrete geometry, construction, packing, worst-case analysis.

3829 W. H. E. Day and H. Edelsbrunner. Investigation of proportional link linkage clustering methods. *J. Classif.*, 2:239–254, 1985. [de-ipllc-85] *Keywords:* design of algorithms, cluster analysis, worst-case analysis.

3830 E. F. D'Azevedo. Optimal triangular mesh generation by coordinate transformation. *SIAM J. Sci. Statist. Comput.*, 12(4):755–786, 1991. [d-otmgc-91] *Keywords:* triangulation.

3831 E. F. D'Azevedo and R. B. Simpson. On optimal interpolation triangle incidences. *SIAM J. Sci. Statist. Comput.*, 10(6):1063–1075, 1989. [ds-oiti-89] *Keywords:* Delaunay triangulation. *Annote:* What triangulation minimizes error if we are interpolating a convex quadratic function? First we scale so that contours of the function are turned from ellipses into circles. Error is proportional to area of minimum containing circle. Another proof that DT minimizes circumradii.

3832 L. De Floriani. A graph based approach to object feature recognition. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 100–109, 1987. [d-gbaof-87] *Cites:* adf-efgrs-84, adf-gmsou-85, bj-tdor-85, h-efitd-84, ht-dgtc-73, k-sccad-80, r-rrstm-80, s-adfbr-81, t-dfslg-72, w-ebdss-85, w-tsgm-86, w-fevd-82, ZZZ.

3833 L. De Floriani. A pyramidal data structure for triangle-based surface description. *IEEE Comput. Graph. Appl.*, 9(2):67–78, March 1989. [d-pdstb-89]

3834 Leila De Floriani. Data structures for encoding triangulated irregular networks. *Adv. Eng. Softw.*, 9(3):122–128, 1987. [d-dseti-87] *Annote:* Describes some choices for data structures for representing a triangulation, and methods for point-location, edge-neighbour and vertex-neighbour problems.

3835 Leila De Floriani. Surface representations based on triangular grids. *Visual Comput.*, 3(1):27–50, February 1987. [d-srbtg-87] *Keywords:* triangulation, trees, data structures.

3836 L. De Floriani and B. Falcidieno. A hierarchical boundary model for solid object representation. *ACM Trans. Graph.*, 7:42–60, 1988. [df-hbmso-88]

3837 Leila De Floriani, Bianca Falcidieno, George Nagy, and Caterina Pienovi. Hierarchical structure for surface approximation. *Comput. Graph. (UK)*, 8(2):183–193, 1984. [dfnp-hssa-84] *Keywords:* surface approximation, hierarchical triangulation, tree data structure, data points, structured graph representation. *Annote:* 3 way division into triangles. *Abstract:* Hierarchical triangulation is a method for point selection and surface representation where the surface is approximated at successively finer levels of detail by triangular patches whose projections in the horizontal plane are nested. A tree data structure for this representation can be constructed in O(n**2) worst case and O(n log n) average case time, where n is the number of data points considered. Efficient algorithms for approximation of the elevation of an arbitrary point, contour extraction, and conversion of the hierarchical structure into an ordinary triangulated irregular network, are demonstrated. The convergence and the optimality of the approximation and the relationship of the hierarchical triangulation to a structured graph representation are examined. 9 refs.

3838 L. De Floriani, B. Falcidieno, G. Nagy, and C. Pienovi. On sorting triangles in a Delaunay tessellation. *Algorithmica*, 6:522–532, 1991. [dfnp-stdt-91]

3839 L. De Floriani, B. Falcidieno, G. Nagy, and C. Pienovi. Polyhedral terrain description using visibility criteria. Technical Report 17/89, CNR, Genova, 1989. [dfnp-ptduv-89]

3840 L. De Floriani, B. Falcidieno, and C. Pienovi. Delaunay-based representation of surfaces defined over arbitrarily shaped domains. *Comput. Vision Graph. Image Process.*, 32:127–140, 1985. [dfp-dbrsd-85] *Annote:* CDT for surface fitting. Incremental algorithm. Points (where greatest error occurs) added until desired accuracy reached. ($O(N \log N)$) average, $O(N^2)$ worst.

3841 L. De Floriani, B. Falcidieno, and C. Pienovi. Graph representation of a hierarchical surface model. In *Proc. 7th IEEE Internat. Conf. Pattern Recogn.*, pages 1093–1096, New York, NY, 1984. IEEE. [dfp-grhsm-84] *Keywords:* triangulation, hierarchical structures, surface models, graph representation. *Annote:* Nested triangulation for surface representation. *Abstract:* The paper describes a hierarchical structure for representing surfaces defined at arbitrarily distributed data points. The surface is approximated at increasing levels of accuracy by a network of triangular, planar faces whose projections in the plane are nested, which is called hierarchical triangulation. A dual representation of this triangulation as a vertex- structured graph is defined, and some basic properties of this representation are discussed. Algorithms for constructing a hierarchical triangulation and for converting it to its dual form are given. 12 refs.

3842 L. De Floriani, B. Falcidieno, and C. Pienovi. Structured graph representation of a hierarchical triangulation. *Comput. Vision Graph. Image Process.*, 45(2):215–226, February 1989. [dfp-sgrht-89] *Keywords:* hierarchical triangulation, structured graph representation, surface representation. *Annote:* Each triangle is split into three. *Abstract:* The problem of representing a 2 1/2-dimensional surface at variable degrees of accuracy is considered. A hierarchical model, called a hierarchical triangulation, is described which approximates a surface by a network of triangular, planar facets whose projections in the plane are nested. In the paper, a dual representation of such a triangulation in the form of a structured graph is defined and the fundamental properties of this representation are discussed. An algorithm for converting a hierarchical triangulation into its dual form is given. As an example of application, an algorithm is described for the conversion of the dual graph into the standard triangle-oriented structure used for encoding triangulated irregular networks. (Author abstract) 15 Refs.

3843 L. De Floriani, B. Falcidieno, C. Pienovi, and G. Nagy. On sorting triangles in a Delaunay tessellation. Technical report, Instituto per la Matematica Applicata, Consiglio Nazionale delle Richerche, Genova, Italy, 1988. [dfpn-stdt-88]

3844 L. De Floriani and P. Magillo. Horizon computation on a hierarchical triangulated terrain model. *Visual Comput.*, 11:134–149, 1995. [dm-hchtt-95]

3845 Leila de Floriani, Paola Magillo, and Enrico Puppo. Applications of computational geometry to geographic information systems. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 333–388. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [dmp-acggi-00] *Annote:* Chapter 7 of su-hcg-00.

3846 L. De Floriani, P. Marzano, and E. Puppo. Hierarchical terrain models: Survey and formalization. In *Proc. IEEE Sympos. Applied Comput.*, pages 323–327, 1994. [dmp-htmsf-94]

3847 L. De Floriani and G. Nagy. Two algorithms for radial ordering of Delaunay triangles. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 40, 1989. [dn-tarod-89]

3848 L. De Floriani and G. Nagy. Visibility problems on a topographic surface. Technical Report 59, CNR, Genova, 1988. [dn-vpts-88]

3849 L. De Floriani, G. Nagy, and P. Jeanne. Visibility characteristics of grey-scale images. In *Fifth International Conference on Image Analysis and Processing*, September 1989. [dnj-vcgsi-89]

3850 L. De Floriani, G. Nagy, and H. Nair. Visibility oriented criteria for surface characterization. Technical Report CGL-88-824, Rensselaer Polytechnic Institute, 1988. [dnn-vocsc-88]

3851 L. De Floriani and E. Puppo. A hierarchical triangle-based model for terrain description. In *Theories and Methods of Spatio-Temporal Reasoning in Geographic Space*, pages 236–251. ??, Pisa, September 1992. [fp-htbmt-92]

3852 L. De Floriani and E. Puppo. A survey of constrained Delaunay triangulation algorithms for surface representaion. In G. G. Pieroni, editor, *Issues on Machine Vision*, pages 95–104. Springer-Verlag, New York, NY, 1989. [dp-scdta-89]

3853 L. De Floriani and E. Puppo. An online algorithm for constrained Delaunay triangulation. Unpublished manuscipts, May 1991. [dp-olacd-91] *Precedes:* dp-olacd-92.

3854 L. De Floriani and E. Puppo. An online algorithm for constrained Delaunay triangulation. *Comput. Vision Graph. Image Process.*, 54(3):290–300, 1992. [dp-olacd-92] *Succeeds:* dp-olacd-91. *Annote:* In this paper you will find the definition of a Constrained Delaunay Triangulation, some theorems and the pseudocode of the algorithms to program it. On-Line means that you can insert points and required edges in any order. With this algorithm you can update an old CDT without retriangulating the old data.

3855 Leila De Floriani and Enrico Puppo. Constrained Delaunay triangulation for multiresolution surface description. In *Proc. Ninth IEEE International Conference on Pattern Recognition*, pages 566–569, Los Alamitos, California, 1988. CS Press. [dp-cdtms-88] *Annote:* Incremental algorithm for the CDT. Point insertion is done by joining to vertices of the containing triangle, and then using switches. Segment insertion is done by deleting intersected triangles, triangulating the two resulting polygons (non-Delaunay) and switching on the resulting mess.

L. De Floriani. See also [698, 699, 1869, 2547, 2548, 9103, 9104].

P. De La Torre. See also [11391].

3856 Jesús A. De Loera and Frederick J. Wicklin. Viro's method disproves Ragsdale's conjecture: a story. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 371–372, 2000. [dw-vmdrc-00] *Keywords:* video review.

J. A. De Loera. See also [1593, 1594].

3857 C. N. De Meneses and C. C. De Souza. Exact solutions of rectangular partitions via integer programming. *Internat. J. Comput. Geom. Appl.*, 10:477–522, 2000. [dd-esrpi-00]

A. De Pennington. See also [8655].

3858 C. C. De Souza and C. C. Ribeiro. A tight worst case bound for the performance ratio of heuristics for the minimum rectilinear Steiner tree problem. *OR Spektrum*, 12:109–111, 1990. [dr-twcbp-90] *Keywords:* Steiner tree, L_1 metric, heuristics.

3859 C. C. De Souza and C. C. Ribeiro. Heuristics for the minimum rectilinear Steiner tree problem: new algorithms and a computational study. *Discrete Appl. Math.*, 45(3):205–220, 1993. [dr-hmrst-93] *Keywords:* Steiner tree, L_1 metric, heuristics.

C. C. De Souza. See also [3857].

A. Dean. See also [2301].

3860 A. M. Dean and J. P. Hutchinson. Rectangle-visibility representations of bipartite graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 159–166. Springer-Verlag, 1995. [dh-rvrbg-95] *Keywords:* graph drawing, visibility.

3861 J. A. Dean, A. Lingas, and J.-R. Sack. Recognizing polygons: or how to eavesdrop. In *Proc. 24th Allerton Conf. Commun. Control Comput.*, pages 324–333, 1986. [dls-rphe-86] *Precedes:* dls-rphs-88.

3862 J. A. Dean, A. Lingas, and J.-R. Sack. Recognizing polygons, or how to spy. *Visual Comput.*, 3:344–355, 1988. [dls-rphs-88] *Keywords:* computer graphics, visibility, hidden line/surface elimination, polygons, two-dimensional. *Succeeds:* dls-rphe-86.

3863 J. A. Dean and J.-R. Sack. Efficient hidden-line elimination by capturing winding information. In *Proc. 23rd Allerton Conf. Commun. Control Comput.*, pages 496–505, 1985. [ds-ehlec-85] *Keywords:* computer graphics, visibility, convex hull, hidden line/surface elimination, polygons, two-dimensional.

3864 N. Dean. The matching extendability of surfaces. Technical Report 90-14, DIMACS, Rutgers Univ., 1990. [d-mes-90]

3865 N. Dean, M. Mevenkamp, and C. Monma. Netpad: An interactive graphics system for network modeling and optimization. Technical report, Bellcore, ?? [dmm-nigsn-??] *Keywords:* user interface, graph algorithms, windows, graphics, networks, crossing number.

N. Dean. See also [1852, 1999].

Thomas Dean. See also [4403].

3866 S. R. Deans. Hough transform from the Radon transform. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-3(2):185–188, March 1981. [d-htrt-81]

3867 P. M. Dearing. Location problems. *Oper. Res. Lett.*, 4(3):95–98, 1985. [d-lp-85] *Keywords:* facility location.

P. M. Dearing. See also [1976].

3868 Donald P. DeBoer, Frederick T. Evers, and Douglas Garfield Link. *Analysis of Variance: Comparative Examples, BALANOVA, BMDP and SPSS.* Social Science Computing Laboratory, University of Western Ontario, London, Ontario, Canada, 1983. [del-avceb-83] *ISBN:* 0-7714-0427-1.

3869 H. Debrunner. Helly type theorems derived from basic singular homology. *Amer. Math. Monthly*, 77:375–380, 1970. [d-httdb-70]

H. Debrunner. See also [6542–6544].

3870 H. E. Debrunner and P. Mani-Levitska. Can you cover your shadows? *Discrete Comput. Geom.*, 1:45–58, 1986. [dm-cycys-86]

3871 Michael Deering. Geometry compression. *Comput. Graph.*, ??:13–20, 1995. Proc. SIGGRAPH '95. [d-gc-95] *Keywords:* triangulation, surface approximation, computer graphics, hardware, graphics pipeline.

S. S. Deerthi. See also [12427].

3872 D. Defays. An efficient algorithm for a complete link method. *Comput. J.*, 20:364–366, 1977. [d-eaclm-77]

Elena Degtiariora-Kostova. See also [2160].

3873 V. U. Degtyar and M. Ya. Finkel'shteyn. Classification algorithms based on construction of convex hulls of sets. *Eng. Cybern.*, 12:150–154, 1974. [df-cabcc-74]

A. Deguet. See also [7625].

G. R. DeHaan. See also [7714]

3874 M. J. DeHaemer, Jr. and M. J. Zyda. Simplification of objects rendered by polygonal approximations. *Computers & Graphics*, 15(2):175–184, 1991. [dz-sorpa-91] *Keywords:* surface approximation, simplification.

3875 M. Dehn. Transformation der Kurven auf zweiseitigen Flächen. *Math. Ann.*, 72:413–421, 1912. [d-tdkaz-12]

3876 M. Dehn. Über unendliche diskontinuierliche Gruppen. *Math. Ann.*, 71(104–116), 1912. [d-uudg-12]

3877 F. Dehne. A one dimensional systolic array for the largest empty rectangle problem. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 518–524, 1985. [d-odsal-85]

3878 F. Dehne. An $O(n^4)$ algorithm to construct all Voronoi diagrams for k nearest neighbor searching in the Euclidean plane. In *Proc. Internat. Colloq. Automata Lang. Program.*, 1983. [d-oacav-83]

3879 F. Dehne. An optimal algorithm to construct all Voronoi diagrams for k nearest neighbor searching in the Euclidean plane. In *Proc. 20th Allerton Conf. Commun. Control Comput.*, pages 85–93, 1982. [d-oacav-82]

3880 F. Dehne. Computational geometry and vlsi. In *Proc. CompEuro Conference*, pages 870–875, 1987. [d-cgv-87]

3881 F. Dehne. Computing digitized Voronoi diagrams on a systolic screen and applications to clustering. In *Proc. International Symposium on Optimal Algorithms*, volume 401 of *Lecture Notes Comput. Sci.*, pages 14–24. Springer-Verlag, 1989. [d-cdvds-89]

3882 F. Dehne. Computing the largest empty rectangle on one- and two-dimensional processor arrays. *J. Parallel Distrib. Comput.*, 9(1):63–68, 1990. [d-clero-90]

3883 F. Dehne. $o(n^{1/2})$ algorithms for the maximal elements and ecdf searching problem on a mesh-connected parallel computer. *Inform. Process. Lett.*, 22(6):303–306, 1986. [d-oamee-86]

3884 Frank Dehne. Optical clustering. *Visual Comput.*, 2(1):39–43, January 1986. [d-oc-86] *Keywords:* picture analysis.

3885 F. Dehne. Parallel computational geometry and clustering methods. Report SCS-TR-104, School Comput. Sci., Carleton Univ., Ottawa, ON, 1986. [d-pcgcm-86]

3886 F. Dehne. Solving geometric problems on mesh-connected and one-dimensional processor arrays. In *Proc. 11th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 43–59, 1985. [d-sgpmc-85]

3887 F. Dehne. Solving visibility and separability problems on a mesh of processors. *Visual Comput.*, 3:356–370, 1988. [d-svspm-88] *Keywords:* parallel computation, polygons, two-dimensional.

3888 F. Dehne. Voronoi-Diagramme zur Bestimmung k nächster Nachbarn. Report ??, Lehrstuhl Inform. III, Rheinisch-Westfälischen Tech. Hochschule Aachen, Aachen, West Germany, 1982. [d-vdzbk-82]

3889 F. Dehne, X. Deng, P. Dymond, A. Fabri, and A. A. Khokhar. A randomized parallel 3D convex hull algorithm for coarse grained multicomputers. In *Proc. 7th ACM Sympos. Parallel Algorithms Architect.*, pages 27–33, 1995. [dddfk-rp3dc-95]

3890 F. Dehne, H. Djidjev, and J.-R. Sack. An optimal PRAM algorithm for planar convex embedding. In *Graph Drawing '93 (Proc. ALCOM Workshop on Graph Drawing)*, pages 75–77, 1993. [dds-opapc-93] *Keywords:* graph drawing, convex, straight-line.

3891 F. Dehne, A. Fabri, M. Nassar, A. Rau-Chaplin, and R. Valiveti. Hyperoctree construction from slices on a hypercube. In *Proc. 13th Allerton Conf. Commun. Control Comput.*, page ??, 1992. [dfnrv-hcsh-92] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1752.

3892 F. Dehne, A. Fabri, M. Nasser, and A. Rau-Chaplin. Construction of d-dimensional hyperoctrees on a hypercube multiprocessor. *J. Parallel Distrib. Comput.*, ??, 1993/94. [dfnr-cddhh-94] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1752. *Comments:* to appear.

3893 F. Dehne, A. Fabri, and A. Rau-Chaplin. Data structure decomposition for coarse grained multicomputers. Manuscript, ??, ?? [dfr-dsdcg-]

3894 F. Dehne, A. Fabri, and A. Rau-Chaplin. Scalable parallel computational geometry for coarse grained multicomputers. *Internat. J. Comput. Geom. Appl.*, 6:379–400, 1996. [dfr-spcgc-96] *Succeeds:* dfr-spgac-93.

3895 F. Dehne, A. Fabri, and A. Rau-Chaplin. Scalable parallel geometric algorithms for coarse grained multicomputers. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 298–307, 1993. [dfr-spgac-93] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1819. *Precedes:* dfr-spcgc-96. *Cites:* at-pdgp-89, b-snta-68, b-skrp-77, bt-pdcnm-89, cp-dsnlt-90, -gchpc-92, gl-rrft-89, ds-tssp-87, dfr-dsdcg-, hs-ndssg-86, h-fuenl-89, l-ipaaa-92, ol-mcp-81, ps-cgi-85, rv-ltsls-87, lw-mprrd-81, ZZZ.

3896 F. Dehne, A. Ferreira, and A. Rau-Chaplin. Parallel branch and bound on fine grained hypercube multiprocessors. *Parallel Comput.*, 15:201–209, 1990. [dfr-pbbfg-90]

3897 F. Dehne, A. Ferreira, and A. Rau-Chaplin. Parallel fractional cascading on a hypercube multiprocessor. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 1084–1093, 1989. [dfr-pfchm-89]

3898 F. Dehne, A. Ferreira, and A. Rau-Chaplin. Parallel fractional cascading on hypercube multiprocessors. *Comput. Geom. Theory Appl.*, 2(3):141–167, 1992. [dfr-pfchm-92]

3899 F. Dehne, A. Ferreira, and A. Rau-Chaplin. Parallel processing of pointer based quadtrees. In *Proc. Internat. Conf. Parallel Process.*, pages 255–262, 1991. [dfr-pppbq-91]

3900 F. Dehne and L. Ficocelli. An efficient computational geometry method for detecting dotted lines in noisy images. In *Proc. Vision Interface '89*, pages 88–93, 1989. [df-ecgmd-89]

3901 F. Dehne and L. Ficocelli. Detecting dotted lines in noisy images. *Comput. J.*, 33(5):424–428, 1990. [df-ddlni-90]

3902 F. Dehne, B. Flach, J.-R. Sack, and N. Valiveti. Analog parallel algorithms for computational geometry. *Journal of Parallel Algorithms and Applications*, 5:1–14, 1994. [dfsv-apacg-94]

3903 F. Dehne, B. Flach, J.-R. Sack, and N. Valiveti. Analog parallel computational geometry. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 143–153, 1992. [dfsv-apcg-92] *Cites:* c-sm-61, cg-asgpf-83, gj-cigtn-79, h-ngrhc-84, ht-ncdop-85, ht-cncm-86, k-mtpd-80, lls-hobst-89, l-pnrh-82, lprs-melpr-82, l-tspp-77, m-avns-89, ps-cgi-85, s-ansiu-87, stw-annic-86, s-ansfp-90, sem-vainn-86, th-snona-86, ZZZ.

3904 F. Dehne and S. E. Hambrusch. Parallel algorithms for determining k-width-connectivity in binary images. In *Proc. 2nd IEEE Symposium on Parallel and Distributed Processing*, pages 488–496, 1990. [dh-padkw-90]

3905 F. Dehne and S. E. Hambrusch. Parallel algorithms for determining k-width-connectivity in binary images. *J. Parallel Distrib. Comput.*, 12(1):12–23, 1991. [dh-padkw-91]

3906 F. Dehne, A. Hassenklover, and J.-R. Sack. Computing the configuration space for a robot on a mesh-of-processors. In *Proc. 1989 Internat. Conf. Parallel Process.*, volume 3, pages 40–48, 1989. [dhs-ccsrm-89i]

3907 F. Dehne, A. Hassenklover, and J.-R. Sack. Computing the configuration space for a robot on a mesh-of-processors. *Parallel Comput.*, 12(2):221–231, 1989. [dhs-ccsrm-89a] *Keywords:* motion planning, configuration space, parallel computations.

3908 F. Dehne, A. Hassenklover, J.-R. Sack, and N. Santoro. Parallel visibility on a mesh-connected parallel computer. In *Proc. International Conference on Parallel Processing and Applications*, pages 203–210, 1987. [dhss-pvmcp-87]

3909 F. Dehne, A.-L. Hassenklover, J.-R. Sack, and N. Santoro. Computational geometry algorithms for the systolic screen. *Algorithmica*, 6:734–761, 1991. [dhss-cgass-91]

3910 F. Dehne, C. Kenyon, and A. Fabri. Scalable and architecture independent parallel geometric algorithms with high probability optimal time. In *Proc. 6th IEEE Symp. on Parallel and Distributed Processing*, pages 586–593, 1994. [dkf-saipg-94]

3911 Frank Dehne and Rolf Klein. A sweepcircle algorithm for Voronoi diagrams. In *Proc. 13th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, Lecture Notes Comput. Sci., pages 59–70. Springer-Verlag, 1987. [dk-savd-87]

3912 Frank Dehne and Rolf Klein. An optimal algorithm for computing the Voronoi diagram on a cone. Report SCS-TR-122, School of Comput. Sci., Carleton Univ., 1987. [dk-oacvd-87]

3913 Frank Dehne and Rolf Klein. "The Big Sweep": On the power of the wavefront approach to Voronoi diagrams. Technical Report 136, Department of Computer Science, FernUniversität Hagen, Germany, 1992. [dk-bsbav-92] *Succeeds:* dk-bsbav-91. *Precedes:* dk-bspwa-94.

3914 Frank Dehne and Rolf Klein. "The Big Sweep": On the power of the wavefront approach to Voronoi diagrams. In *Proc. Internat. Sympos. Math. Found. Comput. Sci.*, volume 841 of *Lecture Notes Comput. Sci.*, pages 296–305. Springer-Verlag, 1994. [dk-bspwa-94] *Succeeds:* dk-bsbav-92. *Precedes:* dk-bspwa-97.

3915 Frank Dehne and Rolf Klein. "The Big Sweep": On the power of the wavefront approach to Voronoi diagrams. *Algorithmica*, 17(1):19–32, 1997. [dk-bspwa-97] *Succeeds:* dk-bspwa-94.

3916 Frank Dehne and Rolf Klein. The Big Sweep: The beachline approach for Voronoi diagrams in nice metrics. Manuscript, FernUniversität Hagen, Germany, 1991. [dk-bsbav-91] *Precedes:* dk-bspwa-92.

3917 Frank Dehne, Russ Miller, and Andrew Rau-Chaplin. Optical clustering on a mesh-connected computer. *Internat. J. Parallel Program.*, 20(6), 1991. [dmr-ocmcc-91]

3918 F. Dehne and H. Noltemeier. A computational geometry approach to clustering problems. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 245–250, 1985. [dn-cgacp-85]

3919 F. Dehne and H. Noltemeier. Clustering geometric objects and applications to layout problems. In *Proc. Computer Graphics Tokyo '85*, pages 35–40, 1985. [dn-cgoal-85]

3920 F. Dehne and H. Noltemeier. Clustering methods for geometric objects and applications to design problems. *Visual Comput.*, 2(1):31–38, January 1986. [dn-cmgoa-86] *Keywords:* layout problems.

3921 F. Dehne and H. Noltemeier. Voronoi trees and clustering problems. *Inform. Syst.*, 12(2):171–175, 1987. [dn-vtcp-87]

3922 F. Dehne and Q. T. Pham. Visibility algorithms for binary images on the hypercube and the perfect-shuffle computer. In *Proc. IFIP WG 10.3 Working Conf. on Parallel Processing*, pages 117–124, 1988. [dp-vabih-88]

3923 F. Dehne, Q. T. Pham, and I. Stojmenović. Optimal visibility algorithms for binary images on the hypercube. *Internat. J. Parallel Program.*, 19(3):213–224, 1990. [dps-ovabi-90]

3924 F. Dehne, Q. T. Pham, and I. Stojmenović. Optimal visibility algorithms for binary images on the hypercube — preliminary version. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 1035–1036, 1988. [dps-ovabi-88]

3925 F. Dehne and A. Rau-Chaplin. Implementing data structures on a hypercube multiprocessor and applications in parallel computational geometry. In *Proc. 15th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 316–329, 1989. [dr-idshm-89]

3926 F. Dehne and A. Rau-Chaplin. Implementing data structures on a hypercube multiprocessor and applications in parallel computational geometry. *J. Parallel Distrib. Comput.*, 8(4):367–375, 1990. [dr-idshm-90]

3927 F. Dehne and J.-R. Sack. A survey of parallel computational geometry algorithms. In *Proc. International Workshop on Parallel Processing by Cellular Automata and Arrays*, volume 342 of *Lecture Notes Comput. Sci.*, pages 73–88, 1988. [ds-spcga-88] *Keywords:* parallel computations, survey.

3928 F. Dehne and J.-R. Sack. Separability of sets of polygons through single translations. In *Proc WG'87*, volume 246 of *Lecture Notes Comput. Sci.*, pages 237–251. Springer-Verlag, 1987. [ds-sspts-87]

3929 F. Dehne and J.-R. Sack. Separabilty of sets of polygons. In *Proc. 12th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 237–251, 1986. [ds-ssp-86]

3930 F. Dehne and J.-R. Sack. Translation separability of sets of polygons. *Visual Comput.*, 3:227–235, 1987. [ds-tssp-87] *Keywords:* robotics, motion planning, detection, reporting, separation, path planning, segment trees, polygons, two-dimensional.

3931 F. Dehne, J.-R. Sack, and N. Santoro. Computing on a systolic screen: hulls, contours and applications. In *Conf. Parallel Architectures Languages Europe*, volume 258 of *Lecture Notes Comput. Sci.*, pages 121–133. Springer-Verlag, 1987. [dss-csshc-87] *Keywords:* parallel computation, computer graphics, convex hull, polygons, two-dimensional.

3932 F. Dehne, J.-R. Sack, and N. Santoro, editors. *Proc. 1st Workshop on Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1989. [dss-pwads-89]

3933 F. Dehne, J.-R. Sack, and N. Santoro, editors. *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1991. [dss-p2wad-91]

3934 F. Dehne, J.-R. Sack, N. Santoro, and S. Whitesides, editors. *Proc. 3rd Workshop on Algorithms and Data Structures*, volume 709 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1993. [dssw-p3wad-93]

3935 F. Dehne, J. R. Sack, and I. Stojmenović. A note on determining the 3-dimensional convex hull of a set of points on a mesh of processors. In *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 154–162. Springer-Verlag, 1988. [dss-nd3dc-88]

3936 F. Dehne and I. Stojmenović. An $O(n)$ algorithm for the ecdf searching problem for arbitrary dimensions on a mesh-of-processors. *Inform. Process. Lett.*, 28(2):67–70, 1988. [ds-oaesp-88]

3937 F. Dehne and I. Stojmenović. An optimal parallel solution to the ecdf searching problem for higher dimensions on a mesh-of-processors. In *Proc. Allerton Conf. Commun. Control Comput.*, pages 660–661, 1987. [ds-opses-87]

3938 F. Dehne and R. Tamassia. Cutting polygons to achieve separability, with dynamization. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 32, 1989. [dt-cpasd-89]

F. Dehne. See also [412, 1026, 1027, 6617, 6618].

3939 V. G. Deĭneko, René van Dal, and Günter Rote. The convex-hull-and-line traveling salesman problem: A solvable case. Report 233, Inst. Math., Tech. Univ. Graz, Graz, Austria, September 1992. [ddr-chlts-92] *Precedes:* ddr-chlts-94.

3940 V. G. Deĭneko, René van Dal, and Günter Rote. The convex-hull-and-line traveling salesman problem: A solvable case. *Inform. Process. Lett.*, 51:141–148, 1994. [ddr-chlts-94] *Succeeds:* ddr-chlts-92. *Cites:* akmsw-gamsa-87, r-nltsp-92. *Abstract:* We solve the special case of the Euclidean Traveling Salesman Problem where $n-m$ cities lie on the boundary of the convex hull of all n cities, and the other m cities lie on a line segment inside this convex hull by an algorithm which needs $O(mn)$ time and $O(n)$ space.

Vladimir G. Deineko. See also [2592].

N. DeJong. See also [6310].

M. Dekesel. See also [4006].

3941 T. J. Dekker. A floating-point technique for extending the available precision. *Numerische Mathematik*, 18:224–242, 1971. [d-fptea-71]

3942 B. V. Dekster. Assembling r-gons out of n given segments. *Math. Mag.*, 65(1):44–48, February 1992. [d-argon-92]

3943 C. Delannoy. Un algorithme rapide de recherche de plus proches voisins. *RAIRO Inform. Theor.*, 14:275–286, 1980. [d-uardr-80] *Keywords:* nearest neighbors.

M. Delarche. See also [2740].

3944 B. Delaunay. Sur la sphère vide. A la memoire de Georges Voronoi. *Izv. Akad. Nauk SSSR, Otdelenie Matematicheskih i Estestvennyh Nauk*, 7:793–800, 1934. [d-slsv-34] *Keywords:* Delaunay triangulation. *Comments:* Translated as Bull. Acad. Sci. USSR: Class. Sci. Math. Nat.

J. DeLazzer. See also [9215].

A. Delcher. See also [11553, 11554].

A. L. Delcher. See also [8286].

3945 C. J. A. Delfinado and H. Edelsbrunner. An incremental algorithm for Betti numbers of simplicial complexes. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 232–239, 1993. [de-iabns-93] *Cites:* ah-tl-35, b-ct-93, clr-ia-90, dc-cchtt-91, e-acg-87, e-was-92, eks-sspp-83, em-tdas-94, g-gsh-81, kb-ptacs-79, m-eat-84, r-iat-88, s-siec-61, ZZZ.

3946 K. Deljouie-Rakhshandeh. An approach to the generation of triangular grids possessing few obtuse triangles. *Internat. J. Numer. Methods Eng.*, 29:1299–1321, 1990. [d-agtgp-90] *Annote:* Wants triangulation with very few obtuse angles. Combines ad-hoccery for node generation with switching rules. Also decomposes complex shape into convex pieces.

3947 Charles Delman and Gregory Galperin. Billiards on polyhedra: A separation principle and a calculus for the number of trajectories. Univ. Eastern Illinois, 2001. [dg-bop-01]

G. Delott. See also [7605].

3948 E. D. Demain, M. L. Demaine, and J. O'Rourke. PushPush and Push-1 are NP-hard in 2D. In *Proc. 12th Canad. Conf. Comput. Geom.*, pages ??–??, August 2000. [ddo-pp1an-00] *URL:* http://cs.smith.edu/~orourke/papers.html. *Cites:* ddo-ppnph2d-00.

3949 E. D. Demain, M. L. Demaine, and J. O'Rourke. PushPush is NP-hard in 2D. Technical Report 065, Smith College, Northampton, MA, January 2000. [ddo-ppnph2d-00] *Cites:* os-ppnph3d-99.

3950 Erik D. Demain, Stefan Langerman, and Joseph O'Rourke. Short interlocked linkages. In *Proc. 13th Canad. Conf. Comput. Geom.*, pages ??–??, 2001. [dlo-sil-01]

3951 E. Demaine, M. Demaine, A. Lubiw, J. O'Rourke, and I. Pashchenko. Metamorphosis of the cube. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 409–410, 1999. Video and abstract. [ddlop-mc-99]

3952 E. Demaine and J. O'Rourke. Computational geometry column 37. *Internat. J. Comput. Geom. Appl.*, ??:??–??, 1999. Also in SIGACT News, 30(3):39–42 (1999), Issue 112; LANL XXX archive cs.CG/9908007. [do-cgc37-99] *Annote:* Open problems from the 15th Annual ACM Symposium on Computational Geometry.

E. Demaine. See also [1979–1982].

3953 E. D. Demaine, M. L. Demaine, and C. S. Kaplan. Polygons cuttable by a circular saw. *Comput. Geom. Theory Appl.*, 20:69–84, 2001. [ddk-pccs-01]

3954 E. D. Demaine, M. L. Demaine, and A. Lubiw. Folding and cutting paper. In *Proc. Japan Conf. Discrete Comput. Geom.*, Lecture Notes Comput. Sci. Springer-Verlag, 1998. [ddl-fcp-98] *URL:* http://ranran.cis.ibaraki.ac.jp/jcdcg98/jcdcg98.html.

3955 E. D. Demaine, M. L. Demaine, and A. Lubiw. Folding and one straight cut suffice. In *Proc. 10th Annu. ACM-SIAM Sympos. Discrete Alg.*, pages 891–892, January 1999. [ddl-foscs-99] *URL:* http://www.siam.org/meetings/da99/.

3956 E. D. Demaine, M. L. Demaine, A. Lubiw, and J. O'Rourke. Enumerating foldings and unfoldings between polygons and polytopes. In *Proc. Japan Conf. Discrete Comput. Geom. '98*, pages 9–12, December 2000. Revised version to appear in LNCS. [ddao-efupp-00]

3957 Erik D. Demaine, Martin L. Demaine, Anna Lubiw, and Joseph O'Rourke. Enumerating foldings and unfoldings between polygons and polytopes. In *Proc. Japan Conf. Discrete Comput. Geom. '00*, volume ?? of *Lecture Notes Comput. Sci.*, pages ??–?? Springer-Verlag, 2001. Tokyo, Nov. 2000, pp. 9–12. [ddlo-efupp-01] *Succeeds:* ddlo-ecerfu-00.

3958 E. D. Demaine, M. L. Demaine, A. Lubiw, and J. O'Rourke. Enumerating foldings and unfoldings between polygons and polytopes. In *Proc. Japan Conf. Discrete Comput. Geom. '98*, volume ?? of *Lecture Notes Comput. Sci.*, pages ??–??, Berlin, 2001. Springer-Verlag. To appear. [o-fucg-01] *Succeeds:* ddao-efupp-00.

3959 E. D. Demaine, M. L. Demaine, A. Lubiw, and J. O'Rourke. Examples, counterexamples, and enumeration results for foldings and unfoldings between polygons and polytopes. Technical Report 069, Smith College, Northampton, MA, July 2000. LANL ArXive cs.CG/0007019. [ddlo-ecerfu-00]

3960 E. D. Demaine, M. L. Demaine, and J. S. B. Mitchell. Folding flat silhouettes and wrapping polyhedral packages: New results in computational origami. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 105–114, June 1999. [ddm-ffswp-99] *URL:* http://www.cs.miami.edu/events/SCG99.

3961 E. D. Demaine, D. Eppstein, J. Erickson, G. W. Hart, and J. O'Rourke. Vertex-unfoldings of simplicial manifolds. Technical Report 072, Dept. Comput. Sci., Smith College, Northampton, MA, USA, October 2001. [deeho-vusm-01] *URL:* http://arXiv.org/abs/cs/0110054/. *Succeeds:* deeho-vusp-01.

3962 E. D. Demaine, D. Eppstein, J. Erickson, G. W. Hart, and J. O'Rourke. Vertex-unfoldings of simplicial polyhedra. Technical Report 071, Dept. Comput. Sci., Smith College, Northampton, MA, USA, July 2001. [deeho-vusp-01] *URL:* http://arXiv.org/abs/cs/0107023/.

3963 Erik D. Demaine and Joseph O'Rourke. Open problems from CCCG'00. In *Proc. 13th Canad. Conf. Comput. Geom.*, pages ??–??, 2001. [do-op99-01]

3964 Erik D. Demaine and J. O'Rourke. Open problems from CCCG'99. In *Proc. 12th Canad. Conf. Comput. Geom.*, pages 269–272, August 2000. [do-op99-00]

E. D. Demaine. See also [378–380, 1791–1793, 1991, 3498, 3499].

M. Demaine. See also [1979–1982, 3951].

M. L. Demaine. See also [3948, 3949, 3953–3960].

Daniel DeMenthon. See also [12866, 12867].

A. Demers. See also [7574].

3965 Hüseyin Demir. Incircles within. *Math. Mag.*, 59:77–83, 1986. [d-iw-86]

3966 J. Demmel. On error analysis in arithmetic with varying relative precision. Technical Report 251, Dept. Comput. Sci., New York Univ., New York, NY, October 1986. [d-eaavr-86]

3967 J. Demmel. The componentwise distance to the nearest singular matrix. *SIAM J. Matrix Anal. Appl.*, 13(1):10–19, 1992. [d-cdnsm-92]

3968 L. Deneen and G. Shute. Polygonizations of point sets in the plane. *Discrete Comput. Geom.*, 3:77–87, 1988. [ds-ppsp-88] *Keywords:* counting, arrangements, star-shaped, two-dimensional, combinatorial geometry.

3969 L. L. Deneen and J. B. Dezell. Using partitioning and clustering techniques to generate rectilinear Steiner trees. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 315–318, 1990. [dd-upctg-90] *Cites:* b-tprrs-88, ds-psars-89, dw-spg-72, jd-acd-88, dh-pcsa-73, ggj-ccsmt-77, gj-rstpi-77, h-oasrs-79, k-papat-77, ks-ppars-85, lw-vdllm-80, ps-cgi-85, r-fhars-89, s-harst-81, s-cg-78, sdt-opsal-91, sll-ohars-80, yw-ossaw-72, ZZZ.

3970 L. L. Deneen and S. Joshi. Treasures in an art gallery. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 17–22, 1992. [dj-tag-92] *Cites:* at-oadvp-81, c-ctpg-75, ea-lacvp-81, js-clvpa-87, ll-ccagp-86, l-vsp-83, o-agta-87, ZZZ.

3971 L. L. Deneen and G. M. Shute. A plane-sweep algorithm for rectilinear Steiner trees with deferred connections. Unpublished Manuscript, 1989. [ds-psars-89]

3972 L. L. Deneen, G. M. Shute, and C. D. Thomborson. A probably fast, provably optimal algorithm for rectilinear Steiner trees. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 299–304, 1992. [dst-pfpoa-92] *Cites:* br-iastp-92, d-os-70, dw-spg-72, gj-rstpi-77, h-sprd-66, h-smtrd-76, k-fa-73, tds-crsmt-87, ZZZ.

L. L. Deneen. See also [12190, 12897].

L. Denenberg. See also [8780].

3973 X. Deng. A convex hull algorithm on course-grained multicomputer. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, pages 634–642, 1994. [d-chacg-94]

3974 X. Deng. An optimal parallel algorithm for linear programming in the plane. *Inform. Process. Lett.*, 35:213–217, 1990. [d-opalp-90] *Keywords:* parallel computations, linear programming, two-dimensional.

3975 X. Deng, T. Kameda, and C. Papadimitriou. How to learn an unknown environment. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 298–303, 1991. [dkp-hlue-91]

3976 Xiaotie Deng, Tiko Kameda, and Christos Papadimitriou. How to learn an unknown environment I: The rectilinear case. *J. ACM*, 45(2):215–245, 1998. [dkp-hlue1-98] *Succeeds:* dkp-hlue1-93.

3977 Xiaotie Deng, Tiko Kameda, and Christos H. Papadimitriou. How to learn an unknown environment I: the rectilinear case. Technical Report CS-93-04, Department of Computer Science, York University, Canada, 1993. [dkp-hlue1-93] *Precedes:* dkp-hlue1-98.

3978 Xiaotie Deng and Andy Mirzaian. Robot mapping: Foot-prints vs tokens. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 353–362. Springer-Verlag, 1993. [dm-rmfpv-93]

X. Deng. See also [3889].

Xiao Wen Deng. See also [3081].

3979 E. Dengler, M. Friedell, and J. Marks. Constraint-driven diagram layout. In *Proc. IEEE Sympos. on Visual Languages*, pages 330–335, 1993. [dfm-cddl-93] *Keywords:* graph drawing, constraints.

T. G. Dennehy. See also [5731].

3980 Markus Denny and Christian Sohler. Encoding a triangulation as a permutation of its point set. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 39–43, 1997. [ds-etpip-97]

3981 N. Deo. Note on Hopcroft and Tarjan's planarity algorithm. *J. ACM*, 23:74–75, 1976. [d-nhtpa-76] *Keywords:* graph drawing.

3982 N. Deo and C.-Y. Pany. Shortest-path algorithms: taxonomy and annotation. *Networks*, 14:275–323, 1984. [dp-spata-84]

N. Deo. See also [11144].

3983 A. DePano, Y. Ke, and J. O'Rourke. Finding largest inscribed equilateral triangles and squares. In *Proc. 25th Allerton Conf. Commun. Control Comput.*, pages 869–878, October 1987. [dko-fliet-87] *Keywords:* two-dimensional, inscribed, regular polygons, maximal area, optimization. *Comments:* submitted to Internat. J. Comput. Geom. Appl.

3984 N. A. A. DePano. Best regular enclosures of triangles. In *IEEE SOUTHEASTCON, 1988, Knoxville*, pages 368–372. 1988. [d-bret-88] *Keywords:* triangles, enclosure.

3985 N. A. A. DePano. *Polygon approximation with optimized polygonal enclosures: applications and algorithms*. Ph.D. thesis, Dept. Comput. Sci., Johns Hopkins Univ., 1987. [d-paope-87] *Keywords:* polygons, approximation, enclosure, doctoral thesis.

3986 N. A. A. DePano and A. Aggarwal. Finding restricted k-envelopes for convex polygons. In *Proc. 22nd Allerton Conf. Commun. Control Comput.*, pages 81–90, 1984. [da-frkec-84]

3987 N. Adlai A. DePano, Farinaz D. Boudreau, Philip Katner, and Brian Li. Algorithmic paradigms. examples in computational geometry II. In *21st SIGCSE Technical Symposium on Computer Science Education*, pages 186–191, Fort Collins Computer Center, Fort Collins, CO, 1990. ACM. [dbkl-apecg-90] *Keywords:* computational geometry, algorithmic paradigms. *Annote:* Generates random polygons by taking convex hull of M points from uniform distribution over circle. Use these to test if minimum area and minimum perimeter enclosing rectangles are different. *Abstract:* We discuss two problems from the relatively new field of computational geometry to illustrate two advanced notions in algorithm design and analysis. One problem deals with the triangulation of convex polygons while the other delves into minimum enclosing rectangles. Our work continues with the objective set forth in an earlier paper of a similar title. (Author abstract) 11 Refs.

3988 A. D. DeRose. Geometric programming: A coordinate-free approach. In *Theory and Practice of Geometric Modeling*, Blaubeuren, FRG (Oct 1988), 1989. Springer-Verlag. [d-gpcfa-89]

A. D. DeRose. See also [1453].

3989 T. DeRose. *Geometric Continuity: A parameterization independent measure of continuity for computer aided design*. PhD thesis, Computer Science, Unioversity of California, Berkeley, 1985. [d-pimcc-85] *Keywords:* doctoral thesis.

Tony DeRose. See also [2785, 7115–7117, 11999].

3990 T. D. DeRose, M. Lounsbery, and J. Warren. Multiresolution analysis for surface of arbitrary topological type. Report 93-10-05, Department of Computer Science, University of Washington, Seattle, WA, 1993. [dlw-masat-93]

T. D. DeRose. See also [8980].

S. C. DeSarkar. See also [3778, 3779].

3991 G. Desaulniers. On shortest paths for a car-like robot maneuvering around obstacles. Les Cahiers du GERAD G-94-35, Ecole des Hautes Etudes Commerciales, Montreal, Canada, 1994. [d-spclr-94]

3992 H. Desaulniers and N. F. Steward. Robustness of numerical methods in geometric computation when problem data is uncertain. *CAD*, 25(9):539–545, ?? [ds-rnmgc-]

3993 H. Desaulniers and N. F. Stewart. An extension of manifold boudary representations to the r-sets. *ACM Trans. Graph.*, 11(1):40–60, January 1992. [ds-embrr-92]

3994 H. Desaulniers and N. F. Stewart. Backward error analysis for floating-point operations on rectilinear r-sets. Technical Report 816, Univ. Montreal, 1993. [ds-beafp-93] *Keywords:* Computer-aided design.

3995 H. Desaulniers and N. F. Stewart. Quasi-rectilinear r-sets. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 52–58, 1992. [ds-qrrs-92] *Cites:* r-mmrso-79, r-rrstm-80, rv-smcsr-83, m-ism-88, -isbfp-85, g-rssm-87, h-gsm-89, s-drpga-90, s-rsasf-91, ds-embrr-92, lth-csgpo-86, w-restr-88, m-rfldd-90, hhk-rsops-89, hk-prga-89, mn-fccrp-90i, r-cirfd-89, m-vigau-88p, w-aedfd-34, m-erf-34, a-efslc-67, l-tsas-64, ds-beafp-93, w-aep-65, k-sa-69, bs-msto-91, bs-iftmo-92, s-scctf-92, ZZZ.

Mathieu Desbrun. See also [514].

3996 R. Descartes. *Principia Philosophiae.* Ludovicus Elzevirius, Amsterdam, 1644. [d-pp-44]

P. K. Desikan. See also [161, 162].

3997 P. Desnogues. *Triangulations et quadriques.* Thèse de doctorat en sciences, Université de Nice-Sophia Antipolis, France, 1996. [d-tq-96] *URL:* http://www-sop.inria.fr/prisme/publis/these-desnogues.ps.gz. *Keywords:* doctoral thesis.

3998 Pascal Desnoguès and Olivier Devillers. A locally optimal triangulation of the hyperbolic paraboloid. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 49–54, 1995. [dd-lothp-95] *URL:* http://www-sop.inria.fr/prisme/publis/dd-lothp-95.ps.gz.

3999 A. Dessmark, A. Lingas, and A. Maheshwari. Multi-list ranking: complexity and applications. In *Proc. 10th Sympos. Theoret. Aspects Comput. Sci.*, volume 665 of *Lecture Notes Comput. Sci.*, pages 306–316. Springer-Verlag, 1993. [dlm-mlrca-93]

Paul R. Detmer. See also [1488].

4000 G. Dettori. Recent results in polygonal approximation. *Adv. Modell. Simul.*, 6(2):35–57, 1986. [d-rrpa-86] *Keywords:* polygons, approximation.

G. Dettori. See also [3536].

O. Deussen. See also [11741].

4001 F. Dévai. Complexity of two-dimensional visibility computations. In *Proc. 3rd European Conference on CAD'CAM and Computer Graphics*, volume 827–841, 1984. [d-ctdvc-84]

4002 F. Dévai. *Complexity of visibility computations.* PhD thesis, University of Budapest, Budapest, Hungary, 1981. [d-cvc-81] *Keywords:* doctoral thesis.

4003 F. Dévai. Quadratic bounds for hidden line elimination. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 269–275, 1986. [d-qbhle-86] *Keywords:* hidden line/surface elimination. *Cites:* a-nqimr-67, b-lbact-83, bm-gta-76, cgl-pgd-83, d-cvc-81, d-ctdvc-84, eos-calha-83t, f-cgpractice-85, f-ltehs-80, fw-ccmb-78, gm-ahle-69, hc-gi-52, l-shlpc-70, n-flsah-85, s-tsbhl-81, sss-cthsa-74, wa-hsrup-77, w-cvgnl-85, ZZZ.

4004 F. Dévai and T. Szendrényi. Comments on convex hull of a finite set of points in two dimensions. *Inform. Process. Lett.*, 9:141–142, 1979. [ds-cchfs-79]

4005 R. L. Devaney. *Introduction to Chaotic Dynamical Systems.* Benjamin Cummins, 1986. [d-icds-86]

H. Devarajan. See also [1481].

4006 P. A. Devijver and M. Dekesel. Insert and delete algorithms for maintaining dynamic Delaunay triangulations. *Pattern Recogn. Lett.*, 1:73–77, 1982. [dd-idamd-82]

4007 P. A. Devijver and J. Kittler. *Pattern Recognition: A Statistical Approach.* Prentice Hall, Englewood Cliffs, NJ, 1982. [dk-prsa-82]

4008 P. A. Devijver and S. Maybank. On the computation of the Delaunay triangulation of a convex polygon. In *Proc. 6th IEEE Internat. Conf. Pattern Recogn.*, pages 420–422, 1982. [dm-cdtcp-82]

P. A. Devijver. See also [8669].

4009 Olivier Devillers. An introduction to randomization in computational geometry. *Theoret. Comput. Sci.*, 157:35–52, 1996. [d-ircg-96] *URL:* http://www-sop.inria.fr/prisme/publis/d-ircg-96.ps.gz. *Cites:* as-solri-92, bd-rcuet-92, bdsty-arsol-92, bdt-schov-93, bt-hrodt-86, bt-rcdt-93, prisme-by-ga-95, ce-oails-92, cegss-cfals-93, c-ochaa-93, c-narsc-87, cms-frric-93, cs-arscg-89, prisme-2626, bds-lric-94, d-rysoa-92, dg-dbppl-93, dmt-fddtl-92, dty-dlals-92, dy-rchyd-93, gks-ricdv-92, ms-dplah-91, m-lavd-91, m-rmstd-91, m-rmstf-91, m-rmstl-91, m-cgitr-93, ol-mcp-81, ps-cgi-85, p-slpab-90, s-dmgsm-91, s-dmcpr-92, s-sfira-91, t-tdrac-93. *Abstract:* This paper is not a complete survey on randomized algorithms in computational geometry, but an introduction to this subject providing intuitions and references. In a first time, some basic ideas are illustrated by the sorting problem, and in a second time few results on computational geometry are briefly explained.

4010 O. Devillers. Computational geometry and discrete computations. In *Proc. 6th Discrete Geometry for Computer Imagery conf.*, volume 1176 of *Lecture Notes Comput. Sci.*, pages 317–324. Springer-Verlag, 1996. (invited paper). [d-cgdc-96]

4011 Olivier Devillers. Improved incremental randomized Delaunay triangulation. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 106–115, 1998. [d-iirdt-98] *URL:* http://www-sop.inria.fr/prisme/publis/d-iirdt-98.ps.gz. *Abstract:* We propose a new data structure to compute the Delaunay triangulation of a set of points in the plane. It combines good worst case complexity, fast behavior on real data, and small memory occupation. The location structure is organized into several levels. The lowest level just consists of the triangulation, then each level contains the triangulation of a small sample of the levels below. Point location is done by marching in a triangulation to determine the nearest neighbor of the query at that level, then the march restarts from that neighbor at the level below. Using a small sample (3 %) allows a small memory occupation; the march and the use of the nearest neighbor to change levels quickly locate the query.

4012 Olivier Devillers. *Méthodes d'optimisation du tracé de rayon.* PhD thesis, Université Paris Sud, Paris, France, 1988. [d-mddtd-88] *Keywords:* doctoral thesis.

4013 Olivier Devillers. On deletion in Delaunay triangulation. Research Report 3451, INRIA, 1998. [d-ddt-98] *URL:* http://www.inria.fr/RRRT/RR-3451. *Precedes:* d-ddt-99. *Abstract:* This paper present how space of spheres and shelling can be used to delete efficiently a point from d-dimensional triangulation. In 2-dimension, if k is the degree of the deleted vertex, the complexity is $O(k \log k)$, but we notice that this number apply only to low cost operations; time consuming computations are done only a linear number of times. This algorithm can be viewed as a variation of Heller algorithm which is popular in the geographic information system community. Unfortunately Heller algorithm is false as explained in this paper.

4014 Olivier Devillers. On deletion in Delaunay triangulation. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 181–188, 1999. [d-ddt-99] *URL:* http://www-sop.inria.fr/prisme/publis/d-ddt-99.ps.gz. *Succeeds:* d-ddt-98. *Cites:* agss-ltacv-89, a-pdpaa-87, bbp-iayed-98scg, bd-irgo-95, bm-sdcs-71, c-bvdcp-86, ads-rdppw-98, d-iirdt-98, dmt-ssgtu-92i, dp-papaf-98, es-itfwr-96, gs-cdtp-78, h-taatm-90, l-tdam-97, m-smdnt-93, msz-frplw-96, obs-stcav-92, p-gcc-70, s-chdch-86, s-nmpgc-98. *Abstract:* This paper present how space of spheres and shelling can be used to delete efficiently a point from d-dimensional triangulation. In 2-dimension, if k is the degree of the deleted vertex, the complexity is $O(k \log k)$, but we notice that this number apply only to low cost operations; time consuming computations are done only a linear number of times. This algorithm can be viewed as a variation of Heller algorithm which is popular in the geographic information system community. Unfortunately Heller algorithm is false as explained in this paper.

4015 Olivier Devillers. Randomization yields simple $O(n \log^* n)$ algorithms for difficult $\Omega(n)$ problems. *Internat. J. Comput. Geom. Appl.*, 2(1):97–111, 1992. [d-rysoa-92] *URL:* http://www-sop.inria.fr/prisme/publis/d-rysoa-92.ps.gz. *Keywords:* randomized algorithms, Delaunay triangulation, skeleton, medial axis, minimum spanning tree, simple polygon. *Succeeds:* d-sroa-91. *Abstract:* We use here the results on the influence graph [2188] to adapt them for particular cases where additional information is available. In some cases, it is possible to improve the expected randomized complexity of algorithms from $O(n \log n)$ to $O(n \log^* n)$. This technique applies in the following applications : triangulation of a simple polygon, skeleton of a simple polygon, Delaunay triangulation of points knowing the EMST (euclidean minimum spanning tree).

4016 Olivier Devillers. Robust and efficient implementation of the Delaunay tree. Report 1619, INRIA Sophia-Antipolis, Valbonne, France, 1992. [d-reidt-92] *URL:* http://www.inria.fr/RRRT/RR-1619. *Keywords:* randomized algorithms, Delaunay triangulation, practical issue, degenerate cases.

4017 Olivier Devillers. Simple randomized $O(n \log^* n)$ algorithms. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 141–144, August 1991. [d-sroa-91] *Keywords:* randomized algorithms, Delaunay triangulation, skeleton, medial axis, minimum spanning tree, simple polygon. *Precedes:* d-rysoa-92. *Cites:* agss-ltacv-89, bdsty-olgag-91a, c-tsplt-90i, cs-arscg-89, s-sfira-90, ZZZ.

4018 Olivier Devillers. Simultaneous containment of several polygons: analysis of the contact configurations. Report 1179, INRIA Sophia-Antipolis, Valbonne, France, 1990. [d-scspa-90] *URL:* http://www.inria.fr/RRRT/RR-1179. *Keywords:* polygon placement, contact configurations. *Precedes:* d-scspa-93.

4019 Olivier Devillers. Simultaneous containment of several polygons: analysis of the contact configurations. *Internat. J. Comput. Geom. Appl.*, 3(4):429–442, 1993. [d-scspa-93] *URL:* http://www-sop.inria.fr/prisme/publis/d-scspa-93.ps.gz. *Keywords:* motion planning, polygon containment, robotics. *Succeeds:* d-scspa-90. *Abstract:* The main concern of this paper is the detection of double contact configurations for some polygons moving in translation in a polygonal environment. We first establish some general properties about such configurations and give conditions of existence of double contacts for two or three objects. For three convex polygons moving in a polygonal environment or three simple polygons moving in a rectangle there always exists a double contact. Two examples without possibility of double contacts are given, one with three polygons (not convex) moving in a polygonal environment, and one with four convex polygons moving in a rectangle. We deduce an algorithm detecting a double contact position in time $O(n^2)$ (resp $O(n^3)$) for two (resp three) convex polygons of constant sizes moving in a non-convex polygon of size n.

4020 Olivier Devillers and Andreas Fabri. Scalable algorithms for bichromatic line segment intersection problems on coarse grained multicomputers. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 277–288, 1993. [df-sabls-93] *Precedes:* df-sabls-96. *Abstract:* We present output-sensitive scalable parallel algorithms for bichromatic line segment intersection problems for the Coarse Grained Multicomputer model. Under the assumption that $n \geq p^2$, where n is the number of line segments and p the number of processors, we obtain an intersection counting algorithm with a time complexity of $O(\frac{n \log n \log p}{p} + T_s(n \log p, p))$, where $T_s(m,p)$ is the time used to sort m items on a p processor machine. An additional $O(\frac{k}{p})$ time is spent on the reporting of the k intersections. As the sequential complexity is $O(n \log n)$ and $O(k)$ for counting and reporting, respectively, we obtain a speedup of $\frac{p}{\log p}$.

4021 Olivier Devillers and Andreas Fabri. Scalable algorithms for bichromatic line segment intersection problems on coarse grained multicomputers. *Internat. J. Comput. Geom. Appl.*, 6:487–506, 1996. [df-sabls-96] *URL:* http://www-sop.inria.fr/prisme/publis/df-sabls-96.ps.gz. *Succeeds:* df-sabls-93. *Cites:* adh-cgaiaccl-93, b-sna-68, bt-pdcnm-89, cegs-ablsp-89, cp-dsnlthrc-90, dfr-spgac-93, gsg-pmvsppsp-92, grand-ch, gl-rrft-89, l-ipaa-92, ps-crrbsi-92, ps-cgi-85, rv-ltslsn-87. *Abstract:* We present output-sensitive scalable parallel algorithms for bichromatic line segment intersection problems for the Coarse Grained Multicomputer model. Under the assumption that $n \geq p^2$, where n is the number of line segments and p the number of processors, we obtain an intersection counting algorithm with a time complexity of $O(\frac{n \log n \log p}{p} + T_s(n \log p, p))$, where $T_s(m,p)$ is the time used to sort m items on a p processor machine. An additional $O(\frac{k}{p})$ time is spent on the reporting of the k intersections. As the sequential complexity is $O(n \log n)$ and $O(k)$ for counting and reporting, respectively, we obtain a speedup of $\frac{p}{\log p}$.

4022 Olivier Devillers, Alexandra Fronville, Bernard Mourrain, and Monique Teillaud. Algebraic methods and arithmetic filtering for exact predicates on circle arcs. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 139–147, 2000. [dfmt-amafe-00] *Cites:* bp-rpsis-97, bs-ealcs-99, bv-earic-99, svy-crm-99, cloiva-92, lpt-rpqid-99, p-gacg-99p-iaeia-99, y-tegc-97, y-fpaa-00. *Abstract:* The purpose of this paper is to present a new method to design exact geometric predicates in algorithms dealing with curved objects such as circular arcs. We focus on the comparison of the abscissae of two intersection points of circle arcs, which is known to be a difficult predicate involved in the computation of arrangements of circle arcs. We present an algorithm for deciding the x-order of intersections from the signs of the coefficients of a polynomial, obtained by a general approach based on resultants. This method allows the use of efficient arithmetic and filtering techniques leading to fast implementation as shown by the experimental results.

4023 Olivier Devillers, Alexandra Fronville, Bernard Mourrain, and Monique Teillaud. Algebraic methods and arithmetic filtering for exact predicates on circle arcs. In *Abstracts 16th European Workshop Comput. Geom.*, pages 117–120. Ben-Gurion University of the Negev, 2000. [dfmt-amafe-00i]

4024 Olivier Devillers and Pierre-Marie Gandoin. Compression géométrique pour une transmission progressive. Rapport de recherche 3766, INRIA, 1999. [dg-cgtp-99] *URL:* http://www-sop.inria.fr/prisme/biblio/. *Cites:* bb-srmua-97, bg-tdrcs-93, sk-ltrdt-97. *Abstract:* The compression of geometric structures is a relatively new field of data compression. Since about 1995, several articles have dealt with the coding of meshes, using for most of them the following approach: the vertices of the mesh are coded in an order such that it contains partially the topology of the mesh. In the same time, some simple rules attempt to predict the position of the current vertex from the positions of its neighbours that have been previously coded. In this article, we describe a compression algorithm whose principle is completely different: the order of the vertices is used to compress their coordinates, and then the topology of the mesh is reconstructed from the vertices. This algorithm, particularly suited for terrain models, achieves compression factors that are slightly greater than those of the currently available algorithms, and moreover, it allows progressive and interactive transmission of the meshes.

4025 Olivier Devillers and Pierre-Marie Gandoin. Geometric compression for interactive transmission. In *Proc. of IEEE Visualization 2000*, pages 319–326, 2000. [dg-cgit-00]

4026 Olivier Devillers and Mordecai Golin. Dog bites postman: Point location in the moving Voronoi diagram and related problems. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 133–144. Springer-Verlag, 1993. [dg-dbppl-93] *Keywords:* Voronoi, Delaunay, moving points, randomized algorithms, dynamic algorithms, localisation. *Precedes:* dg-dbppl-98.

4027 Olivier Devillers and Mordecai Golin. Dog bites postman: Point location in the moving Voronoi diagram and related problems. *Internat. J. Comput. Geom. Appl.*, 8:321–342, 1998. [dg-dbppl-98] *URL:* http://www-sop.inria.fr/prisme/publis/dg-dbppl.ps.gz. *Succeeds:* dg-dbppl-93. *Cites:* ar-vdmph-92, a-vdsfg-91, bdsty-arsol-92, bt-rcdt-93, c-bvdcp-86, cms-frric-92i, cs-arscg-89, d-rysoa-92, dg-dbppl-93, dmt-fddtl-92, dty-dlals-92, egs-oplms-86, fl-vdmpp-91, gt-dtdpl-91, gmr-vdmpp-91, gks-ricdv-92, iklm-cdf3s-93, m-rmstd-91, ms-dplah-91, p-pplr-90, r-dvd-91, r-vdds-92, rn-dvdmp-91, s-dmgsm-91, s-barga-91, s-vdr-92. *Abstract:* In this paper, we discuss two variations of the two-dimensional post-office problem that arise when the post-offices are n postmen moving with constant velocities. The first variation addresses the question: given a point q_0 and time t_0 who is the nearest postman to q_0 at time t_0? We present a randomized incremental data structure that answers the query in expected $O(\log^2 n)$ time. The second variation views a query point as a dog searching for a postman to bite and finds the postman that a dog running with speed v_d could reach first. While it is quite straightforward to design a data structure for the first problem, designing one for the second appears more difficult. We show that if the dog is quicker than all of the postmen then there is a nice correspondence between the problems. This correspondence will permit us to use the data structure developed for the first problem to solve the second one in $O(\log^2 n)$ time as well. The proposed structure is semi-dynamic, that is the set of postmen can be modified by inserting new postmen. A fully dynamic structure that also supports deletions can be obtained, but in that case the query time becomes $O(\log^3 n)$.

4028 Olivier Devillers and Mordecai Golin. Incremental algorithms for finding the convex hulls of circles and the lower envelopes of parabolas. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 153–158, 1994. [dg-iafch-94] *Precedes:* dg-iafch-95. *Cites:* a-sdcgp-85, bcddy-acchs-92, r-chada-92, ZZZ.

4029 Olivier Devillers and Mordecai Golin. Incremental algorithms for finding the convex hulls of circles and the lower envelopes of parabolas. *Inform. Process. Lett.*, 56(3):157–164, 1995. [dg-iafch-95] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html. *Succeeds:* dg-iafch-94. *Cites:* a-dcgp-85, bcddy-acchs-92, r-chada-92. *Abstract:* The existing $O(n \log n)$ algorithms for finding the convex hulls of circles and the lower envelope of parabolas follow the divide-and-conquer paradigm. The difficulty with developing incremental algorithms for these problems is that the introduction of a new circle or parabola can cause $\Theta(n)$ structural changes, leading to $\Theta(n^2)$ total structural changes during the running of the algorithm. In this note we examine the geometry of these problems and show that, if the circles or parabolas are first sorted by appropriate parameters before constructing the convex hull or lower envelope incrementally, then each new addition may cause at most 3 changes in an amortized sense. These observations are then used to develop $O(n \log n)$ incremental algorithms for these problems.

4030 Olivier Devillers, Mordecai Golin, Klara Kedem, and Stefan Schirra. Queries on Voronoi diagrams of moving points. *Comput. Geom. Theory Appl.*, 6:315–327, 1996. [dgks-qvdmp-96] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html. *Succeeds:* dgks-rdqvd-94i. *Cites:* ar-vdmph-92, c-sssl-86, dg-dbppl-93, dsst-mdsp-89, fl-vdmpp-91, gt-dtdpl-91, gks-ricdv-92, gmr-vdmpp-91, m-apcad-83, r-vdds-90, r-dvd-91, rn-dvdmp-91, st-pplup-86, sa-dsstg-95, s-vdr-92. *Abstract:* Suppose we are given n moving postmen described by their motion equations $p_i(t) = s_i + v_i t$, $i = 1, \ldots, n$, where $s_i \in R^2$ is the position of the i'th postman at time $t = 0$, and $v_i \in R^2$ is his velocity. The problem we address is how to preprocess the postmen data so as to be able to efficiently answer two types of nearest-neighbor queries. The first one asks "who is the nearest postman at time t_q to a dog located at point s_q. In the second type a query dog is located at point s_q at time t_q, its speed is $v_q > |v_i|$ (for all $i = 1, \ldots, n$), and we want to know which postman the dog can catch first. The first type of query is relatively simple to address, the second type at first seems much more complicated. We show that the problems are very closely related, with efficient solutions to the first type of query leading to efficient solutions to the second. We then present two solutions to these problems, with tradeoff between preprocessing time and query time. Both solutions use deterministic data structures.

4031 Olivier Devillers, Mordecai Golin, Klara Kedem, and Stefan Schirra. Revenge of the dog: Queries on Voronoi diagrams of moving points. Report MPI-I-94-149, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. also INRIA-2329. [dgks-rdqvd-94t] *Precedes:* dgks-rdqvd-94i.

4032 Olivier Devillers, Mordecai Golin, K. Kedem, and S. Schirra. Revenge of the dog: Queries on Voronoi diagrams of moving points. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 122–127, 1994. [dgks-rdqvd-94i] *Succeeds:* dgks-rdqvd-94t. *Precedes:* dgks-qvdmp-96. *Cites:* c-sssl-86, dg-dbppl-93, dsst-mdsp-89, fl-vdmpp-91, gks-ricdv-92, gmr-vdmpp-92, gt-dtdpl-91, m-apcad-83, st-pplup-86, ZZZ.

4033 Olivier Devillers and Philippe Guigue. The shuffling buffer. *Internat. J. Comput. Geom. Appl.*, 11:555–572, 2001. [dg-sb-01]

4034 Olivier Devillers and Matthew Katz. Optimal line bipartitions of point sets. *Internat. J. Comput. Geom. Appl.*, 9:39–51, 1999. [dk-olbps-99] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html. *Succeeds:* dk-olbps-96. *Cites:* as-pglp-94, abky-cabmm-88, a-dp-86, cms-frric-93, gks-sgsop-95, hr-tcpp-93, hs-ftp-91, jk-eaetc-94, k-iagoe-95, ks-ebago-93, mw-fobpp-91, ms-ppgmm-91, ol-mcp-81, ps-cgi-85, rww-obps-92, s-nlap2-96. *Abstract:* Let S be a set of n points in the plane. We study the following problem: Partition S by a line into two subsets S_a and S_b such that $max\{f(S_a), f(S_b)\}$ is minimal, where f is any monotone function defined over 2^S. We first present a solution to the case where the points in S are the vertices of a convex polygon and apply it to some common cases — $f(S')$ is the perimeter, area, or width of the convex hull of $S' \subseteq S$ — to obtain linear solutions (or $O(n \log n)$ solutions if the convex hull of S is not given) to the corresponding problems. This solution is based on an efficient procedure for finding a minimal entry in matrices of some special type, which we believe is of independent interest. For the general case we present a linear space solution which is in some sense output sensitive. It yields solutions to the perimeter and area cases that are never slower and often faster than the best previous solutions.

4035 Olivier Devillers and Matthew J. Katz. Optimal line bipartitions of point sets. In *Proc. 7th Annu. Internat. Sympos. Algorithms Comput.*, pages 45–54, 1996. [dk-olbps-96] *Precedes:* dk-olbps-99.

4036 Olivier Devillers, Giuseppe Liotta, Franco P. Preparata, and Roberto Tamassia. Checking the convexity of polytopes and the planarity of subdivisions. In *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 186–199. Springer-Verlag, 1997. [dlpt-ccpps-97] *Precedes:* dlpt-ccpps-98.

4037 Olivier Devillers, Giuseppe Liotta, Franco P. Preparata, and Roberto Tamassia. Checking the convexity of polytopes and the planarity of subdivisions. *Comput. Geom. Theory Appl.*, 11:187–208, 1998. [dlpt-ccpps-98] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html. *Keywords:* graph drawing, planar, straight-line, checking. *Succeeds:* dlpt-ccpps-97. *Cites:* -dcgs-, bbdgt-ccgg-97, bo-arcgi-79, bk-dpcw-95, b-ecvdl-96, c-tsplt-91a, dtv-olcpt-95, dtv-olcpt-95t, dv-aptg-96, f-slrpg-48, glm-othsr-96, h-gt-72, ht-ept-74, k-eops-88, ll-abgtc-87, lpt-rpqid-97, lpt-rpqid-99, mn-cgs-96, mnssssu-cgpvg-96, mnssssu-cgpvg-97, swm-ccr-95, y-tegc-97. *Abstract:* This paper considers the problem of verifying the correctness of geometric structures. In particular, we design simple optimal checkers for convex polytopes in two and higher dimensions, and for various types of planar subdivisions, such as triangulations, Delaunay triangulations, and convex subdivisions. Their performance is analyzed also in terms of the algorithmic degree, which characterizes the arithmetic precision required.

4038 Olivier Devillers, Stefan Meiser, and Monique Teillaud. Fully dynamic Delaunay triangulation in logarithmic expected time per operation. Technical Report 1349, INRIA, 1991. [dmt-fddtl-91t] *Succeeds:* dmt-fddtl-92. *Precedes:* dmt-fddtl-91.

4039 Olivier Devillers, Stefan Meiser, and Monique Teillaud. Fully dynamic Delaunay triangulation in logarithmic expected time per operation. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 42–53. Springer-Verlag, 1991. [dmt-fddtl-91] *Keywords:* randomized algorithms, Delaunay triangulation, dynamizing datastructures. *Succeeds:* dmt-fddtl-91t. *Precedes:* dmt-fddtl-92.

4040 Olivier Devillers, Stefan Meiser, and Monique Teillaud. Fully dynamic Delaunay triangulation in logarithmic expected time per operation. *Comput. Geom. Theory Appl.*, 2(2):55–80, 1992. [dmt-fddtl-92] *URL:* http://www-sop.inria.fr/prisme/publis/dmt-fddtl-92.ps.gz. *Keywords:* randomized algorithms, Delaunay triangulation, dynamizing datastructures. *Succeeds:* dmt-fddtl-91. *Precedes:* dmt-fddtl-91t. *Abstract:* The Delaunay Tree is a hierarchical data structure that has been introduced in [2219] and analyzed in [2188,2221]. For a given set of sites in the plane and an order of insertion for these sites, the Delaunay Tree stores allthe successive Delaunay triangulations. As proved before, the DelaunayTree allows the insertion of a site in logarithmic expected time andlinear expected space, when the insertion sequence is randomized. In thispaper, we describe an algorithm maintaining the Delaunay Tree underinsertions and deletions of sites. This can be done in $O(\log n)$expected time for an insertion and $O(\log\log n)$ expected time for adeletion, where n is the number of sites currently present in thestrucuture. For deletions, by expected time, we mean averaging over allalready inserted sites for the choice of the deleted sites. The algorithmhas been effectively coded and experimental results are given.

4041 Olivier Devillers, Stefan Meiser, and Monique Teillaud. The space of spheres, a geometric tool to unify duality results on Voronoi diagrams. Report 1620, INRIA Sophia-Antipolis, Valbonne, France, 1992. [dmt-ssgtu-92t] *URL:* http://www.inria.fr/RRRT/RR-1620. *Precedes:* dmt-ssgtu-92i.

4042 Olivier Devillers, Stefan Meiser, and Monique Teillaud. The space of spheres, a geometric tool to unify duality results on Voronoi diagrams. In *Abstracts 8th European Workshop Comput. Geom.*, pages 45–49. Utrecht University, 1992. [dmt-ssgtu-92]

4043 Olivier Devillers, Stefan Meiser, and Monique Teillaud. The space of spheres, a geometric tool to unify duality results on Voronoi diagrams. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 263–268, 1992. [dmt-ssgtu-92i] *Keywords:* duality results, generalized Voronoi diagrams, geometric transforms, upper/lower envelopes. *Succeeds:* dmt-ssgtu-92t.

4044 Olivier Devillers and Naji Mouawad. Guarding vertices versus guarding edges in a simple polygon. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 99–102, 1992. [dm-gvvge-92] *Cites:* c-ctpg-75, ll-ccagp-86, ea-lacvp-81, gj-cigtn-79, o-agta-87, ZZZ.

4045 Olivier Devillers and Asish Mukhopadhyay. Finding an ordinary conic and an ordinary hyperplane. *Nordic J. Comput.*, 6:422–428, 1999. [dm-focoh-99] *URL:* http://www-sop.inria.fr/prisme/biblio/. *Succeeds:* dm-focm-98.

4046 Olivier Devillers and Asish Mukhopadhyay. Finding an ordinary conic and more. Research Report 3517, INRIA, 1998. [dm-focm-98] *URL:* http://www-sop.inria.fr/prisme/biblio/. *Precedes:* dm-focoh-99. *Abstract:* Given a finite set of non-collinear points in the plane there exists a line that passes through exactly two points. Such a line is called an *ordinary line*. An efficient algorithm for computing such a line was proposed by Mukhopadhyay et al. In this note we extend this result in two directions. We first show how to use this algorithm to compute an *ordinary conic*, that is, a conic passing through exactly five points, assuming that all the points do not lie onthe same conic. Our proof of existence and the consequent algorithm is simpler than previous ones. We also show how to compute an ordinary hyperplane in three and higher dimensions.

4047 Olivier Devillers, Sylvain Pion, and Monique Teillaud. Walking in a triangulation. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 106–114, 2001. [dpt-wt-01]

4048 Olivier Devillers and Franco P. Preparata. A probabilistic analysis of the power of arithmetic filters. Technical Report CS-96-27, Center for Geometric Computing, Dept. Computer Science, Brown Univ., 1996. [dp-papaf-96] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-27.ps.Z. *Keywords:* arithmetic filter, robustness, probabilistic analysis, geometric predicate, CGC, Brown. *Precedes:* dp-papaf-98.

4049 Olivier Devillers and Franco P. Preparata. A probabilistic analysis of the power of arithmetic filters. *Discrete Comput. Geom.*, 20:523–547, 1998. [dp-papaf-98] *URL:* http://www-sop.inria.fr/prisme/publis/dp-papaf-98.ps.gz. *Succeeds:* dp-papaf-96. *Cites:* b-g-87, bkmnsu-egcl-95, bms-hcvdl-94, fv-eeacg-93, lpt-rpqiv-96, mn-iga-94, y-tegc-97. *Abstract:* The assumption of real-number arithmetic, which is at the basis of conventional geometric algorithms, has been seriously challenged in recent years, since digital computers do not exhibit such capability. A geometric predicate usually consists of evaluating the sign of some algebraic expression. In most cases, rounded computations yield a reliable result, but sometimes rounded arithmetic introduces errors which may invalidate the algorithms. The rounded arithmetic may produce an incorrect result only if the exact absolute value of the algebraic expression is smaller than some (small) ε, which represents the largest error that may arise in the evaluation of the expression. The threshold ε depends on the structure of the expression and on the adopted computer arithmetic, assuming that the input operands are error-free. A pair (arithmetic engine,threshold) is an *arithmetic filter*. In this paper we develop a general technique for assessing the efficacy of an arithmetic filter. The analysis consists of evaluating both the threshold and the probability of failure of the filter. To exemplify the approach, under the assumption that the input points be chosen randomly in a unit ball or unit cube with uniform density, we analyze the two important predicates "which-side" and "insphere". We show that the probability that the absolute values of the corresponding determinants be no larger than some positive value V, with emphasis on small V, is $\Theta(V)$ for the which-side predicate, while for the insphere predicate it is $\Theta(V^{\frac{2}{3}})$ in dimension 1,$O(V^{\frac{1}{2}})$ in dimension 2, and $O(V^{\frac{1}{2}} \ln \frac{1}{V})$ in higher dimensions. Constants are small, and are given in the paper.

4050 Olivier Devillers and Franco P. Preparata. Evaluating the cylindricity of a nominally cylindrical point set. In *Proc. 11th ACM-SIAM Sympos. Discrete Algorithms*, pages 518–527, 2000. [dp-ecncp-00]

4051 Olivier Devillers and Franco P. Preparata. Further results on arithmetic filters for geometric predicates. In *Abstracts 15th European Workshop Comput. Geom.*, pages 113–116. INRIA Sophia-Antipolis, 1999. [dp-frafg-99i] *Precedes:* dp-frafg-99a.

4052 Olivier Devillers and Franco P. Preparata. Further results on arithmetic filters for geometric predicates. *Comput. Geom. Theory Appl.*, 13:141–148, 1999. [dp-frafg-99a] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html. *Succeeds:* dp-frafg-99i. *Cites:* dp-papaf-98. *Abstract:* An efficient technique to solve precision problems consists in using exact computations. For geometric predicates, using systematically expensive exact computations can be avoided by the use of filters. The predicate is first evaluated using rounding computations, and an error estimation gives a certificate of the validity of the result. In this note, we studies the statistical efficiency of filters for cosphericity predicate with an assumption of regular distribution of the points. We prove that the expected value of the polynomial corresponding to the in sphere test is greater than ϵ with probability $O(\epsilon \log \frac{1}{\epsilon})$ improving the results of a previous paper [4049].

4053 Olivier Devillers, Monique Teillaud, and Mariette Yvinec. Dynamic location in an arrangement of line segments in the plane. *Algorithms Rev.*, 2(3):89–103, 1992. [dty-dlals-92] *Keywords:* randomized algorithms, arrangement of line-segments, dynamizing data structures.

Olivier Devillers. See also [515, 516, 1185–1187, 1689–1692, 2157, 2161–2165, 2171–2195, 2476, 2941, 3998].

4054 M. P. Devine and D. Wood. SEPARATION in d dimensions, or strip mining in asteroid fields. *Comput. Graph.*, 13:329–336, 1989. [dw-sddsm-89]

4055 L. Devroye. *Lecture Notes on Bucket Algorithms*. Birkhäuser Verlag, Boston, MA, 1986. [d-lnba-86] *Keywords:* book.

4056 L. Devroye. On the expected size of some graphs in computational geometry. *Comput. Math. Appl.*, 15:53–64, 1988. [d-essgc-88]

4057 L. Devroye. On the oscillation of the expected number of points on a random convex hull. *Statistics and Probability Letters*, 11:281–286, 1991. [d-oenpr-91]

4058 Luc Devroye, P. Epstein, and J.-R. Sack. On generating random intervals and hyperrectangles. *J. Computat. Graph. Statistics*, 2(3):291–307, 1993. [des-grih-93]

4059 L. Devroye and L. Laforest. An analysis of random d-dimensional quadtrees. *SIAM J. Comput.*, 19:821–832, 1990. [dl-arddq-90]

4060 Luc Devroye, Ernst Peter Mücke, and Binhai Zhu. A note on point location in Delaunay triangulations of random points. *Algorithmica*, 22:477–482, 1998. [dmz-npldt-98] *Comments:* replaces the old, wrong entry dmz-npldt-95.

4061 L. Devroye and T. J. Wagner. Nearest neighbor methods in discrimination. In P. R. Krishnan and L. N. Kanal, editors, *Handbook of Statistics*, volume 2. North-Holland, 1982. [dw-nnmd-82]

4062 L. Devroye and B. Zhu. Intersections of random line segments. *Internat. J. Comput. Geom. Appl.*, 4:261–274, 1994. [dz-irls-94] *Keywords:* probabilistic analysis, computational geometry, intersections of line segments, asymptotic analysis, algorithmic complexity, incidence graph.

L. Devroye. See also [1135–1137, 2302–2305, 12979].

4063 L. P. Devroye. A note on finding convex hulls via maximal vectors. *Inform. Process. Lett.*, 11:53–56, 1980. [d-nfchm-80]

4064 L. P. Devroye. A note on the expected time required to construct the outer layer. *Inform. Process. Lett.*, 20:255–257, 1985. [d-netrc-85]

4065 L. P. Devroye. Expected time analysis of algorithms in computational geometry. In G. T. Toussaint, editor, *Computational Geometry*, pages 135–151. North-Holland, Amsterdam, Netherlands, 1985. [d-etaac-85]

4066 L. P. Devroye. How to reduce the average complexity of convex hull finding algorithms. *Comput. Math. Appl.*, 7:299–308, 1981. [d-hracc-81]

4067 L. P. Devroye. Moment inequalities for random variables in computational geometry. *Computing*, 30:111–119, 1983. [d-mirvc-83]

4068 L. P. Devroye. On the average complexity of some bucketing algorithms. *Comput. Math. Appl.*, 7:407–412, 1981. [d-acsba-81]

4069 L. P. Devroye. On the computer generation of random convex hulls. *Comput. Math. Appl.*, 8:1–13, 1982. [d-cgrch-82]

4070 L. P. Devroye. Recent results on the average time behavior of some algorithms in computational geometry. In *Proc. 13th Sympos. Interface: Comput. Sci. Statist.*, pages 76–82, 1981. [d-rratb-81]

4071 L. P. Devroye. Some results on the average time for sorting and searching in R^2. Report ??, School Comput. Sci., McGill Univ., Montreal, PQ, 1981. [d-srats-81]

4072 L. P. Devroye and G. T. Toussaint. A note on linear expected time algorithms for finding convex hulls. *Computing*, 26:361–366, 1981. [dt-nleta-81] *Succeeds:* dt-eafch-78.

4073 L. P. Devroye and G. T. Toussaint. Elimination algorithms for finding convex hulls in linear expected running time with radial densities. Report ??, Dept. Comput. Sci., McGill Univ., Montreal, PQ, 1978. [dt-eafch-78] *Precedes:* dt-nleta-81.

L. P. Devroye. See also [13025].

P. M. Dew. See also [3822, 10061].

4074 A. K. Dewdney. Complexity of nearest neighbour searching in three and higher dimensions. Report 28, Dept. Comput. Sci., Univ. Western Ontario, London, ON, 1977. [d-cnnst-77]

4075 A. K. Dewdney. Embedding graphs in Euclidean 3-space. *Amer. Math. Monthly*, 84:372–373, 1977. [d-ege3s-77]

4076 A. K. Dewdney. Embedding graphs in three-dimensional space. *Ars Combin.*, 9:77–90, 1980. [d-egtds-80]

4077 A. K. Dewdney. The embedding dimension of a graph. *Ars Combin.*, 9:77–90, 1980. [d-edg-80]

4078 A. K. Dewdney and J. K. Vranch. A convex partition of R^3 with applications to Crum's problem and Knuth's post-office problem. *Utilitas Math.*, 12:193–199, 1977. [dv-cprac-77] *Keywords:* Voronoi diagram, proximity, searching.

4079 Don Dewhirst, Sreedhar Vangavolu, and Harley Wattrick. The combination of hexahedral and tetrahedral meshing algorithms. In *Proc. 4th International Meshing Roundtable*, pages 291–304, Albuquerque, NM, 1995. Sandia National Laboratories. [dvw-chtma-95]

D. J. DeWitt. See also [2048].

S. Dey. See also [1223].

4080 T. Dey, C. Bajaj, and K. Sugihara. On good triangulations in three dimensions. In *Proc. Symposium on Solid Modeling and CAD/CAM Applications*. ACM/SIGGRAPH, June 1991. To appear. [dbs-gttd-91]

4081 Tamal Dey, Herbert Edelsbrunner, Sumanta Guha, and Dmitry Nekhayev. Topology preserving edge contraction. geometric combinatorics. *Publ. Inst. Math. (Beograd) (N.S.)*, 66:23–45, 1999. [degn-tpec-98]

4082 T. Dey and J. Pach. Extremal problems for geometric hypergraphs. Manuscipt, ??, 1994. In preparation. [dp-epgh-94]

T. Dey. See also [1256, 1257, 1810].

4083 T. K. Dey. A new technique to compute polygonal schema for 2-manifolds and null-homotopy detection. manuscript, 1993. [d-ntcpd-93] *Precedes:* ds-ntcps-94, d-ntcps-94.

4084 T. K. Dey. A new technique to compute polygonal schema for 2-manifolds with application to null-homotopy detection. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 277–284, 1994. [d-ntcps-94] *Succeeds:* d-ntcpd-93. *Cites:* ds-ntcps-94, de-iabns-93, g-gsh-77, hs-aacsl-91, my-chthu-88, s-dcc-92, s-tacg-90, s-ctcgt-80, v-kfdp-89, vy-cccs-90, ZZZ.

4085 T. K. Dey. *Decompositions of polyhedra in three dimensions*. PhD thesis, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1991. Technical Report CSD-TR-91-056. [d-dptd-91] *Keywords:* doctoral thesis.

4086 T. K. Dey. Good triangulations in the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 102–106, 1990. [d-gtp-90] *Cites:* ba-acfem-76, bgr-ntp-88, c-gqtm-89, e-stdac-89, f-cfemg-72, ll-gdtpg-86, ZZZ.

4087 T. K. Dey. Improved bounds for k-Sets and k-th levels. In *Proc. 38th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 156–161, 1997. [d-ibkkl-97]

4088 T. K. Dey. Improved bounds on planar k-sets and related problems. *Discrete Comput. Geom.*, 19:373–382, 1998. [d-ibpks-98]

4089 T. K. Dey. On counting triangulations in d dimensions. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 280–285, 1992. [d-ctdd-92] *Precedes:* d-ctdd-93. *Cites:* acns-cfs-82, de-cschh-92, gp-ubcpr-86, k-mts-88, s-ubccr-75, ZZZ.

4090 T. K. Dey. On counting triangulations in d dimensions. *Comput. Geom. Theory Appl.*, 3:315–325, 1993. [d-ctdd-93] *Succeeds:* d-ctdd-92.

4091 T. K. Dey. Optimal algorithms to detect null-homologous cycles on 2-manifolds. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 273–278, 1993. [d-oadnh-93] *Precedes:* d-oadnh-97. *Cites:* d-ntcpd-93, de-iabns-93, m-ati-77, m-eat-84, s-dcc-92, s-tacg-90, vy-cccs-90, ZZZ.

4092 T. K. Dey. Optimal algorithms to detect null-homologous cycles on 2-manifolds. *Internat. J. Comput. Geom. Appl.*, 7:167–174, 1997. [d-oadnh-97] *Succeeds:* d-oadnh-93.

4093 T. K. Dey. Triangulation and CSG representation of polyhedra with arbitrary genus. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 364–372, 1991. [d-tcrpa-91] *Keywords:* polyhedron. *Cites:* bd-pnr-90, bd-cdpr-90, c-cpplb-84, cp-tncp-90, dbs-gttd-91, dghs-eafcr-88, egs-ccmfa-90, e-acg-87, egppss-acptc-88, k-rmrs-89, py-ebsph-90, p-hresr-84, rs-dt3dn-89, ZZZ.

4094 T. K. Dey, C. L. Bajaj, and K. Sugihara. On good triangulations in three dimensions. *Internat. J. Comput. Geom. Appl.*, 2(1):75–95, 1992. [dbs-gttd-92] *Keywords:* Delaunay triangulation, mesh generation.

4095 T. K. Dey, M. B. Dillencourt, and S. K. Ghosh. Triangulating with high connectivity. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 339–343, 1994. [ddg-thc-94] *Precedes:* ddgc-thc-97. *Cites:* c-clps-85, dett-adgab-93t, d-hcptn-90, l-cpt-90, ys-fpgdc-93, ZZZ.

4096 T. K. Dey, M. B. Dillencourt, S. K. Ghosh, and J. Cahill. Triangulating with high connectivity. *Comput. Geom. Theory Appl.*, 8:39–56, 1997. [ddgc-thc-97] *Succeeds:* ddg-thc-94.

4097 T. K. Dey and H. Edelsbrunner. Counting simplex crossings and halving hyerplanes. Manuscript, ??, 1992. [de-cschh-92]

4098 T. K. Dey and H. Edelsbrunner. Counting triangle crossings and halving planes. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 270–273, 1993. [de-ctchp-93] *Cites:* acns-cfs-82, abfk-pswen-91, acegsw-ptphp-91, bfl-nhp-89, e-acg-87, e-ibith-91, elss-dgpps-73, r-mkkde-21, vz-ctpci-92, ZZZ.

4099 T. K. Dey and H. Edelsbrunner. Counting triangle crossings and halving planes. *Discrete Comput. Geom.*, 12:281–289, 1994. [de-ctchp-94]

4100 Tamal K. Dey, Herbert Edelsbrunner, and Sumanta Guha. Computational topology. In Bernard Chazelle, Jacob E. Goodman, and Richard Pollack, editors, *Advances in Discrete and Computational Geometry - Proc. 1996 AMS-IMS-SIAM Joint Summer Research Conf. Discrete and Computational Geometry: Ten Years Later*, number 223 in Contemporary Mathematics, pages 109–143. American Mathematical Society, 1999. [degct-99]

4101 Tamal K. Dey, Stefan Funke, and Edgar A. Ramos. Surface reconstruction in almost linear time under locally uniform sampling. In *Abstracts 17th European Workshop Comput. Geom.*, pages 129–132. Freie Universität Berlin, 2001. [dfr-sralt-01]

4102 Tamal K. Dey and Sumanta Guha. Algorithms for manifolds and simplicial complexes in Euclidean 3-space. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 398–407, May 1996. [dg-amsce-96]

4103 Tamal K. Dey and Sumanta Guha. Optimal algorithms for curves on surfaces. In *Proc. 36th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 266–274, 1995. [dg-oacs-95] *Annote:* To appear in JCSS, with new title: Transforming Curves on Surfaces.

4104 T. K. Dey and P. Kumar. A simple provable algorithm for curve reconstruction. In *Proc. 10th ACM-SIAM Sympos. Discrete Algorithms*, pages 893–894, January 1999. [dk-spacr-99]

4105 T. K. Dey and N. Leekha. Surface reconstruction simplified. Manuscript, December 1999. [dl-srs-99]

4106 T. K. Dey, K. Mehlhorn, and E. A. Ramos. Curve reconstruction: Connecting dots with good reason. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 197–206, 1999. [dmr-crcdgr-99]

4107 T. K. Dey, K. Mehlhorn, and E. A. Ramos. Curve reconstruction: Connecting dots with good reason. *Comput. Geom. Theory Appl.*, 15:229–244, 2000. [dmr-crcdg-00] *Succeeds:* ekns-ddsfo-97.

4108 T. K. Dey, S. P. Pal, and D. C. Prasad. Art gallery problems for visibility with reflection. In preparation, 1995. [dpp-agpvr-95]

4109 T. K. Dey and H. Schipper. A new technique to compute polygonal schema for 2-manifolds with application to null-homotopy detection. Manuscript, ??, 1994. [ds-ntcps-94] *Succeeds:* d-ntcpd-93.

4110 Tamal K. Dey and Nimish R. Shah. On the number of simplicial complexes in $\Re^d$. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 31–36, 1995. [ds-nscr-95]

4111 T. K. Dey, K. Sugihara, and C. L. Bajaj. Delaunay triangulations in three dimensions with finite precision arithmetic. *Comput. Aided Geom. Design*, 9:457–470, 1992. [dsb-dttdf-92] *Keywords:* Delaunay triangulation, robustness.

4112 Tamal K. Dey and Rephael Wenger. Reconstructing curves with sharp corners. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 233–241, 2000. [dw-rcsc-00]

4113 T. K. Dey and R. Wenger. Reconstructing curves with sharp corners. *Comput. Geom. Theory Appl.*, 19:89–99, 2001. [dw-rcsc-01]

Tamal K. Dey. See also [644, 835–838, 1258–1260, 1287, 10858].

4114 M. Deza and P. Frankl. On squashed designs. *Discrete Comput. Geom.*, 1:379–390, 1986. [df-sd-86]

M. Deza. See also [1146].

J. B. Dezell. See also [3969].

4115 A. Dhagat and J. O'Rourke. Motion planning amidst movable square blocks. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 188–191, 1992. [do-mpams-92] *Keywords:* motion planning. *Cites:* w-mppmo-91, ZZZ. *Abstract:* Proves that planning motion for a robot who can push square blocks, when some blocks are moveable and others immobile, is NP-hard. The paper erroneously claims to establish NP-completeness but never establishes membership in NP. Subsequently the result was strengthened in bos-mpams-94 to PSPACE hard.

4116 S. W. Dharmadhikari and K. Jogdeo. A characterization of convexity and central symmetry for planar polygonal sets. *Israel J. Math.*, 15:356–366, 1973. [dj-cccsp-73]

4117 G. Di Battista, editor. *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1997. [d-gd-97] *Keywords:* graph drawing, collection.

4118 G. Di Battista, P. Eades, H. de Fraysseix, P. Rosenstiehl, and R. Tamassia, editors. *Graph Drawing '93 (Proc. ALCOM Workshop on Graph Drawing)*, 1993. [defrt-gd93p-93] *URL:* ftp://ftp.cs.brown.edu/pub/gd94/gd-92-93/gd93-v2.ps.Z. *Keywords:* graph drawing, collection.

4119 G. Di Battista, P. Eades, R. Tamassia, and I. G. Tollis. Algorithms for drawing graphs: an annotated bibliography. Preprint, Dept. Comput. Sci., Brown Univ., Providence, RI, November 1993. Preliminary version available via anonymous ftp from wilma.cs.brown.edu, gdbiblio.tex.Z and gdbiblio.ps.Z in /pub/papers/compgeo. [dett-adgab-93] *Keywords:* graph drawing, graph theory, computer graphics, bibliography. *Succeeds:* et-adgab-89, dett-adgab-93t. *Precedes:* dett-adgab-94.

4120 G. Di Battista, P. Eades, R. Tamassia, and I. G. Tollis. Algorithms for drawing graphs: an annotated bibliography. manuscript, June 1993. [dett-adgab-93t] *Precedes:* dett-adgab-93, dett-adgab-94.

4121 G. Di Battista, P. Eades, R. Tamassia, and I. G. Tollis. Algorithms for drawing graphs: an annotated bibliography. *Comput. Geom. Theory Appl.*, 4:235–282, 1994. [dett-adgab-94] *Keywords:* graph drawing, graph theory, computer graphics, bibliography. *Succeeds:* dett-adgab-93, dett-adgab-93t.

4122 G. Di Battista, P. Eades, R. Tamassia, and I. G. Tollis. *Graph Drawing*. Prentice Hall, Upper Saddle River, NJ, 1999. [dett-gd-99] *Keywords:* graph drawing.

4123 G. Di Battista, A. Garg, G. Liotta, A. Parise, R. Tamassia, E. Tassinari, F. Vargiu, and L. Vismara. Drawing directed acyclic graphs: An experimental study. Technical Report CS-96-24, Center for Geometric Computing, Dept. Comput. Sci., Brown Univ., October 1996. [dglpttvv-ddage-96] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-24.ps.Z. *Keywords:* graph drawing, upward, experiments, CGC, Brown.

4124 G. Di Battista, A. Garg, G. Liotta, A. Parise, R. Tamassia, E. Tassinari, F. Vargiu, and L. Vismara. Drawing directed acyclic graphs: An experimental study. In S. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 76–91. Springer-Verlag, 1997. [dglpttvv-ddage-97] *URL:* http://www.cs.brown.edu/cgc/papers/dglpttvv-ddges-97.ps.gz. *Keywords:* graph drawing, upward, experiments, CGC, Brown.

4125 Giuseppe Di Battista, Ashim Garg, Giuseppe Liotta, Armando Parise, Roberto Tamassia, Emanuele Tassinari, Francesco Vargiu, and Luca Vismara. Drawing directed acyclic graphs: An experimental study. *Internat. J. Comput. Geom. Appl.*, 10(6):623–648, 2000. [dglpttvv-ddage-00] *Succeeds:* dglpttvv-ddage-96, dglpttvv-ddage-97.

4126 G. Di Battista, A. Garg, G. Liotta, R. Tamassia, E. Tassinari, and F. Vargiu. An experimental comparison of four graph drawing algorithms. 1996. [dglttv-ecfgd-96] *URL:* http://www.cs.brown.edu/cgc/papers/dglttv-ecfgd-96.ps.gz. *Keywords:* graph drawing, experiments, orthogonal. *Precedes:* dglttv-ecfgd-97.

4127 G. Di Battista, A. Garg, G. Liotta, R. Tamassia, E. Tassinari, and F. Vargiu. An experimental comparison of four graph drawing algorithms. *Comput. Geom. Theory Appl.*, 7:303–325, 1997. [dglttv-ecfgd-97] *URL:* http://www.cs.brown.edu/cgc/papers/dglttv-ecfgd-96.ps.gz. *Keywords:* graph drawing, experiments, orthogonal, CGC, Brown. *Succeeds:* dglttv-ecfgd-96.

4128 G. Di Battista, A. Garg, G. Liotta, R. Tamassia, E. Tassinari, and F. Vargiu. An experimental comparison of three graph drawing algorithms. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 306–315, 1995. [dglttv-ectgd-95] *URL:* http://www.cs.brown.edu/cgc/papers/dglttv-ectgd-95.ps.gz. *Keywords:* graph drawing, experiments, orthogonal. *Cites:* bcn-cdder-92, bfn-wigdp-85, bnt-ladfd-86, bbdl-tealf-91, bk-bhogd-94, con-dpgn-85, cp-ltadp-90, celr-tdgd-95, dh-dgnus-89, fpp-sssfe-88, fr-scpdt-84, dett-adgab-94, dgst-ads-90, dlv-sorod-93, dlt-pepg-84, eg-rpdfb-94, eg-glbdb-95, fr-gdfdp-91, gs-ssa-79, gnv-dptdd-88, h-celag-94, h-ggpig-95, jemwdt-npgda-91, jm-mpsne-96, k-vaor-89, kk-adgug-89, k-dpgul-92, k-adpg-93, k-mcvr-93, kb-pgap-92, l-aeglv-80, lmp-sbeac-94, lmps-trm1b-90, lms-gtrre-91, lms-la3be-93, nt-fapsd-84, pt-iabod-95, r-nmdpg-87, rt-rplbo-86, s-mncpe-84, stt-mvuhs-81, t-eggmn-87, tdb-agdrd-88, tt-uavrp-86, tt-pgelt-89, tt-gd-95, t-dgds-88, t-hdg-63, v-ucvc-81, w-npagt-90, w-cblsg-85, w-dpg-82, ZZZ.

4129 G. Di Battista, A. Garg, G. Liotta, R. Tamassia, E. Tassinari, F. Vargiu, and L. Vismara. Drawing directed graphs: An experimental study. Manuscript, Dept. Comput. Sci., Brown Univ., 1996. [dglttvv-ddges-96] *Keywords:* graph drawing, experiments, upward.

4130 G. Di Battista, A. Giammarco, G. Santucci, and R. Tamassia. The architecture of Diagram Server. In *Proc. IEEE Workshop on Visual Languages*, pages 60–65, 1990. [dgst-ads-90] *Keywords:* graph drawing.

4131 G. Di Battista, W. Lenhart, and G. Liotta. Proximity drawability: a survey. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 328–339. Springer-Verlag, 1995. [dll-pds-95] *Keywords:* graph drawing, proximity, survey.

4132 G. Di Battista and G. Liotta. Upward planarity checking: "Faces are more than polygons". In S. H. Whitesides, editor, *Graph Drawing (Proc. GD '98)*, volume 1547 of *Lecture Notes Comput. Sci.*, pages 72–86. Springer-Verlag, 1998. [dl-upcfm-98]

4133 G. Di Battista, G. Liotta, M. Strani, and F. Vargiu. Diagram Server. In *Proc. Advanced Visual Interfaces*, volume 36 of *World Scientific Series in Computer Science*, pages 415–417, 1992. [dlsv-ds-92] *Keywords:* graph drawing.

4134 G. Di Battista, G. Liotta, and F. Vargiu. Diagram Server. *J. Visual Lang. Comput.*, 6(3):275–298, 1995. (special issue on Graph Visualization, edited by I. F. Cruz and P. Eades). [dlv-ds-95] *Keywords:* graph drawing, system.

4135 G. Di Battista, G. Liotta, and F. Vargiu. Spirality and optimal orthogonal drawings. *SIAM J. Comput.*, 27(6):1764–1811, 1998. [dlv-sood-98] *Succeeds:* dlv-sorod-93,lvd-odmnb-94.

4136 G. Di Battista, G. Liotta, and F. Vargiu. Spirality of orthogonal representations and optimal drawings of series-parallel graphs and 3-planar graphs. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 151–162. Springer-Verlag, 1993. [dlv-sorod-93]

4137 G. Di Battista, G. Liotta, and S. H. Whitesides. The strength of weak proximity. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 178–189. Springer-Verlag, 1996. [dlw-swp-96] *URL:* http://www.cs.brown.edu/cgc/papers/dlw-swp-96.ps.gz. *Keywords:* graph drawing.

4138 G. Di Battista, W. P. Liu, and I. Rival. Bipartite graphs upward drawings and planarity. *Inform. Process. Lett.*, 36:317–322, 1990. [dlr-bgudp-90] *Keywords:* graph drawing.

4139 Giuseppe Di Battista and Petra Mutzel, editors. *New Trends in Graph Drawing: Special Issue on Selected Papers from the 1997 Symposium on Graph Drawing*, volume 3:4. 1999. [dm-ntgds-99] *URL:* http://www.cs.brown.edu/publications/jgaa/papers.html.

4140 G. Di Battista and P. Mutzel, editors. *Special Issue on Selected Papers from the 1997 Symposium on Graph Drawing*. J. Graph Algorithms Appl. To appear. [dm-spgd-] *Keywords:* graph drawing, collection.

4141 G. Di Battista and E. Nardelli. An algorithm for testing planarity of hierarchical graphs. In G. Tinhofer and G. Schmidt, editors, *Proc. 12th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 246 of *Lecture Notes Comput. Sci.*, pages 277–289. Springer-Verlag, 1987. [dn-atphg-87] *Keywords:* graph drawing.

4142 G. Di Battista and E. Nardelli. Hierarchies and planarity theory. *IEEE Trans. Syst. Man Cybern.*, 18(6):1035–1046, 1988. [dn-hpt-88] *Keywords:* graph drawing upward planar.

4143 Giuseppe Di Battista, Maurizio Patrignani, and Francesco Vargiu. A Split & Push approach to 3D orthogonal drawing. In S. H. Whitesides, editor, *Graph Drawing (Proc. GD '98)*, volume 1547 of *Lecture Notes Comput. Sci.*, pages 87–101. Springer-Verlag, 1998. [dpv-spa3d-98] *Keywords:* graph drawing, orthogonal, three-dimensional.

4144 G. Di Battista, E. Pietrosanti, R. Tamassia, and I. G. Tollis. Automatic layout of PERT diagrams with XPERT. In *Proc. IEEE Workshop on Visual Languages*, pages 171–176, 1989. [dptt-alpdx-89] *Keywords:* graph drawing.

4145 G. Di Battista and R. Tamassia. Algorithms for plane representations of acyclic digraphs. *Theoret. Comput. Sci.*, 61:175–198, 1988. [dt-aprad-88] *Keywords:* graph drawing.

4146 G. Di Battista and R. Tamassia. An integrated graphic system for designing and accessing statistical data bases. In *Proc. 7th Sympos. on Computational Statistics*, pages 231–236. Physica-Verlag, 1986. [dt-igsda-86] *Keywords:* graph drawing.

4147 G. Di Battista and R. Tamassia. Incremental planarity testing. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 436–441, 1989. [dt-ipt-89] *Keywords:* graph drawing.

4148 G. Di Battista and R. Tamassia. On-line graph algorithms with SPQR-trees. In M. S. Paterson, editor, *Automata, Languages and Programming (Proc. 17th ICALP)*, volume 443 of *Lecture Notes Comput. Sci.*, pages 598–611. Springer-Verlag, 1990. [dt-olgas-90]

4149 G. Di Battista and R. Tamassia. On-line maintenance of triconnected components with SPQR-trees. Report CS-92-40, Comput. Sci. Dept., Brown Univ., Providence, RI, 1992. Submitted for publication. [dt-olmtc-92] *Succeeds:* dt-olgas-90.

4150 G. Di Battista and R. Tamassia. On-line maintenance of triconnected components with SPQR-trees. *Algorithmica*, 15:302–318, 1996. [dt-olmtc-96] *Succeeds:* dt-olgas-90, dt-olmtc-92.

4151 G. Di Battista and R. Tamassia. On-line planarity testing. Report CS-92-39, Comput. Sci. Dept., Brown Univ., Providence, RI, 1992. [dt-olpt-92] *Succeeds:* dt-ipt-89. *Precedes:* dt-olpt-96.

4152 G. Di Battista and R. Tamassia. On-line planarity testing. *SIAM J. Comput.*, 25:956–997, 1996. [dt-olpt-96] *Keywords:* graph drawing. *Succeeds:* dt-ipt-89, dt-olpt-92.

4153 G. Di Battista and R. Tamassia, editors. *Special Issue on Geometric Representations of Graphs*, volume 9:1–2 of *Comput. Geom. Theory Appl.* 1998. [dt-sigrg-98] *Keywords:* graph drawing, collection.

4154 G. Di Battista and R. Tamassia, editors. *Special Issue on Graph Drawing*, volume 16:1 of *Algorithmica*. 1996. [dt-sigd-96] *Keywords:* graph drawing, collection.

4155 G. Di Battista, R. Tamassia, and I. G. Tollis. Area requirement and symmetry display in drawing graphs. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 51–60, 1989. [dtt-arsdd-89] *Keywords:* graph drawing. *Cites:* con-dpgn-85, cnao-laepg-85, cp-ltadp-90, dt-aprad-88, dlt-pepg-84, e-hgd-84, et-adgab-89, f-slrpg-48, fpp-sssfe-88, gy-tsr-83, ht-ept-74, hp-callc-79, k-vrrpd-75, kr-pl-75, k-fpos-87, lec-aptg-67, lns-mdg-85, ma-fddso-86, ma-fddst-88, r-nmdpg-87, rt-tdt-81, ru-roptc-88, rt-rplbo-86, s-epgg-90, s-cm-51, sr-vudtd-34, s-mncpe-84, sr-cdtn-83, tt-uavrp-86, t-eggmn-87, tt-eepgl-87, tdb-agdrd-88, t-hdg-63, w-bzv-36, w-dpg-82, ZZZ.

4156 G. Di Battista, R. Tamassia, and I. G. Tollis. Area requirement and symmetry display of planar upward drawings. *Discrete Comput. Geom.*, 7(4):381–401, 1992. [dtt-arsdp-92] *Keywords:* graph drawing.

4157 G. Di Battista, R. Tamassia, and I. G. Tollis. Constrained visibility representations of graphs. *Inform. Process. Lett.*, 41:1–7, 1992. [dtt-cvrg-92] *Keywords:* graph drawing.

4158 G. Di Battista, R. Tamassia, and I. G. Tollis. On planar drawings of acyclic digraphs. Report UTDCS 7-88, Comput. Sci. Program., Univ. Texas Dallas, Richardson, TX, 1988. [dtt-pdad-88]

4159 G. Di Battista, R. Tamassia, and L. Vismara. On-line convex planarity testing. Technical Report CS-95-26, Dept. Comput. Sci., Brown Univ., August 1995. [dtv-olcpt-95t] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/95/cs95-26.ps.Z.

4160 G. Di Battista, R. Tamassia, and L. Vismara. On-line convex planarity testing. In *Graph-Theoretic Concepts in Computer Science (Proc. WG '94)*, volume 903 of *Lecture Notes Comput. Sci.*, pages 242–255. Springer-Verlag, 1995. [dtv-olcpt-95] *Keywords:* graph drawing.

4161 G. Di Battista, R. Tamassia, and L. Vismara. Output-sensitive reporting of disjoint paths. Technical Report CS-96-25, Dept. Computer Science, Brown Univ., August 1996. [dtv-osrdp-96t] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-25.ps.Z.

4162 G. Di Battista, R. Tamassia, and L. Vismara. Output-sensitive reporting of disjoint paths. In *Proc. 2nd Ann. Internat. Conf. Computing and Combinatorics*, volume 1090 of *Lecture Notes Comput. Sci.*, pages 81–91. Springer-Verlag, 1996. [dtv-osrdp-96i] *URL:* http://www.cs.brown.edu/cgc/papers/dtv-osrdp-96.ps.gz.

4163 G. Di Battista, R. Tamassia, and L. Vismara. Output-sensitive reporting of disjoint paths. *Algorithmica*, 23(4):302–340, 1999. [dtv-osrdp-99] *Succeeds:* dtv-osrdp-96i, dtv-osrdp-96t. *Annote:* Special Issue of Selected Papers from the 2nd Annual International Computing and Combinatorics Conference.

4164 G. Di Battista and L. Vismara. Angles of planar triangular graphs. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 431–437, 1993. [dv-aptg-93] *Keywords:* graph drawing.

4165 G. Di Battista and L. Vismara. Angles of planar triangular graphs. *SIAM J. Discrete Math.*, 9(3):349–359, 1996. [dv-aptg-96]

G. Di Battista. See also [1508, 1547, 1855–1866, 2306, 2307, 2435, 2439, 2440, 2633, 3423–3425, 3608, 3609, 7720, 8874, 8882, 12744, 13256].

4166 V. Di Gesu and M. C. Maccarone. Description of fuzzy images by convex hull technique. In *Proc. 8th IEEE Internat. Conf. Pattern Recogn.*, pages 1276–1278, 1986. [dm-dfich-86]

4167 Mario Dias. Intersection of straight lines with algebraic surfaces in NC-SAVE. In *Abstracts 10th European Workshop Comput. Geom.*, pages 38–40. Universidad de Cantabria, Santander, 1994. [d-islas-94]

4168 M. Díaz and J. O'Rourke. Algorithms for computing the center of area of a convex polygon. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 46, 1989. [do-accac-89]

4169 M. Díaz and J. O'Rourke. Algorithms for computing the center of area of a convex polygon. *Visual Comput.*, 10:432–442, 1994. [do-accac-94] *Keywords:* convexity, centerpoints. *Succeeds:* do-accac-89.

4170 M. Díaz and J. O'Rourke. Chord center for convex polygons. In B. Melter, A. Rosenfeld, and P. Bhattacharyai, editors, *Computational Vision*, pages 29–44. American Mathematical Society, 1991. [do-cccp-91] *Keywords:* convexity, centerpoints.

4171 M. Díaz and J. O'Rourke. Computing the center of area of a polygon. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 171–182. Springer-Verlag, 1989. [do-ccap-89] *Keywords:* convexity, centerpoints.

4172 M. Díaz and J. O'Rourke. Computing the center of area of a simple polygon. Technical Report 89-03, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1989. [do-ccasp-89] *Keywords:* convexity, centerpoints.

4173 M. Díaz and J. O'Rourke. Ham-sandwich sectioning of polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 282–286, 1990. [do-hssp-90] *Keywords:* convexity, centerpoints, ham-sandwich. *Cites:* do-hssp-90t, e-acg-87, eos-calha-86, ZZZ.

4174 M. G. Díaz and J. O'Rourke. Ham-sandwich sectioning of polygons. Technical Report, Johns Hopkins Univ., Baltimore, MD, 1990. In preparation. [do-hssp-90t]

4175 M. Dickerson and M. Montague. Fast new algorithms for locally minimum triangulations - and a platform for testing them. Manuscript, ??, 1994. [dm-fnalm-94]

4176 Matthew Dickerson and Daniel Scharstein. Optimal placement of convex polygons to maximize point containment. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 114–121, 1996. [ds-opcpm-96] *Keywords:* motion planning, polygon containment, arrangements, output-sensitive algorithms, bucketing.

4177 Matthew Dickerson and Daniel Scharstein. Optimal placement of convex polygons to maximize point containment. *Comput. Geom. Theory Appl.*, 11:1–16, 1998. [ds-opcpm-98] *Succeeds:* ds-opcpm-96.

4178 Matthew Dickerson and Daniel Scharstein. The rotation diagram and optimal containing placements of a convex polygon. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V9–V10, 1996. [ds-rdocp-96] *Cites:* ds-opcpm-96, ZZZ.

Matthew Dickerson. See also [1402, 1403, 1405–1409].

4179 M. T. Dickerson. Rank of the longest edge in the greedy triangulation. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 182–187, 1992. [d-rlegt-92] *Cites:* dd-frnns-90, dd-ekdnp-91, g-nrpt-79, g-segta-89, k-ndot-80, ll-abgtc-87, l-abigt-86, l-tspp-77, mz-ngndt-79, ps-cgi-85, mz-pmhfa-83, r-slcdn-70, s-sisie-91, ZZZ.

4180 M. T. Dickerson and R. L. Drysdale. Enumerating k distances for n points in the plane. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 234–238, 1991. [dd-ekdnp-91] *Keywords:* Delaunay triangulation, proximity, enumeration. *Precedes:* dds-saeid-92. *Cites:* aass-sdp-90, bfprt-tbs-73, c-ntcos-85, dd-frnns-90, s-mmdpsl-90t, sh-cpp-75, y-cmstk-82, ZZZ.

4181 M. T. Dickerson, R. L. Drysdale, and J. R. Sack. Simple algorithms for enumerating interpoint distances and finding k nearest neighbors. *Internat. J. Comput. Geom. Appl.*, 2(3):221–239, 1992. [dds-saeid-92] *Keywords:* enumeration, selection, Delaunay triangulation, nearest neighbors. *Succeeds:* dd-ekdnp-91.

4182 M. T. Dickerson, R. L. S. Drysdale, S. A. McElfresh, and Emo Welzl. Fast greedy triangulation algorithms. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 211–220, 1994. [ddmw-fgta-94] *Cites:* agss-ltacv-89, bsw-cffrn-77, c-cdt-87, cl-aldt-84, dfsv-apcg-92, d-rlegt-92, dd-frnns-90, dds-saeid-92, dg-aivib-70, g-nrpt-79, g-segta-89, hp-nrmwt-92, k-ndot-80, k-mtpd-80, ll-gdtpg-86, ls-ekcpo-92i, l-olbng-87, ll-abgtc-87, ll-fagt-92, ll-gtamw-92, l-gdtan-86, l-abigt-86, l-nhmwt-87, l-gtcbe-89, l-tspp-77, mz-ngndt-79, mz-pmhfa-83, ph-hta-87, ps-cgi-85, s-eis-92, w-eucdt-93, wa-srr3d-86, ws-oacdt-87, y-cdcrc-75, ZZZ.

4183 M. T. Dickerson and R. S. Drysdale. Fixed-radius near neighbor search algorithms for points and segments. *Inform. Process. Lett.*, 35:269–273, 1990. [dd-frnns-90] *Keywords:* near neighbor search, Delaunay triangulation.

4184 M. T. Dickerson and D. Eppstein. Algorithms for proximity problems in higher dimensions. *Comput. Geom. Theory Appl.*, 5:277–291, 1996. [de-apphd-96]

4185 Matthew T. Dickerson, Scott A. McElfresh, and Mark H. Montague. New algorithms and empirical findings on minimum weight triangulation heuristics. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 238–247, 1995. [dmm-naefm-95] *Keywords:* greedy triangulation, experimental. *Cites:* bs-plibp-94, bsw-cffrn-77, ddmw-fgta-94, dm-fnalm-94, dra-sltgt-95, g-nrpt-79, g-segta-89, hp-nrmwt-94, k-mtpd-80, ll-fagt-92, l-nhmwt-87, l-gtcbe-89, l-tspp-77, mz-ngndt-79, mz-pmhfa-83, o-cgc-94, w-eucdt-93, w-oagts-94, wa-srr3d-86, y-cdcrc-75, ZZZ.

4186 Matthew T. Dickerson and Mark H. Montague. A (usually?) connected subgraph of the minimum weight triangulation. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 204–213, 1996. [dm-ucsmw-96] *Cites:* aatr-tin-95, cx-alesw-96, cgt-ecabs-95, cn-asla-85, dj-wtacg-89, ddmw-fgta-94, dmm-naefm-95, eorw-fmakg-92, gj-cigtn-79, g-nrpt-79, k-csmwt-94, k-mtpd-80, yxy-cdapp-94, ZZZ.

4187 M. T. Dickerson and J. Shugart. Enumerating k longest distances for n points in the plane. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 137–142, 1992. [ds-ekldn-92] *Cites:* aass-sdp-90, bey-eedt-91a, bfprt-tbs-73, c-ntcos-85, c-mcsrv-72, dd-ekdnp-91, d-hdvdl-91, ki-fkbdn-91, mz-pmhfa-83, ps-cgi-85, s-lisps-89, s-sisie-91, sh-cpp-75, y-cmstk-82, yb-cf-61, ZZZ.

Ralf Dickmann. See also [10107].

4188 Walter Didimo and Antonio Leonforte. GRID: An interactive tool for computing orthogonal drawings with the minimum number of bends. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 309–315. Springer-Verlag, 1997. [dl-gitco-97] *Keywords:* graph drawing.

4189 W. Didimo and G. Liotta. Computing orthogonal drawings in a variable embedding setting. In K.-Y. Chwa and O. H. Ibarra, editors, *Algorithms and Computation (Proc. ISAAC '98)*, volume 1533 of *Lecture Notes Comput. Sci.*, pages 79–88. Springer-Verlag, 1998. [dl-codve-98]

W. Didimo. See also [1859, 1860, 2434, 2435, 2439, 2440].

4190 V. J. Dielissen and A. Kaldewaij. Rectangular partition is polynomial in two dimensions but NP-complete in three. *Inform. Process. Lett.*, 38:1–6, 1991. [dk-rpipt-91] *Abstract:* The inherent computational complexity of polygon decomposition problems is of importance in the field of computational geometry. For one of these problems it is shown that the three dimensional version is NP-complete whereas its two dimensional version is polynomial. This provides an example for the conjecture posed by O'Rourke and Supowit [10417].

4191 P. Dierckx. *Curve and Surface Fitting with Splines.* Clarendon Press, New York, 1993. [d-csfs-93]

4192 P. Dierken A. Bialostocki and B. Voxman. Some notes on the Erdős-Szekeres theorem. *Discrete Math.*, 91:231–238, 1991. [bdv-snest-91]

P. Dierker. See also [1974].

4193 R. Diestel. A separating property of planar triangulations. *J. Graph Theory*, 11(1):43–52, 1987. [d-sppt-87] *Keywords:* triangulation.

B. Dietrich. See also [12017].

4194 W. C. Dietrich, L. R. Nackman, C. J. Sundaresan, and F. Gracer. TGMS: An object-oriented system for programming geometry. *Softw. – Pract. Exp.*, 19(10):978–1013, 1989. [dnsg-toosp-89] *Keywords:* implementation.

4195 P. Dietz. *Intersection graph algorithms.* Ph.D. thesis, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1984. Technical Report TR 84-628. [d-iga-84] *Keywords:* doctoral thesis.

4196 P. F. Dietz. Fully persistent arrays. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 67–74. 1989. [d-fpa-89] *Keywords:* data structuring, persistent.

4197 P. F. Dietz and R. Raman. Persistence, amortization and randomization. In *Proc. ACM-SIAM Sympos. Discrete Algorithms*, pages 78–88. 1991. [dr-par-91] *Keywords:* data structuring, persistent, probabilistic analysis, amortized analysis.

4198 P. F. Dietz and D. D. Sleator. Two algorithms for maintaining order in a list. In *Proc. 19th Annu. ACM Sympos. Theory Comput.*, pages 365–372, 1987. [ds-tamol-87]

4199 M. Dietzfelbinger. Lower bounds for sorting of sums. *Theoret. Comput. Sci.*, 66:137–155, 1989. [d-lbss-89] *Keywords:* lower bounds, comparison trees, sorting $X + Y$.

4200 M. Dietzfelbinger, J. Gil, Y. Matias, and N. Pippenger. Polynomial hash functions are reliable. In *ICALP*, pages 235–246, July 1992. [dgmp-phfr-92]

4201 M. Dietzfelbinger, T. Hagerup, J. Katajainen, and M. Penttonen. A reliable randomized algorithm for the closest-pair problem. Report 513, Dept. Comput. Sci., Univ. Dortmund, Dortmund, Germany, 1993. [dhkp-rracp-93]

4202 M. Dietzfelbinger, T. Hagerup, J. Katajainen, and M. Penttonen. A reliable randomized algorithm for the closest-pair problem. *J. Algorithms*, 25:19–51, 1997. [dhkp-rracp-97]

4203 M. Dietzfelbinger, A. Karlin, K. Mehlhorn, F. Meyer auf der Heide, H. Rohnert, and R. E. Tarjan. Dynamic perfect hashing — upper and lower bounds. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 524–531, 1988. [dkmmrt-dphul-88]

4204 M. Dietzfelbinger, A. Karlin, K. Mehlhorn, F. Meyer auf der Heide, H. Rohnert, and R. E. Tarjan. Dynamic perfect hashing: upper and lower bounds. *SIAM J. Comput.*, 23:738–761, 1994. [dkmmrt-dphul-94]

4205 M. Dietzfelbinger and W. Maass. Two lower bound arguments with inaccessible numbers, 1986. [dm-tlbai-86] *Keywords:* lower bounds.

4206 M. Dietzfelbinger and F. Meyer auf der Heide. A new universal class of hash functions and dynamic hashing in real time. In *Proc. 17th Internat. Colloq. Automata Lang. Program.*, volume 443 of *Lecture Notes Comput. Sci.*, pages 6–19. Springer-Verlag, 1990. [dm-nuchf-90]

4207 M. Dietzfelbinger and F. Meyer auf der Heide. Simple, efficient shared memory simulations. In *Proc. 5th ACM Sympos. Parallel Algorithms Architect.*, pages 110–119, 1993. [dm-sesms-93]

H. N. Dijdjev. See also [4210].

4208 E. W. Dijkstra. A note on two problems in connexion with graphs. *Numerische Mathematik*, 1:269–271, 1959. [d-ntpcg-59]

4209 E. W. Dijkstra. The problem of the convex hull in three dimensions. In E. W. Dijkstra, editor, *A Discipline of Programming*, chapter 24, pages 168–191. Prentice Hall, Englewood Cliffs, NJ, 1977. [d-pchtd-77]

4210 K. Diks, H. N. Dijdjev, O. Sykora, and I. Vrto. Edge separators for planar graphs and their applications. In *Proc. 13th Internat. Sympos. Math. Found. Comput. Sci.*, volume 324 of *Lecture Notes Comput. Sci.*, pages 280–290. Springer-Verlag, 1988. [ddsv-espgt-88]

K. Diks. See also [3230, 3274].

R. Dilão. See also [3541].

4211 K. Dill. Folding proteins: Finding a needle in a haystack. *Current Opinion in Structural Biology*, 3:99–103, 1993. [d-fpfnh-93]

4212 M. Dillencourt. A non-Hamiltonian, nondegenerate Delaunay triangulation. Technical Report CS-TR-1732, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1986. [d-nhndt-86]

4213 M. Dillencourt. Toughness and Delaunay triangulations. Technical report, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1987. In preparation. [d-tdt-87t]

4214 M. Dillencourt, D. M. Mount, and A. Saalfeld. On the maximum number of intersections of two polyhedra in 2 and 3 dimensions. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 49–54, 1993. [dms-mnitp-93] *Cites:* fdfh-cgpp-90, ps-cgi-85, ZZZ.

4215 M. B. Dillencourt. A non-Hamiltonian, nondegenerate Delaunay triangulation. *Inform. Process. Lett.*, 25:149–151, 1987. [d-nhndt-87]

4216 M. B. Dillencourt. An upper bound on the shortness exponent of inscribable polytopes. Report CS-TR-1868, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1987. [d-ubsei-87]

4217 M. B. Dillencourt. An upper bound on the shortness exponent of inscribable polytopes. *J. Combin. Theory Ser. B*, 46(1):66–83, February 1989. [d-ubsei-89]

4218 M. B. Dillencourt. Finding Hamiltonian cycles in Delaunay triangulations is NP-complete. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 223–228, 1992. [d-fhcdt-92]

4219 M. B. Dillencourt. Graph-theoretical properties of algorithms involving Delaunay triangulations. Technical Report CS-TR-2059, Institute for Advanced Computer Studies, University of Maryland, 1988. [d-gtpaidt-88]

4220 M. B. Dillencourt. Hamiltonian cycles in planar triangulations with no separating triangles. *J. Graph Theory*, 14(1):31–49, 1990. [d-hcptn-90]

4221 M. B. Dillencourt. Polytopes of small order and their Hamiltonian properties. Technical Report, Univ. California, Irvine, CA, ?? [d-psoth-]

4222 M. B. Dillencourt. Realizability of Delaunay triangulations. *Inform. Process. Lett.*, 33(6):283–287, February 1990. [d-rdt-90]

4223 M. B. Dillencourt. Toughness and Delaunay triangulations. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 186–194, 1987. [d-tdt-87] *Precedes:* d-tdt-90. *Cites:* b-hg-78, b-gstds-84, b-vdch-79, c-tghc-73, d-slsv-34, d-tscan-87, d-nhndt-86, d-tdt-87t, es-vda-85, h-gt-69, k-tscan-83, obw-cdnh-84, ps-cgi-85, s-cg-78, ZZZ.

4224 M. B. Dillencourt. Toughness and Delaunay triangulations. *Discrete Comput. Geom.*, 5:575–601, 1990. [d-tdt-90] *Succeeds:* d-tdt-87.

4225 M. B. Dillencourt. Traveling salesman cycles are not always subgraphs of Delaunay triangulations or of minimum weight triangulations. *Inform. Process. Lett.*, 24:339–342, 1987. [d-tscan-87]

4226 M. B. Dillencourt, D. M. Mount, and N. S. Netanyahu. A randomized algorithm for slope selection. report CS-TR-2431, University of Maryland, College Park, MD, March 1990. [dmn-rass-90] *Precedes:* dmn-rass-91, dmn-rass-92.

4227 M. B. Dillencourt, D. M. Mount, and N. S. Netanyahu. A randomized algorithm for slope selection. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 135–140, 1991. [dmn-rass-91] *Succeeds:* dmn-rass-90. *Cites:* ahu-daca-74, b-etsh-90, csss-otass-89, dba-nm-74, dmn-rass-90, dh-nbp-83, em-sstcd-90, es-cmsrl-90, iky-ltall-89, m-ltalp-83, r-msr-84, s-gspi-76, ss-tseal-87, t-mlpral-50, ZZZ.

4228 M. B. Dillencourt, D. M. Mount, and N. S. Netanyahu. A randomized algorithm for slope selection. *Internat. J. Comput. Geom. Appl.*, 2:1–27, 1992. [dmn-rass-92] *Keywords:* slope selection, randomized algorithm, Theil Sen estimator, line fitting, robust estimation. *Succeeds:* dmn-rass-90, dmn-rass-91.

4229 M. B. Dillencourt, I. Rivin, and W. D. Smith. Combinatorial structure of Delaunay triangulations of the plane. Manuscript, ??, 1991. [drs-csdtp-91]

4230 M. B. Dillencourt and H. Samet. Extracting region boundaries from maps stored as linear quadtrees. In *Proc. 3rd Internat. Sympos. Spatial Data Handling*, pages 65–77, August 1988. [ds-erbms-88]

4231 M. B. Dillencourt and H. Samet. Using topological sweep to extract the boundaries of regions in maps represented by region quadtrees. *Algorithmica*, 15(1):82–102, January 1996. [ds-utseb-96]

4232 M. B. Dillencourt, H. Samet, and M. Tamminen. A general approach to connected–component labeling for arbitrary image representations. *J. ACM*, 39(2):253–280, April 1992. [dst-gaccl-92] *Comments:* also Corrigendum, Journal of the ACM 39:4 (October 1992), 985; University of Maryland Computer Science TR-2303.

4233 M. B. Dillencourt and W. D. Smith. A linear-time algorithm for testing the inscribability of trivalent polyhedra. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 177–185, 1992. [ds-ltati-92] *Precedes:* ds-ltati-95. *Cites:* b-vdch-79, c-tghc-73, cfg-upg-90, d-psoth-, d-tdt-90, drs-csdtp-91, ds-gtpig-, e-acg-87, f-dpsds-82, g-cp-67, gs-spp-87, hrs-cchpc-92, nc-pgta-88, ps-cgi-85, r-giph3-, r-ciph3-92, rs-ig-91, s-ptadi-92, s-sedag-81, ZZZ.

4234 M. B. Dillencourt and W. D. Smith. A linear-time algorithm for testing the inscribability of trivalent polyhedra. *Internat. J. Comput. Geom. Appl.*, 5:21–36, 1995. [ds-ltati-95] *Keywords:* inscribability, polyhedra, toughness, planar graphs, Delaunay triangulation. *Succeeds:* ds-ltati-92.

4235 M. B. Dillencourt and W. D. Smith. A simple method for resolving degeneracies in Delaunay triangulation. In *Proc. 20th Internat. Colloq. Automata Lang. Program.*, volume 700 of *Lecture Notes Comput. Sci.*, pages 177–188. Springer-Verlag, July 1993. [ds-smrdd-93]

4236 M. B. Dillencourt and W. D. Smith. Graph-theoretical conditions for inscribability and Delaunayrealizability. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 287–292, 1994. [ds-gtcid-94] *Cites:* a-vdsfg-91, bll-cpt-93t, bm-gta-76, b-vdch-79, cn-hcpls-89, c-tghc-73, c-psepg-92, cl-hcdc-89, d-ubsei-89, d-rdt-90, d-tdt-90, d-fhcdt-92, ds-ltati-92, ds-smrdd-93, e-acg-87, e-dnng-92, e-hcsc-73, f-dpsds-82, g-cp-67, hr-cccph-93, hrs-cchpc-92, js-niqpr-91, ls-mogar-93, ms-tgmst-91, o-cgc2-87, py-nng-92, ps-cgi-85, r-ciph3-92, r-ahvfl-92, r-giph3-, rs-iphdd-91, rs-ig-91, s-sedag-81, t-pihhg-76, t-tppg-83, t-tpg-56, t-bhcpg-77, c-ig-69, gmr-vdmpp-92, ZZZ.

4237 M. B. Dillencourt and W. D. Smith. Graph-theoretical properties of inscribable graphs. Technical Report, Univ. California, Irvine, CA, ?? [ds-gtpig-]

M. B. Dillencourt. See also [4095, 4096].

4238 R. P. Dilworth. A decomposition theorem for partially ordered sets. *Annals of Math.*, 51:161–166, 1950. [d-dtpos-50]

C. Dima. See also [1402].

4239 B. Dimsdale and A. Inselberg. Representing multidimensional surfaces. Report ??, IBM Sci. Center, Los Angeles, CA, 1985. [di-rms-85]

4240 C. Ding and P. Mateti. A framework for the automated drawing of data structure diagrams. *IEEE Trans. Softw. Eng.*, SE-16(5):543–557, 1990. [dm-fadds-90] *Keywords:* graph drawing.

4241 G. Ding, P. Seymour, and P. Winkler. Bounding the vertex cover number of a hypergraph. *Combinatorica*, ??, ?? To appear. [dsw-bvcnh-]

4242 R. Ding and J. R. Reay. Areas of lattice polygons applied to computer graphics. *Zastos. Math. (Poland)*, 19(3–4):547–556, 1987. [dr-alpac-87] *Keywords:* polygons, area, discrete geometry.

4243 Y. Ding and M. A. Weiss. The k-d heap: An efficient multi-dimensional priority queue. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 302–313, 1993. [dw-kdhem-93]

4244 E. A. Dinitz. Algorithm for solution of a problem of maximum flow in a network with power estimation. *Soviet Math. Dokl.*, ??:248–264, 1970. [d-aspmf-70]

4245 Ye. Dinitz and A. Vainshtein. The connectivity carcass of a vertex subset in a graph and its incremental maintenance. In *Proc. 26th Annu. ACM Sympos. Theory Comput.*, pages 716–725, 1994. [dv-ccvsg-94]

4246 G. L. Dirichlet. Über die Reduktion der positiven quadratischen Formen mit drei unbestimmten ganzen Zahlen. *J. Reine Angew. Math.*, 40:209–227, 1850. [d-udrdp-50] *Keywords:* Voronoi diagrams. *Annote:* Voronoi diagrams used for the first time.

P. Dirksen. See also [12457].

A. A. diSessa. See also [51].

4247 E. Dittert and M. J. O'Donnell. Lower bounds for sorting with realistic instruction sets. *IEEE Trans. Comput.*, 34:311–317, 1985. [do-lbsri-85] *Keywords:* lower bounds.

W. Dittrich. See also [1532, 1533].

4248 A. A. Diwan, S. Rane, S. Seshadri, and S. Sudarshan. Clustering techniques for minimizing external path length. In *Proceedings of the International Conference on Very Large Databases*. Morgan Kauffman, 1996. [dr-ctmep-96]

A. A. Diwan. See also [12594].

4249 T. I. Dix and D. H. Kieronska. Errors between sites in restriction site mapping. *Comput. Appl. Biol. Sci.*, 4(1):117–123, 1988. [dk-ebsrs-88]

4250 A. Dixon. The eliminant of three quantics in two independent variables. *Proc. London Math. Soc.*, 2(6):468–478, 1908. [d-etqti-08]

4251 A. R. Dixon, G. H. Kirby, and D. P. M. Wills. A data structure for artificial terrain generation. *Comput. Graph. Forum*, 13(1):37–48, March 1994. [dkw-dsatg-94]

J. K. Dixon. See also [12260].

S. Dixon. See also [2067].

Mourad Djebali. See also [9518].

4252 H. Djidjev and A. Lingas. On computing the Voronoi diagram for restricted planar figures. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 54–64. Springer-Verlag, 1991. [dl-cvdrp-91] *Keywords:* Voronoi diagram, Delaunay triangulation, simple polygon, histogram. *Precedes:* dl-cvdsp-95.

4253 H. Djidjev and A. Lingas. On computing Voronoi diagrams for sorted point sets. *Internat. J. Comput. Geom. Appl.*, 5:327–337, 1995. [dl-cvdsp-95] *Keywords:* Voronoi diagram, Delaunay triangulation, monotone histogram, tine complexity. *Succeeds:* dl-cvdrp-91.

H. Djidjev. See also [3890].

4254 H. N. Djidjev. A linear algorithm for the maximal planar subgraph problem. In *Proc. 4th Workshop Algorithms Data Struct.*, Lecture Notes Comput. Sci., pages 369–380. Springer-Verlag, 1995. [d-lamps-95] *Keywords:* graph drawing, planarization.

4255 H. N. Djidjev. On drawing a graph convexly in the plane. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 76–83. Springer-Verlag, 1995. [d-dgcp-95] *Keywords:* graph drawing, planar, straight-line.

4256 H. N. Djidjev. On the problem of partitioning planar graphs. *SIAM J. Algebraic Discrete Methods*, 3(2):229–240, 1982. [d-pppg-82]

4257 H. N. Djidjev, A. Lingas, and J. Sack. An $O(n \log n)$ algorithm for computing the link center of a simple polygon. Technical Report SCS-TR-148, School of Computer Science, Carleton University, 1988. [dls-oaclc-88]

4258 H. N. Djidjev, A. Lingas, and J. Sack. An $O(n \log n)$ algorithm for computing the link center of a simple polygon. In B. Monien and R. Cori, editors, *Proc. 6th Sympos. Theoret. Aspects Comput. Sci.*, volume 349 of *Lecture Notes Comput. Sci.*, pages 96–107. Springer-Verlag, 1989. [dls-oaclc-89] *Keywords:* link distance.

4259 H. N. Djidjev, A. Lingas, and J. Sack. An $O(n \log n)$ algorithm for computing the link center of a simple polygon. *Discrete Comput. Geom.*, 8(2):131–152, 1992. [dls-oaclc-92] *Keywords:* visibility.

4260 H. N. Djidjev, G. E. Pantziou, and C. D. Zaroliagis. Computing shortest paths and distances in planar graphs. In *Proc. 18th Internat. Colloq. Automata Lang. Program.*, volume 510 of *Lecture Notes Comput. Sci.*, pages 327–338. Springer-Verlag, 1991. [dpz-cspdp-91] *Keywords:* Dijkstra, on-line.

Hristo N. Djidjev. See also [9109].

4261 Martin Dlouhý, František Brabec, and Petr Švestka. A genetic approach to the cleaning path planning problem. In *Abstracts 16th European Workshop Comput. Geom.*, pages 126–131. Ben-Gurion University of the Negev, 2000. [dbs-gacpp-00]

4262 D. Dobkin and H. Edelsbrunner. Organizing point sets in two and three dimensions. Tech. Report F130, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1984. [de-opstt-84]

4263 D. Dobkin and D. Eppstein. Computing the discrepancy. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 47–52, 1993. [de-cd-93] *Cites:* bc-id-87, cpc-drt-84, dm-redsp-93, eg-tsa-89, g-irt-89, h-ecqsp-60, hs-ompc-91, k-re-86, n-med-71, ol-mcp-81, oy-nubkm-91, r-id-54, s-id7-72, w-cildp-71, ZZZ.

4264 D. Dobkin, J. Hershberger, D. Kirkpatrick, and Subhash Suri. Computing the intersection-depth of polyhedra. *Algorithmica*, 9:518–533, 1993. [dhks-cidp-93]

4265 D. Dobkin, J. Hershberger, D. Kirkpatrick, and Subhash Suri. Implicitly searching convolutions and computing depth of collision. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 165–180. Springer-Verlag, 1990. [dhks-isccd-90]

4266 D. Dobkin, R. J. Lipton, and S. Reiss. Linear programming is log-space hard for P. *Inform. Process. Lett.*, 8:96–97, 1979. [dlr-lpils-79]

4267 D. Dobkin and D. Mitchell. Random-edge discrepancy of supersampling patterns. In *Graphics Interface '93*, 1993. [dm-redsp-93] *Keywords:* discrepancy.

4268 D. Dobkin, S. North, and N. Thurston. A viewer for mathematical structures and surfaces in 3d. In *Sympos. on Interactive 3D Graphics*, pages 141–142, May 1990. [dnt-vmss3-90]

4269 D. Dobkin, S. North, and N. Thurston. Salem user's guide. Technical report, ?? [dnt-sug-??]

4270 D. Dobkin and Subhash Suri. Dynamically computing the maxima of decomposable functions, with applications. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 488–493, 1989. [ds-dcmdf-89] *Keywords:* semi-online model, dynamization, amortized analysis. *Precedes:* ds-mge-91.

4271 D. Dobkin and Subhash Suri. Maintenance of geometric extrema. *J. ACM*, 38:275–298, 1991. [ds-mge-91] *Keywords:* semi-online model, dynamization, amortized analysis. *Succeeds:* ds-dcmdf-89.

4272 D. Dobkin and A. Tal. Building and using polyhedral hierarchies. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, page 394, 1993. [dt-buph-93] *Keywords:* video review. *Cites:* dk-ladsc-85, dk-dsppu-90, ZZZ.

4273 D. Dobkin and A. Tel. Gasp - an animation system for computational geometry. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 243–249, 1994. [dt-gascg-94] *Cites:* -pltc-85, b-aa-87, b-eaub-88, b-zsaam-92a, bs-taa-85, ce-oails-92, dk-ladsc-85, dk-dsppu-90, dnt-vmss3-90, dt-buph-93, ekkmns-wcg-94, l-dpslu-86, mn-lledt-89, r-mdbp-91, s-mdbp-93, s-a-88, s-iipg-92, s-votcb-93, ss-otcbt-93, s-ptppm-90, s-tfsaa-90, tcd-njlsm-92, s-raplg-91t, ZZZ.

D. Dobkin. See also [608, 1794–1797, 2942, 8582, 12715–12717, 12742].

4274 D. A. Dobkin, Silvio V. F. Levy, William P. Thurston, and Allan R. Wilks. Contour tracing by piecewise linear approximations. *ACM Trans. Graph.*, 9(4):389–423, October 1990. [dltw-ctpla-90] *Annote:* Algorithm for contour of a function that can be computed at any point. Space is (regularly) triangulated and a linear approximation is used on each simplex. Three goodness of triangle measures are considered: Minimize the number of triangles crossed by a random line (In 2D this is same as shortest diagonal). Minimize ratio of circum and in spheres. Minimize condition number of covariance matrix of a random point, uniformly distributed in a circle. (Ratio between largest and smallest eigenvalues.).

4275 D. P. Dobkin. Computational geometry and computer graphics. *Proc. IEEE*, 80(9):1400–1411, September 1992. [d-cgcg-92]

4276 D. P. Dobkin. Computational geometry: then and now. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 71–109. Springer-Verlag, 1988. [d-cgtn-88] *Keywords:* survey paper, convex hull, design of algorithms.

4277 D. P. Dobkin. Keyword structures in a language for computer geometry. Report TM 78-1271-9, Bell Lab., Murray Hill, NJ, 1978. [d-kslcg-78]

4278 D. P. Dobkin. VLSI, algorithms and graphics. Report ??, Princeton Univ., Princeton, NJ, ?? [d-vag-??]

4279 David P. Dobkin, Robert L. Drysdale, III, and Leonidas J. Guibas. Finding smallest polygons. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 181–214. JAI Press, Greenwich, Conn., 1983. [ddg-fsp-83] *Keywords:* optimization, smallest perimeter, convex polygon, k-gon, Voronoi diagrams, dynamic programming.

4280 D. P. Dobkin and H. Edelsbrunner. Ham-sandwich theorems applied to intersection problems. In *Proc. 10th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 88–99, 1984. [de-hstai-84] *Keywords:* data structuring, discrete geometry, combinatorial geometry, partition, range search, trees, two-dimensional, three-dimensional.

4281 D. P. Dobkin and H. Edelsbrunner. Space searching for intersecting objects. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 387–392, 1984. [de-ssio-84] *Precedes:* de-ssio-87.

4282 D. P. Dobkin and H. Edelsbrunner. Space searching for intersecting objects. *J. Algorithms*, 8:348–361, 1987. [de-ssio-87] *Keywords:* data structuring, discrete geometry, searching, intersection, partition, range search, geometric transformations, trees, two-dimensional, three-dimensional. *Succeeds:* de-ssio-84.

4283 D. P. Dobkin, H. Edelsbrunner, and M. H. Overmars. Searching for empty convex polygons. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 224–228, 1988. [deo-secp-88] *Succeeds:* ar-clecs-85. *Precedes:* deo-secp-90. *Cites:* ar-clecs-85, bf-eses-86, cgl-pgd-85, eg-tsa-86, eos-calha-86, e-cpgnt-79, h-kfiep-78, h-fvgsp-87, h-snec7-83, klp-fmsv-75, osv-swec6-88, ZZZ.

4284 D. P. Dobkin, H. Edelsbrunner, and M. H. Overmars. Searching for empty convex polygons. *Algorithmica*, 5:561–571, 1990. [deo-secp-90] *Succeeds:* deo-secp-88, ar-clecs-85.

4285 D. P. Dobkin, H. Edelsbrunner, and F. Yao. A 3-space partition and its applications. manuscript, 1984. [dey-3spa-84]

4286 D. P. Dobkin, H. Edelsbrunner, and C. K. Yap. Probing convex polytopes. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 424–432, 1986. [dey-pcp-86] *Keywords:* discrete geometry, robotics, probing, worst-case analysis, polytopes, convex, d-dimensional. *Comments:* To appear in Autonomous Robot Vehicles, Cox and Wilfong, ed.

4287 D. P. Dobkin, S. J. Friedman, and K. J. Supowit. Delaunay graphs are almost as good as complete graphs. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 20–26, 1987. [dfs-dgaag-87] *Precedes:* dfs-dgaag-90.

4288 D. P. Dobkin, S. J. Friedman, and K. J. Supowit. Delaunay graphs are almost as good as complete graphs. *Discrete Comput. Geom.*, 5:399–407, 1990. [dfs-dgaag-90] *Succeeds:* dfs-dgaag-87.

4289 David P. Dobkin, Emden R. Gansner, Eleftherios Koutsofios, and Stephen C. North. Implementing a general-purpose edge router. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 262–271. Springer-Verlag, 1997. [dgkn-igper-97] *Keywords:* graph drawing.

4290 D. P. Dobkin, L. Guibas, J. Hershberger, and J. Snoeyink. An efficient algorithm for finding the CSG representation of a simple polygon. *Algorithmica*, 10:1–23, 1993. [dghs-eafcr-93]

4291 D. P. Dobkin, Leonidas J. Guibas, J. Hershberger, and J. Snoeyink. An efficient algorithm for finding the CSG representation of a simple polygon. *Comput. Graph.*, 22(4):31–40, 1988. Proc. SIGGRAPH '88. [dghs-eafcr-88]

4292 D. P. Dobkin and D. Gunopulos. Computing the rectangle discrepancy. Technical Report 443-94, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, 1994. [dg-crd-94t]

4293 D. P. Dobkin and D. Gunopulos. Computing the rectangle discrepancy. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 385–386, 1994. [dg-crd-94] *Keywords:* video review. *Cites:* de-cd-93, dg-crd-94t, td-gsfag-94, m-eapls-94, p-ortap-79, ZZZ.

4294 D. P. Dobkin and D. G. Kirkpatrick. A linear algorithm for determining the separation of convex polyhedra. *J. Algorithms*, 6:381–392, 1985. [dk-ladsc-85] *Keywords:* design of algorithms, construction, separation, convex, polyhedra, hierarchical representations.

4295 D. P. Dobkin and D. G. Kirkpatrick. Determining the separation of preprocessed polyhedra – a unified approach. In *Proc. 17th Internat. Colloq. Automata Lang. Program.*, volume 443 of *Lecture Notes Comput. Sci.*, pages 400–413. Springer-Verlag, 1990. [dk-dsppu-90]

4296 D. P. Dobkin and D. G. Kirkpatrick. Fast algorithms for preprocessed polyhedral intersection detection. [dk-fappi-] *Precedes:* dk-fdpi-82, dk-fdpi-83.

4297 D. P. Dobkin and D. G. Kirkpatrick. Fast detection of polyhedral intersection. In *Proc. 9th Internat. Colloq. Automata Lang. Program.*, volume 140 of *Lecture Notes Comput. Sci.*, pages 154–165. Springer-Verlag, 1982. [dk-fdpi-82] *Keywords:* design of algorithms, data structuring, detection, intersection, polyhedra, three-dimensional, convex, hierarchical representations. *Succeeds:* dk-fappi-. *Precedes:* dk-fdpi-83.

4298 D. P. Dobkin and D. G. Kirkpatrick. Fast detection of polyhedral intersection. *Theoret. Comput. Sci.*, 27(3):241–253, December 1983. [dk-fdpi-83] *Keywords:* design of algorithms, data structuring, detection, intersection, polyhedra, three-dimensional, convex, hierarchical representations. *Succeeds:* dk-fappi-, dk-fdpi-82.

4299 D. P. Dobkin and M. J. Laszlo. Primitives for the manipulation of three-dimensional subdivisions. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 86–99, 1987. [dl-pmtds-87] *Keywords:* data structuring. *Precedes:* dl-pmtds-89. *Cites:* ab-acddv-83, b-prcv-75, b-acgpr-82, b-vdch-79, bhs-swcpg-80, c-cpplb-84, cd-diec-80, ck-acp-70, ew-gmueo-79, gs-pmgsc-85, jb-iaem-87, l-dsmtd-87, w-vt-??, ZZZ.

4300 D. P. Dobkin and M. J. Laszlo. Primitives for the manipulation of three-dimensional subdivisions. *Algorithmica*, 4:3–32, 1989. [dl-pmtds-89] *Succeeds:* dl-pmtds-87.

4301 D. P. Dobkin and R. J. Lipton. Multidimensional searching problems. *SIAM J. Comput.*, 5:181–186, 1976. [dl-msp-76]

4302 D. P. Dobkin and R. J. Lipton. On the complexity of computations under varying sets of primitives. *J. Comput. Syst. Sci.*, 18:86–91, 1979. [dl-ccvsp-79]

4303 D. P. Dobkin and R. J. Lipton. The complexity of searching lines in the plane. Report ??, Dept. Comput. Sci., Yale Univ., New Haven, CT, 1976. [dl-cslp-76]

4304 D. P. Dobkin, R. J. Lipton, and S. P. Reiss. Excursions into geometry. Report 71, Dept. Comput. Sci., Yale Univ., New Haven, CT, 1976. [dlr-eg-76]

4305 D. P. Dobkin and J. I. Munro. Efficient uses of the past. In *Proc. 21st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 200–206, 1980. [dm-eup-80] *Precedes:* dm-eup-85. *Annote:* Data structure to keep track of history of a data structure. Basically adds $\log t$ space and time by keeping $\log t$ history lists.

4306 D. P. Dobkin and J. I. Munro. Efficient uses of the past. *J. Algorithms*, 6:455–465, 1985. [dm-eup-85] *Succeeds:* dm-eup-80.

4307 D. P. Dobkin and S. P. Reiss. The complexity of linear programming. *Theoret. Comput. Sci.*, 11:1–18, 1980. [dr-clp-80]

4308 D. P. Dobkin and D. Silver. Applied computational geometry: Towards robust solutions of basic problems. *J. Comput. Syst. Sci.*, 40(1):70–87, 1989. [ds-acgtr-89] *Succeeds:* ds-rgnap-88.

4309 D. P. Dobkin and D. Silver. Recipes for geometry and numerical analysis, Part I: an empirical study. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 93–105, 1988. [ds-rgnap-88] *Precedes:* ds-acgtr-89. *Cites:* d-eaavr-86, fv-sappm-85, f-cgpractice-85, f-gcest-88, gy-frcg-86, hhk-rsops-87, kj-pdwtl-87, km-fpraa-83, km-catp-81, mk-impgo-84, m-mddlp-79, ms-rcibt-88, mm-sscep-73, m-vigau-86, mw-srama-80, m-ia-66, otu-nsga-87, r-cnebf-82, ss-ccsm-85, s-ggna-88, v-inc-78, v-nmevr-78, vl-eac-74, w-reap-63, ZZZ.

4310 D. P. Dobkin and L. Snyder. On a general method for maximizing and minimizing among certain geometric problems. In *Proc. 20th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 9–17, 1979. [ds-gmmmc-79]

4311 D. P. Dobkin and D. L. Souvaine. Computational geometry: a user's guide. In J. T. Schwartz and C.-K. Yap, editors, *Advances in Robotics 1: Algorithmic and Geometric Aspects of Robotics*, pages 43–93. Lawrence Erlbaum Associates, Hillsdale, NJ, 1987. [ds-cgug-87] *Keywords:* survey paper, design of algorithms, convex hull, point location, intersection, binary search, divide-and-conquer, geometric transformations, dynamizing data structures.

4312 D. P. Dobkin and D. L. Souvaine. Computational geometry in a curved world. *Algorithmica*, 5:421–457, 1990. [ds-cgcw-90] *Keywords:* design of algorithms, intersection, convex, monotone, simple, curved polygon, splinegon. *Succeeds:* s-cgcw-86.

4313 D. P. Dobkin and D. L. Souvaine. Detecting the intersection of convex objects in the plane. *Comput. Aided Geom. Design*, 8:181–200, 1991. [ds-dicop-91] *Keywords:* design of algorithms, intersection, convex, polygon, splinegon.

4314 D. P. Dobkin, D. L. Souvaine, and C. J. Van Wyk. Decomposition and intersection of simple splinegons. Report CS-TR-051-86, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, 1986. [dsv-diss-86] *Keywords:* design of algorithms, decomposition, intersection, simple, curved polygon, splinegon. *Precedes:* dsv-diss-88.

4315 D. P. Dobkin, D. L. Souvaine, and C. J. Van Wyk. Decomposition and intersection of simple splinegons. *Algorithmica*, 3:473–486, 1988. [dsv-diss-88] *Keywords:* design of algorithms, decomposition, intersection, simple, curved polygon, splinegon. *Succeeds:* dsv-diss-86.

4316 David P. Dobkin and Ayellet Tal. Efficient and small representation of line arrangements with applications. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 293–301, 2001. [dt-esrla-01]

4317 D. P. Dobkin and S. Teller. Computer graphics. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 42, pages 779–796. CRC Press LLC, Boca Raton, FL, 1997. [dt-cg-97]

D. P. Dobkin. See also [609, 1389, 1390, 1810, 2363, 2364, 2943–2948, 6720, 12718, 13793].

4318 Katrin Dobrindt. Algorithmen für Polyeder. Master's thesis, Fachbereich Informatik, Universität Saarbrücken, Saarbrücken, Germany, May 1990. [d-afp-90] *Keywords:* master thesis.

4319 Katrin Dobrindt. *Algorithmes Dynamiques Randomisés pour les Arrangements: Application à la Planification de Trajectoires.* Thèse de doctorat en sciences, Ecole des Mines de Paris, Paris, 1994. [d-adraa-94] *Keywords:* doctoral thesis.

4320 Katrin Dobrindt, Kurt Mehlhorn, and Mariette Yvinec. A complete and efficient algorithm for the intersection of a general and a convex polyhedron. Report MPI-I-93-140, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [dmy-ceaig-93t]

4321 Katrin Dobrindt, Kurt Mehlhorn, and Mariette Yvinec. A complete and efficient algorithm for the intersection of a general and a convex polyhedron. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 314–324, 1993. [dmy-ceaig-93]

4322 Katrin Dobrindt and Mariette Yvinec. Remembering conflicts in history yields dynamic algorithms. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 21–30. Springer-Verlag, 1993. [dy-rchyd-93]

Katrin Dobrindt. See also [1690, 1691, 1693–1696, 2196–2199].

K. T. G. Dobrindt. See also [1697].

K. Dobrint. See also [1688].

4323 A. Dobson and S. Macdonald. Lower bounds for lengths of Davenport-Schinzel sequences. *Utilitas Math.*, 6:251–257, 1974. [dm-lblds-74]

A. Dobson. See also [11177].

4324 L. J. Doctor and J. G. Toborg. Display techniques for octree-encoded objects. *IEEE Comput. Graph. Appl.*, 1(3):29–38, July 1981. [dt-dtoeo-81]

4325 S. Doddi, M. Marathe, A. Mirzaian, B. Moret, and B. Zhu. Map labeling and its generalization. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 148–157, 1997. [dmmmz-mlig-97]

4326 Srinivas Doddi, Madhav V. Marathe, and Bernard M. E. Moret. Point set labeling with specified positions. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 182–190, 2000. [dmm-pslsp-00]

4327 C. W. Dodge. *Euclidean geometry and transformations.* Addison-Wesley, Reading, MA, 1972. [d-egt-72]

4328 D. Dodson. COMAIDE: Information visualization using cooperative 3D diagram layout. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 190–201. Springer-Verlag, 1996. [d-civc3-96] *Keywords:* graph drawing, 3D.

J. R. Dodsworth. See also [11519, 11520].

4329 J. Doellner, K. Hinrichs, and H. Spiegel. An interactive environment for visualizing and animating algorithms. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 409–411, 1997. [dhs-ievaa-97] *Cites:* bw-rphs-88, dh-vrsto-95, dh-oo3dm-97, d-oo3dm-96, es-vda-86, f-savd-87, hss-uccli-94, nb-o3dhl-95, o-cgc-94, o-ttt-94, m-ioopt-93, td-vga-95, ZZZ.

4330 J. S. Doerschler and H. Freeman. A rule-based system for dense-map name placement. *Commun. ACM*, 35:68–79, 1992. [df-rbsdm-92]

4331 Jeong-In Doh and Kyung-Yong Chwa. An algorithm for determining visibility of a simple polygon from an internal line segment. *J. Algorithms*, 14:139–168, 1993. [dc-advsp-93]

4332 Jeong-In Doh and Kyung-Yong Chwa. Visibility problems for orthogonal objects in two or three dimensions. *Visual Comput.*, 4(2):84–97, July 1988. [dc-vpoot-88] *Keywords:* hidden line/surface elimination.

4333 T. Dokken. Finding intersections of B-spline represented geometric entities using recursive subdivsion techniques. *Comput. Aided Geom. Design*, 2:189–195, 1985. [d-fibsr-85]

4334 J. Dolan, R. Weiss, MacGregor, and J. Smith. Minimal length tree networks on the unit circle. *Ann. Oper. Res.*, 33(1–4):503–535, 1991. [dwms-mltnu-91] *Keywords:* proximity, Steiner tree, minimal spanning tree, Voronoi diagram, Delaunay triangulation, heuristics.

4335 A. Dolenc and I. Mäkelä. Optimized triangulation of parametric surfaces. Technical Report TKO-B74, Helsinki University of Technology, Helsinki, Finland, 1991. [dm-otps-91]

A. Dolenc. See also [9133].

4336 D. Dolev, K. Karplus, A. Siegel, A. Strong, and J. D. Ullman. Optimal algorithms for structural assembly. *VLSI Design*, 3:38–43, 1982. [dkssu-oasa-82] *Succeeds:* dkssu-owbr-81.

4337 D. Dolev, K. Karplus, A. Siegel, A. Strong, and J. D. Ullman. Optimal wiring between rectangles. In *Proc. 13th Annu. ACM Sympos. Theory Comput.*, pages 312–317, 1981. [dkssu-owbr-81] *Precedes:* dkssu-oasa-82.

4338 D. Dolev, F. T. Leighton, and H. Trickey. Planar embedding of planar graphs. In Franco P. Preparata, editor, *VLSI Theory*, volume 2 of *Adv. Comput. Res.*, pages 147–161. JAI Press, Greenwich, Conn., 1984. [dlt-pepg-84] *Keywords:* graph drawing.

4339 D. Dolev and H. Trickey. On linear area embedding of planar graphs. report cs–81–876, Stanford Univ., 1981. [dt-laepg-81] *Keywords:* plane graph representation, triangulation, area, discrete geometry, NP-completeness.

D. Dolev. See also [11968, 12195].

4340 J. Döllner. *Object-oriented 3d modeling, animation and interaction*. PhD thesis, Universität Münster, Münster, Germany, 1996. [d-oo3dm-96] *Keywords:* doctoral thesis.

4341 J. Döllner and K. Hinrichs. Object-oriented 3d modeling, animation and interaction. *J. Visualization and Comput. Animation*, 8(1):33–64, 1997. [dh-oo3dm-97]

4342 J. Döllner and K. Hinrichs. The virtual rendering system - A toolkit for object oriented 3d rendering. In *EduGraphics/ComputGraphics, Combined Proceedings*, pages 309–318, 1995. [dh-vrsto-95]

4343 V. L. Dol'nikov. A coloring problem. *Siberian Math. J.*, 13:886–894, 1972. [d-cp-72]

B. Dom. See also [5336].

E. Domínguez. See also [1201].

4344 Salvador Dominguez and Oliver Günther. Performance analysis of three curve presentation schemes. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 37–56. Springer-Verlag, 1991. [dg-patcp-91] *Annote:* 7th Intern. Workshop Comput. Geom.

4345 R. J. Donaghy, W. McCune, S. J. Bridgett, C. G. Armstrong, D. J. Robinson, and R. M. McKeag. Dimensional reduction of analysis models. In *Proc. 5th International Meshing Roundtable*, pages 307–320, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [dmbrm-dram-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

R. J. Donaghy. See also [807].

4346 B. Donald and P. Xavier. Provably good approximation algorithms for optimal kinodynamic planning for cartesian robots and open chain manipulators. Technical Report TR-1095, Cornell Univ., Ithaca, NY, 1990. [dx-pgaao-90t]

4347 B. Donald and P. Xavier. Provably good approximation algorithms for optimal kinodynamic planning for cartesian robots and open chain manipulators. *Algorithmica*, 14(6):480–530, 1995. [dx-pgaao-95] *Succeeds:* dx-pgaao-90. *Cites:* as-rac-86, bdg-tocrm-85, b-rmpc-82, c-cdmp-86, d-samps-87, cdrx-ckp-88, cr-nlbtr-87, dx-pgaao-89, dx-nokpr-89, dx-pgaao-90t, fw-pcm-88, gl-mc-83, hp-brd-89, h-dsmt-83t, jc-pspmr-89, jhcp-pgnto-89i, l-spcsa-83, o-mpic-86, p-aspmt-85, ps-coac-82, pt-ipct-86, rt-akpul-89, sh-pmttr-85, s-obbtr-87, sd-gtomr-88, ss-rtoct-85, ss-tocm-86, w-mpav-88, y-amp-87, ZZZ.

B. Donald. See also [1228, 2141].

4348 B. R. Donald. A geometric approach to error detection and recovery for robot motion planning with uncertainty. *Artif. Intell.*, 37(1–3):223–271, 1988. [d-gaedr-88] *Keywords:* compliance, motion planning.

4349 B. R. Donald. A search algorithm for motion planning with six degrees of freedom. *Artif. Intell.*, 31(3):295–353, 1987. [d-samps-87] *Keywords:* motion planning.

4350 B. R. Donald. A theory of error detection and recovery for robot motion planning with uncertainty. In *International Workshop on Geometric Reasoning*, 1986. [d-tedrr-86]

4351 B. R. Donald. Error detection and recovery for robot motion planning with uncertainty. Technical report, Artificial Intelligence Laboratory, MIT, 1987. [d-edrrm-87]

4352 B. R. Donald. *Error Detection and Recovery in Robotics*, volume 336 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1989. [d-edrr-89] *Keywords:* doctoral thesis. *Comments:* revised version of author's thesis, Massachusetts Inst. Tech. 1987.

4353 B. R. Donald. On motion planning with six degrees of freedom: solving the intersection problems in configuration space. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 536–541, 1985. [d-mpsdf-85]

4354 B. R. Donald. Planning multi-step error detection and recovery strategies. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 892–897, 1988. [d-pmsed-88] *Precedes:* d-pmsed-90.

4355 B. R. Donald. Planning multi-step error detection and recovery strategies. *Internat. J. Robot. Res.*, 9:3–60, 1990. [d-pmsed-90] *Keywords:* compliance, motion planning. *Succeeds:* d-pmsed-88.

4356 B. R. Donald. Robot motion planning with uncertainty in the geometric models of the robot and environment: a formal framework for error detection and recovery. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1588–1593, 1986. [d-rmpug-86]

4357 B. R. Donald. The complexity of planar compliant motion planning under uncertainty. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 309–318, 1988. [d-cpcmp-88] *Precedes:* d-cpcmp-90. *Cites:* bk-cmpgm-87, bl-sacsf-83, b-rmpc-82, b-agppu-86, b-ptcms-87, brs-phpsd-87, c-namrm-87, cd-svd-87, cd-svd-88, cr-nlbtr-87, ad-tg-80, d-samps-87, d-rmpug-86, d-tedrr-86, d-edrrm-87, d-gaedr-88, d-ttlrp-87, e-ubfmp-86, em-esm-86, g-cdta-87, hw-moc-86, k-ernmp-87, k-grsmo-85, l-spcsa-83, l-rp-83, lmt-asfms-84, l-cmpue-86, m-cfccc-81, m-apfmc-84, n-moo-86, n-aaadp-86, osy-gvdl1-84, osy-gvdl2-84, oy-rmpmd-85, hss-pgcrm-87, sy-agar-87, t-smcpt-76, y-cmsd-84, y-amp-87, ZZZ.

4358 B. R. Donald. The complexity of planar compliant motion planning under uncertainty. *Algorithmica*, 5:353–382, 1990. [d-cpcmp-90] *Succeeds:* d-cpcmp-88.

4359 B. R. Donald. The mover's problem in automated structural design. In *Proc. Harvard Computer Graphics Conference*, page ??, 1983. [d-mpasd-83]

4360 B. R. Donald. Towards task-level robot programming. Technical Report, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1987. [d-ttlrp-87]

4361 B. R. Donald, J. Baillieul, and R. Brockett. Robotics. In *Symposia in Applied Mathematics*, volume 41, page ??, 1990. [dbb-r-90]

4362 B. R. Donald and D. R. Chang. On computing the homology type of a triangulation. Technical Report TR-91-1183, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1991. [dc-chtt-91]

4363 B. R. Donald and D. R. Chang. On the complexity of computing the homology type of a triangulation. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 650–662, 1991. [dc-cchtt-91]

4364 B. R. Donald and J. Jennings. Sensor interpretation and task-directed planning using perceptual equivalence classes. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 190–197, 1991. [dj-sitdp-91]

4365 B. R. Donald, J. Jennings, and D. Campbell. Towards experimental verification of an automated compliant motion planner based on a geometric theory of error detection and recovery. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 632–637, 1989. [djc-tevac-89]

4366 B. R. Donald, J. Lengyel, M. Reichert, and D. Greenberg. Real-time robot motion planning using rasterizing computer graphics hardware. *Comput. Graph.*, 24(4):327–335, 1990. Proc. SIGGRAPH '90. [dlrg-rtrmp-90]

4367 B. R. Donald and D. K. Pai. On the motion of compliantly-connected rigid bodies in contact: a system for analyzing designs for assembly. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1756–1762, 1990. [dp-mccrb-90] *Keywords:* motion planning, compliance.

4368 B. R. Donald and P. Xavier. A provably good approximation algorithm for optimal-time trajectory planning. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 958–963, 1989. [dx-pgaao-89] *Keywords:* motion planning.

4369 B. R. Donald and P. Xavier. Near-optimal kinodynamic planning for robots with coupled dynamics bounds. In *Proc. 4th IEEE International Symposium on Intelligent Control*, page ??, 1989. [dx-nokpr-89] *Keywords:* motion planning.

4370 B. R. Donald and P. Xavier. Time-safety trade-offs and a bang-bang algorithm for kinodynamic planning. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 525–527, 1991. [dx-tstob-91] *Keywords:* motion planning.

4371 B. R. Donald, P. Xavier, J. Canny, and J. Reif. Kinodynamic motion planning. *J. ACM*, 40(5):1048–1066, November 1993. [dxcr-kmp-93] *Succeeds:* cdrx-ckp-88.

4372 B. R. Donald and P. G. Xavier. Provably good approximation algorithms for optimal kinodynamic planning for Cartesian robots and open chain manipulators. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 290–300, 1990. [dx-pgaao-90] *Precedes:* dx-pgaao-95. *Cites:* as-rac-86, bdg-tocrm-85, b-rmpc-82, c-cdmp-86, d-samps-87, cdrx-ckp-88, cr-nlbtr-87, dx-pgaao-89, dx-nokpr-89, dx-pgaao-90t, fw-pcm-88, gl-mc-83, hp-brd-89, h-dsmt-83t, jc-pspmr-89, jhcp-pgnto-89i, l-spcsa-83, o-mpic-86, p-aspmt-85, ps-coac-82, pt-ipct-86, rt-akpul-89, sh-pmttr-85, s-obbtr-87, sd-gtomr-88, ss-rtoct-85, ss-tocm-86, w-mpav-88, y-amp-87, ZZZ.

B. R. Donald. See also [2142, 2143, 2693–2697].

4373 R. B. Donald. Motion planning with six degrees of freedom. Technical Report AI-TR-791, Artif. Intell. Lab., Massachusetts Inst. Tech., Cambridge, MA, 1984. [d-mpsdf-84]

4374 W. E. Donath and C. K. Wong. An efficient algorithm for boolean mask operations. In *Internat. Conf. Computer Design*, pages 358–360, 1983. [dw-eabmo-83] *Keywords:* polygons, Boolean operations.

LeonBattista Donati. See also [2178–2180].

B. Z. Dong. See also [4839].

L. Dong. See also [6012, 13845].

4375 S. Dong, J. Cong, and C. L. Liu. Constraint floorplan design for flexible blocks. In *IEEE Int. Conf. on Computer-Aided Design*, pages 488–491, 1989. [dcl-cfdfb-89]

4376 W. P. Dong, E. Mainsah, P. F. Sullivan, and K. F. Stout. Instruments and measurement techniques of 3-dimensional surface topography. In K. F. Stout, editor, *Three-Dimensional Surface Topography: Measurement, Interpretation and Applications*. Penton Press, Bristol, Penn., 1994. [dmss-imt3d-94]

4377 X. Dong and M. J. Wozny. A method for generating volumetric features from surface features. *Internat. J. Comput. Geom. Appl.*, 1(3):281–297, 1991. [dw-mgvfs-91] *Keywords:* computer aided design, computer aided manufacturing, geometric modeling, feature extraction.

4378 J. J. Dongarra, C. B. Moler, J. R. Bunch, and G. W. Stewart. *LINPACK Users' Guide*. SIAM Press, Philadelphia, PA, 1979. [dmbs-lug-79]

4379 D. L. Donoho and P. J. Huber. The notion of breakdown point. In P. J. Bickel, K. Doksun, and J. L. Hodges, editors, *A Festschrift for Erich L. Lehmann*, pages 157–184. Wadsworth International Group, Belmont, CA, 1983. [dh-nbp-83]

4380 Melody Donoso and Joseph O'Rourke. Nonorthogonal polyhedra built from rectangles. Technical Report 073, Dept. Comput. Sci., Smith College, Northampton, MA, USA, October 2001. [do-npbr-01] *URL:* http://arXiv.org/abs/cs/0110059/. *Comments:* Answers a question posed in bls-wcnfp-99.

4381 Walt Donovan and Tim Van Hook. Direct outcode calculation for faster clip testing. In Paul Heckbert, editor, *Graphics Gems IV*, pages 125–131. Academic Press, Boston, MA, 1994. [dh-docfc-94] *Keywords:* IEEE floating point arithmetic, line clipping. *Annote:* A clever optimization of clip testing that exploits the properties of IEEE floating point format. Techniques are described to compute the "outcodes" needed for line clipping using only integer arithmetic. Contains C code.

4382 D. Doo and M. Sabin. Behaviour of recursive division surfaces near extraordinary points. *Comput. Aided Design*, 10:356–360, 1978. [ds-brdsn-78]

4383 D. H. Doo. A subdivision algorithm for smoothing down irregularly shaped polyhedrons. In *Proc. IEEE Internat. Conf. Techniques Comput.-Aided Design*, pages 157–165, 1978. [d-sasdi-78]

A. J. van Doorn. See also [8234, 8235].

4384 D. Dor and U. Zwick. Sokaban and other motion planning problems. 1999. [dz-sompp-99] *URL:* http://www.math.tau.ac.il/~ddorit/.

D. Dor. See also [3152].

4385 Carsten Dorgerloh, Jens Lüssem, Morakot Pilouk, and Jürgen Wirtgen. Some tools for modeling and analysis of surfaces. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 263–267, 1997. [dlpw-stmas-97]

4386 D. Dori and M. Ben-Bassat. Circumscribing a convex polygon by a polygon of fewer sides with minimal area addition. *Comput. Vision Graph. Image Process.*, 24:131–159, 1983. [db-ccppf-83] *Keywords:* polygons, extremal figures, area. *Annote:* erratic.

4387 D. Dori and M. Ben-Bassat. Efficient nesting of congruent convex figures. *Commun. ACM*, 27:228–235, 1984. [db-enccf-84]

4388 D. Dorling. Map design for census mapping. *The Geographic J.*, 30:167–179, 1993. [d-mdcm-93]

S. M. Dorney. See also [674].

4389 M. Dorr. A new approach to parametric line clipping. *Computers & Graphics*, 14(3–4):449–464, 1990. [d-naplc-90] *Keywords:* polygons, clipping.

4390 L. Dorst. Discrete straight line segments: parameters, primitives and properties. *Math. Res.*, 51:11–18, 1989. Proc. Geobild '89. [d-dslsp-89] *Keywords:* digital geometry.

4391 L. Dorst, I. Mandhyan, and K. Trovato. Geometrical representation of path planning problems. In *Proc. 2nd International Conference on Intelligent Autonomous Systems*, December 1989. [dmt-grppp-89] *Abstract:* The path planning problem for arbitrary devices is first and foremost a geometrical problem. For the field of control theory, advanced mathematical techniques have been developed to describe and use geometrical structure. In this paper we use the notions of the flow of vector fields and geodesics in metric spaces to formalize and unify path planning problems. A path planning algorithm based on flow propagation is briefly discussed. Applications of the theory to motion planning for a robot arm, a maneuvering car, and Rubik's Cube are given. These very different problems (holomic, non- holomic and discrete, respectively) are all solved by the same unified procedure.

4392 L. Dorst and A. W. M. Smeulders. Discrete representation of straight lines. *IEEE Trans. Pattern Anal. Mach. Intell.*, 6:450–463, 1984. [ds-drsl-84] *Keywords:* digital geometry.

4393 L. Dorst and A. W. M. Smeulders. Discrete straight line segments: parameters, primitives and properties. In *Vision Geom.: Proc. AMS Spec. Sess. Hoboken, NJ 1989. Providence, R.I.*, pages 45–62, 1991. [ds-dslsp-91] *Keywords:* digital geometry.

L. Dorst. See also [12285].

4394 S. E. Dorward. A survey of object-space hidden surface removal. Technical Memorandum 11271-911009-11TM, AT&T Bell Laboratories, Murray Hill, NJ, 1991. [d-soshs-91] *Precedes:* d-soshs-94.

4395 S. E. Dorward. A survey of object-space hidden surface removal. *Internat. J. Comput. Geom. Appl.*, 4:325–362, 1994. [d-soshs-94] *Succeeds:* d-soshs-91.

M. Doskas. See also [1147–1149].

4396 P. Doubilet, G.-C. Rota, and J. Stein. On the foundations of combinatorial theory: ix, combinatorial methods in invariant theory. *Studies in Applied Math*, 53:185–216, 1974. [drs-fctcm-74]

4397 Jean-François Doué. C++ vector and matrix algebra routines. In Paul Heckbert, editor, *Graphics Gems IV*, pages 534–557. Academic Press, Boston, MA, 1994. [d-cvmar-94] *Keywords:* vector algebra, transformation, ray tracing. *Annote:* A C++ subroutine library for 2D, 3D, and 4D vector and matrix operations. Contains C++ code. The Floppy disk that comes with the book and the FTP collection contain a simple ray tracer written using the library.

4398 J. A. Dougenik, N. R. Chrisman, and D. R. Niemeyer. An algorithm to construct continous area cartograms. *Professional Geographer*, 37:75–81, 1985. [dcn-accac-85]

4399 David H. Douglas. Least cost path in geographic information systems. Research note no. 61, Department of Geography, University of Ottawa, Ottawa, Ontario, August 1993. [d-lcpgi-93] *Keywords:* shortest paths, weighted region problem, GIS, Snell's Law. *Annote:* paper was submitted to a journal. Has it appeared??

4400 David H. Douglas. Viewblock: A computer program for constructing perspective view block diagrams. *Revue de Geographie de Montreal*, XXVI(1):102–104, January 1972. [d-vcpcp-72]

4401 David H. Douglas and Thomas K. Peucker. Algorithms for the reduction of the number of points required to represent a digitized line or its caricature. *Canadian Cartographer*, 10(2):112–122, December 1973. [dp-arnpr-73]

P. Downey. See also [4404].

4402 K. A. Dowsland and W. B. Dowsland. Packing problems. *European J. Oper. Res.*, 56:2–14, 1992. [dd-pp-92]

W. B. Dowsland. See also [4402].

4403 John Doyle, Thomas Dean, et al. Strategic directions in artificial intelligence. *ACM Comput. Surv.*, 28(4), 1996. [dd-sdai-96]

4404 J. Dozier, J. Bruno, and P. Downey. A faster solution to the horizon problem. Report TR-CSL-7907, Comput. Syst. Lab., Univ. California, Santa Barbara, CA, 1979. [dbd-fshp-79]

4405 F. F. Dragan and A. Brandstädt. Dominating cliques in graphs with hypertree structure. In *Proc. 11th Sympos. Theoret. Aspects Comput. Sci.*, volume 775 of *Lecture Notes Comput. Sci.*, pages 735–746. Springer-Verlag, 1994. [db-dcghs-94]

F. F. Dragan. See also [2396].

Mircea Dragan. See also [3637–3639].

4406 D. Dragomatz and S. Mann. A classified bibliography of literature on NC milling path generation. *Comput. Aided Design*, 29(3):239–247, March 1997. [dm-cblnm-97]

4407 J.-M. Drappier. Enveloppes convexes. Technical report, Centre CPAO, ENSTA Palaiseau, 1983. [d-ec-83] *Comments:* Survey about convex hull algorithms in 2D and experimental results, in french.

4408 A. Dresden. *Solid Analytic Geometry and Determinants*. Dover, New York, NY, 1964. [d-sagd-64]

A. Dress. See also [1605].

4409 G. Drettakis and E. Fiume. A fast shadow algorithm for area light sources using back projection. In A. Glassner, editor, *Proc. SIGGRAPH '94*, pages 223–230. ACM Press, July 1994. [df-fsaal-94]

G. Drettakis. See also [2763, 4492–4497, 12207].

M. Dreux. See also [9403].

4410 S. E. Dreyfus and R. A. Wagner. The Steiner problem in graphs. *Networks*, 1:195–207, 1972. [dw-spg-72]

4411 Z. Drezner. Competitive location strategies for two facilities. *Region. Sci. Urban Econ.*, 12:485–493, 1982. [d-clstf-82] *Keywords:* facility location.

4412 Z. Drezner. Conditional p-centre problems. *Transp. Sci.*, 23(1):51–53, 1989. [d-cpcp-89] *Keywords:* facility location.

4413 Z. Drezner, editor. *Facility Location*. Springer-Verlag, New York, 1995. [d-fl-95]

4414 Z. Drezner. Maximizing the minimum sight angle of a set of shapes. *IIE Trans.*, 20(2):194–200, 1988. [d-mmsas-88] *Keywords:* optimization.

4415 Z. Drezner. On a modified 1-center problem. *Manage. Sci.*, 27:838–851, 1981. [d-m1cp-81]

4416 Z. Drezner. On the rectangular p-center problem. *Naval Res. Logist. Q.*, 34:229–234, 1987. [d-rpcp-87] *Keywords:* facility location, l_1-metric.

4417 Z. Drezner. The p-center problem. *European J. Oper. Res.*, 26(2):312–313, 1986. [d-pcp-86] *Keywords:* facility location.

4418 Z. Drezner. The p-centre problems — Heuristic and optimal algorithms. *J. Oper. Res. Soc.*, 35:741–748, 1984. [d-pcpho-84] *Keywords:* facility location.

4419 Z. Drezner. The planar two-center and two-median problem. *Transp. Sci.*, 18:351–361, 1984. [d-ptctm-84] *Keywords:* facility location.

4420 Z. Drezner, A. Mehrez, and G. O. Wesolowsky. The facility location problems with limited distances. *Transp. Sci.*, 25:183–187, 1992. [dmw-flpld-91] *Keywords:* facility location.

4421 Z. Drezner and S. Shelah. On the complexity of the Elzinga-Hearn algorithm for the 1-center problem. *Math. Oper. Res.*, 12(2):255–261, 1987. [ds-ceha1-87] *Keywords:* facility location.

4422 Z. Drezner and G. O. Wesolowski. Location of an obnoxious route. *J. Oper. Res. Society*, 40(11):1011–1018, 1989. [dw-lor-89] *Keywords:* facility location, points, convex polygon.

4423 Z. Drezner and G. O. Wesolowsky. Location of multiple obnoxious facilities. ?? [dw-lmof-??] *Keywords:* facility location.

4424 Z. Drezner and G. O. Wesolowsky. Minmax and maxmin facility location problems on a sphere. *Naval Res. Logist. Q.*, 30:305–312, 1983. [dw-mmflp-83] *Keywords:* facility location.

4425 J. R. Driscoll, H. N. Gabow, R. Shrairaman, and R. E. Tarjan. Relaxed heaps: An alternative to Fibonacci heaps with applications to parallel computation. *Commun. ACM*, 31:1343–1354, 1988. [dgrt-rhafh-88] *Keywords:* shortest paths, Dijkstra, priority queue.

4426 J. R. Driscoll, N. Sarnak, D. D. Sleator, and R. E. Tarjan. Making data structures persistent. *J. Comput. Syst. Sci.*, 38:86–124, 1989. [dsst-mdsp-89]

4427 J. R. Driscoll, N. Sarnak, S. Sleator, and R. E. Tarjan. Making data structures persistent. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 109–121, 1986. [dsst-mdsp-86]

R. Drysdale. See also [12588, 12742].

4428 R. L. Drysdale, Scott McElfresh, and Jack Scott Snoeyink. An improved diamond property for minimum-weight triangulations. In *Abstracts 14th European Workshop Comput. Geom.*, pages 65–67. Universitat Polytènica de Catalunya, Barcelona, 1998. [dms-idpmw-98]

4429 R. L. Drysdale and J. Quinn. Intersecting vectors with 5-axis machine toll movements. In *Proc. 1995 NSF Design and Manufacturing Grantees Conference*, pages 201–202, 1994. [dq-ivw5a-94]

R. L. Drysdale. See also [1120, 4180, 4181, 7525, 7526, 11692, 11693].

4430 R. L. Drysdale, III. A practical algorithm for computing the Delaunay triangulation for convex distance functions. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 159–168, 1990. [d-pacdt-90] *Keywords:* Delaunay triangulation, L_1 metric, L_p metric, L_∞ metric, divide-and-conquer, points.

4431 R. L. Drysdale, III. *Generalized Voronoi Diagrams and Geometric Searching*. Ph.D. thesis, Dept. Comput. Sci., Stanford Univ., Stanford, CA, 1979. Report STAN-CS-79-705. [d-gvdgs-79] *Keywords:* two-dimensional, doctoral thesis, Voronoi diagrams, line segments.

4432 R. L. Drysdale, III and J. W. Jaromczyk. A note on lower bounds for the maximum area and maximum perimeter k-gon problems. *Inform. Process. Lett.*, 32:301–303, 1989. [dj-nlbma-89] *Keywords:* lower bounds, polygons.

4433 R. L. Drysdale, III and R. B. Jerard. Discrete simulation of NC machining. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 126–135, 1987. [dj-dsnm-87] *Keywords:* CAD, approximation, simulation. *Precedes:* djsh-dsnm-89. *Cites:* a-sagni-82, acp-ncggm-84, b-ncma-72, c-scads-67, c-gqtm-89, fp-cgdm-79, fd-ficg-82, gr-bscs-74, gz-cccad-84, g-orncm-86, hv-esavp-82, kms-spafa-85, jdh-ucgtd-87, jhd-sncms-86, m-snct-73, og-cgvnc-85, rv-smhsc-82, ra-mecg-76, sjw-cadcs-82, t-rtps-86, vh-rsmmp-81, zb-cstsm-86, ZZZ.

4434 R. L. Drysdale, III, R. B. Jerard, B. Schaudt, and K. Hauck. Discrete simulation of NC machining. *Algorithmica*, 4:33–60, 1989. [djsh-dsnm-89] *Keywords:* CAD, approximation, simulation. *Succeeds:* dj-dsnm-87.

4435 R. L. Drysdale, III and D. T. Lee. Generalized Voronoi diagrams in the plane. In *Proc. 16th Allerton Conf. Commun. Control Comput.*, pages 833–842, 1978. [dl-gvdp-78] *Precedes:* ld-gvdp-81.

R. L. Drysdale, III. See also [2363, 2364, 2949, 2950, 3153, 3154, 4279, 8611].

4436 Robert L. Scot Drysdale, Günter Rote, and Oswin Aichholzer. A simple linear time greedy triangulation algorithm for uniformly distributed points. Technical Report IIG-408, Institutes for Information Processing, Technische Universität Graz, February 1995. [dra-sltgt-95] *URL:* http://www.tu-graz.ac.at/Rote. *Abstract:* We present a simple, practical algorithm that computes the greedy triangulation of a set of n points in the plane in expected time O(n) and space O(n), for n points drawn independently from a uniform distribution over some fixed convex shape.

Robert L. Scot Drysdale. See also [4182, 12589].

R. S. Drysdale. See also [4183].

4437 S. Drysdale. Solving closest-point problems by searching the Delaunay diagram. In *Proc. 2nd MSI Workshop Comput. Geom.*, 1992. [d-scpps-92]

4438 D. Du and Y. Zhang. On heuristics for minimum length rectilinear partitions. *Algorithmica*, 5:111–128, 1990. [dz-hmlrp-90]

4439 D.-Z. Du. On Steiner ratio conjectures. *Ann. Oper. Res.*, 33(1–4):437–449, 1991. [d-src-91] *Keywords:* Steiner tree.

4440 D.-Z. Du and Y.-M. Chen. An "11"-heuristic for minimum edge length rectangular partitions of rectilinear figures. Report ??, Math. Sci. Res. Inst., Univ. California, Berkeley, CA, 1985. [dc-11hme-85] *Precedes:* dc-fhmel-86.

4441 D.-Z. Du and Y.-M. Chen. On fast heuristics for minimum edge length rectangular partition. Technical Report MSRI-03618-86, Math. Sci. Res. Inst., Univ. California, Berkeley, CA, February 1986. [dc-fhmel-86] *Succeeds:* dc-11hme-85. *Precedes:*

4442 D. Z. Du, B. Gao, R. L. Graham, Z.-C. Liu, and P.-J. Wan. Minimum Steiner trees in normed planes. *Discrete Comput. Geom.*, ??, ?? To appear. [dgglw-mstnp-]

4443 Ding-Zhu Du and Frank Hwang. The state of art on Steiner ratio problems. In Ding-Zhu Du and Frank Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 195–224. World Scientific, Singapore, 2nd edition, 1995. [dh-sasrp-95] *Keywords:* survey paper. *Succeeds:* dh-sasrp-92.

4444 D.-Z. Du and F. K. Hwang. A proof of Gilbert-Pollak's conjecture on the Steiner ratio. *Algorithmica*, 7:121–135, 1992. [dh-pgpcs-92] *Keywords:* Steiner tree, minimal spanning tree.

4445 D.-Z. Du and F. K. Hwang. An approach for proving lower bounds: solution of Gilbert-Pollak conjecture on Steiner ratio. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 76–85, 1990. [dh-aplbs-90] *Keywords:* Steiner trees.

4446 Ding-Zhu Du and Frank K. Hwang, editors. *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*. World Scientific, 1st edition, 1992. [dh-ceg-92] *Comments:* 8 chapters, survey articles. *Precedes:* dh-ceg-95.

4447 Ding-Zhu Du and Frank K. Hwang, editors. *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*. World Scientific, 2nd edition, 1995. [dh-ceg-95] *Comments:* 11 chapters, xiii + 492 pages, survey articles, contains h-dqgpg-95, c-cgr-95, be-mgot-95, cr-mpgt-95, c-rga-95, dh-sasrp-95, f-vddt-95, hv-gcsr2-95, s-pftbs-95, sw-cgtnd-95, and yd-ecp-95. *Succeeds:* dh-ceg-92.

4448 D. Z. Du and F. K. Hwang. Reducing the Steiner problem in a normed space. *SIAM J. Comput.*, 21:1001–1007, 1992. [dh-rspns-92]

4449 D.-Z. Du and F. K. Hwang. Steiner minimal trees for bar waves. *Acta Math. Appl. Sinica*, ser.3:246–256, 1987. [dh-smtbw-87] *Keywords:* Steiner tree.

4450 D.-Z. Du and F. K. Hwang. The state of art on Steiner ratio problems. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*, pages 163–191. World Scientific, Singapore, 1992. [dh-sasrp-92] *Keywords:* survey paper, Steiner ratio proof. *Precedes:* dh-sasrp-95.

4451 D. Z. Du and F. K. Hwang. The Steiner ratio conjecture of Gilbert and Pollak is true. *Proc. Nat. Acad. Sci. USA*, 87(23):9464–9466, 1990. [dh-srcgp-90] *Keywords:* Steiner tree, minimal spanning tree.

4452 D. Z. Du, F. K. Hwang, G. D. Song, and G. Y. Ting. Steiner minimal trees on sets of four points. *Discrete Comput. Geom.*, 2:401–414, 1987. [dhst-smtsf-87]

4453 D. Z. Du, F. K. Hwang, and J. F. Weng. Steiner minimal trees for regular polygons. *Discrete Comput. Geom.*, 2:65–84, 1987. [dhw-smtrp-87]

4454 D.-Z. Du, F. K. Hwang, and J. F. Weng. Steiner minimal trees on zig-zag line. *Trans. Amer. Math. Soc.*, 228:149–156, 1983. [dhw-smtzz-83] *Keywords:* Steiner tree.

4455 D.-Z. Du, F. K. Hwang, J. F. Weng, and S. C. Chao. Steiner minimal trees for points on a circle. *Proc. Amer. Math. Soc.*, 95:613–618, 1985. [dhwc-smtpc-85] *Keywords:* Steiner tree.

4456 D. Z. Du and D. J. Kleitman. Diameter and radius in the Manhattan metric. *Discrete Comput. Geom.*, 5:351–356, 1990. [dk-drmm-90]

4457 D.-Z. Du, L.-Q. Pan, and M.-T. Shing. Minimum edge length guillotine rectangular partition. Report 02418-86, Math. Sci. Res. Inst., Univ. California, Berkeley, CA, 1986. [dps-melgr-86]

4458 D.-Z. Du, Y. Zhang, and Q. Feng. On better heuristic for Euclidean Steiner minimum trees. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 431–439, 1991. [dzf-bhesm-91]

D. Z. Du. See also [5742, 7274, 8929].

M. W. Du. See also [2839].

Y. Du Terrail. See also [3567].

W. Du. See also [11747].

4459 T. Dubé. A survey of methods for bounding Gröbner bases. Technical report, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, February 1987. [d-smbgb-87]

4460 T. Dubé. Dominance range-query: the one-reporting case. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 208–217, 1993. [d-drqor-93] *Cites:* b-mbstu-75, b-mdc-80, bm-ewcds-80, b-gbamp-85, b-hbfcp-87, bfk-ictor-81, c-fsnaq-83, c-lbors1-90, c-lbors2-90, fb-qtdsr-74, f-lbcor-81, lw-wcarp-77, lw-dsdrq-82, m-mdscg-84, o-ddds-83, ps-cgi-85, w-ndsor-85, wl-arrcd-85, ZZZ.

4461 T. Dubé, B. Mishra, and C. K. Yap. Admissible orderings and bounds on Gröbner normal form algorithm. Technical Report 258, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, December 1986. Robotics Report 88. [dmy-aobgn-86]

4462 Thomas Dubé and Chee Yap. A basis for implementing exact computational geometry. to appear, August 1993. [dy-biecg-93]

T. Dubé. See also [13822].

4463 Dubes and Jain. Clustering methodologies in exploratory data analysis. In M. C. Yovites, editor, *Asvances in Computers*, volume 19. ??, 1980. [dj-cmeda-80]

R. C. Dubes. See also [7468].

D. Dubhashi. See also [10575].

4464 L. E. Dubins. On curves of minimal length with a constraint on average curvature and with prescribed initial and terminal positions and tangents. *Amer. J. Math.*, 79:497–516, 1957. [d-cmlca-57]

4465 P. Dublish. An $o(n^3)$ algorithm for finding the minimal opaque forest of a convex polygon. *Inform. Process. Lett.*, 29:275–276, 1988. [d-oafmo-88] *Keywords:* polygons, visibility.

4466 V. A. Dubovitskij. The Ulam problem of optimal motion of line segments. In *Optimization Software*. ??, New York, NY, 1985. [d-upoml-85]

S. Dubowsky. See also [2117, 2118, 12150].

4467 B. Dubrovin, S. Novikov, and A. Fomenko. *Modern Geometry*. ??, Moscow, 1979. [dnf-mg-79]

4468 B. A. Dubrovin, A. T. Fomenko, and S. P. Novikov. *Modern Geometry - Methods and Applications*. Springer-Verlag, 1984. [dfn-mgma-84]

4469 D. Dubrule, P. Morin, and J.-R. Sack. A parallel cartographic modelling system: design, implementation and performance. In *Proc. GIS'97*, pages 16–20, 1997. [dms-pcmsd-97]

C. Duby. See also [11163].

4470 Carolyn K. Duby, Scott Meyers, and Steven P. Reiss. CCEL: a metalanguage for C++. *Proc. Second Usenix C++ Conference*, ??, August 1992. [dmr-cmc-92]

Carolyn K. Duby. See also [9555].

T. Duchamp. See also [7115–7117].

4471 P. Duchet, Y. Hamidoune, M. Las Vergnas, and H. Meyniel. Representing a planar graph by vertical lines joining different levels. *Discrete Math.*, 46:319–321, 1983. [dhvm-rpgvl-83] *Keywords:* graph drawing.

4472 R. O. Duda and P. E. Hart. *Pattern Classification and Scene Analysis*. Wiley-Interscience, New York, 1973. [dh-pcsa-73]

4473 R. O. Duda and P. E. Hart. Use of the Hough transform to detect lines and curves in pictures. *Commun. ACM*, 15:11–15, January 1972. [dh-uhtdl-72]

4474 Gregory Dudek, Kathleen Romanik, and Sue Whitesides. Localizing a robot with minimum travel. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 437–446, 1995. [drw-lrmt-95] *Keywords:* visibility polygons, localization, on-line. *Precedes:* drw-lrmt-98.

4475 Gregory Dudek, Kathleen Romanik, and Sue Whitesides. Localizing a robot with minimum travel. *SIAM J. Comput.*, 27(2):583–604, April 1998. [drw-lrmt-98] *Keywords:* visibility polygons, localization, on-line. *Succeeds:* drw-lrmt-95.

4476 R. M. Dudley. Balls in R^k do not cut all subsets of $k+2$ points. *Adv. Math.*, 31:306–308, 1979. [d-brdnc-79]

4477 R. M. Dudley. Central limit theorems for empirical measures. *Ann. Probab.*, ??:899–929, 1978. [d-cltem-78]

4478 R. M. Dudley. Metric entropy of some classes of sets with differentiable boundaries. *J. Approx. Theory*, 10:227–236, 1974. [d-mescs-74]

R. M. Dudley. See also [13483].

4479 R. J. Duffin. Lines of best fit by graphics and the Wald line. *Amer. Math. Monthly*, 98(9):835–840, 1991. [d-lbfgw-91] *Keywords:* linear programming, fitting.

P. Dufour. See also [11441–11443].

Jean-François Dufourd. See also [1872, 2766, 2767].

Vida Dujmović. See also [379].

4480 A. Dumitrescu. Planar point sets with few empty convex polygons. *Studia Sci. Math. Hungar*, 36, 2000. [d-ppsfe-00]

4481 A. Dumitrescu, B. Gärtner, S. Pedroni, and E. Welzl. Enumerating triangulation paths. *Comput. Geom. Theory Appl.*, 20:3–12, 2001. [dgpw-etp-01]

4482 A. Dumitrescu and R. Kaye. Matching colored points in the plane: Some new results. *Comput. Geom. Theory Appl.*, 19:69–85, 2001. [dk-mcpps-01]

4483 A. Dumitrescu and J. S. B. Mitchell. Approximation algorithms for TSP with neighborhoods in the plane. In *Proc. 12th Symp. on Discrete Algorithms*, pages 38–46, 2001. [dm-aatnp-01]

4484 B. S. Duncan and A. J. Olson. ?? *Biopolymers*, 33:219–229, 1993. [do--93]

4485 C. A. Duncan. *Balanced Aspect Ratio Trees*. Ph.D. thesis, Department of Computer Science, Johns Hopkins University, Baltimore, Maryland, 1999. [d-bart-99] *Keywords:* doctoral thesis.

4486 C. A. Duncan, M. T. Goodrich, and S. Kobourov. Balanced aspect ratio trees: combining the advantages of k-d trees and octrees. In *Proc. 10th Annu. ACM-SIAM Sympos. Discrete Alg.*, pages 300–309, 1999. [dgk-bartc-99]

4487 C. A. Duncan, M. T. Goodrich, and S. Kobourov. Balanced aspect ratio trees: combining the advantages of k-d trees and octrees. *J. Algorithms*, 38:303–333, 2001. [dgk-bartc-01]

4488 C. A. Duncan, M. T. Goodrich, and E. A. Ramos. Efficient approximation and optimization algorithms for computational metrology. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 121–130, 1997. [dgr-eaoac-97]

C. A. Duncan. See also [1400, 1401, 1410].

4489 M. R. Dunlavey. Query performance of a many-dimensional best-match algorithm. In *Proc. 19th Allerton Conf. Commun. Control Comput.*, pages 389–396, 1981. [d-qpmdb-81]

4490 R. D. Düppe and H. J. Gottschalk. Automatische Interpolation von Isolinien bei willküerlich verteilten Stützpunkten. *Allgemeine Vermessungsnachrichten*, 77:423–426, 1970. [dg-aivib-70]

J. Duprat. See also [3559, 3560].

J. Duquesne. See also [2161, 2162, 2166].

4491 E. Durand. Quasitiler 3.0 documentation, 1994. [d-q3d-94] *URL:* http//www.geom.umn.edu/apps/quasitiler/about.html.

4492 F. Durand, G. Drettakis, and C. Peuch. The visibility skeleton: A powerful and efficient multi-purpose global visibility tool. In *SIGGRAPH 97 Conference Proceedings*, Annual Conference Series, pages 89–100. ACM SIGGRAPH, Addison-Wesley, 1997. [ddp-tvsap-97]

4493 F. Durand, G. Drettakis, and C. Puech. 3D visibility made visibly simple: An introduction to the visibility skeleton. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 475–476, 1997. [ddp-3dvmv-97] *Keywords:* video review. *Cites:* ddp-3dvcn-96, ddp-tvsap-97, df-fsaal-94, dorp-rfmvs-96, dp-vcmvs-95, gm-cagld-90, pd-voag-90, p-srs3d-90, pv-vc-96, sg-fcsbu-94, t-caals-92, ZZZ.

4494 F. Durand, G. Drettakis, and C. Puech. Fast and accurate hierarchical radiosity using global visibility. *ACM Trans. Graph.*, 18(2):128–170, 1999. [ddp-fahrgv-99] *Keywords:* discontinuity meshing, form factor calculation, global illumination, global visibility, hierarchical radiosity, hierarchical triangulation, perception.

4495 F. Durand, G. Drettakis, and C. Puech. The 3d visibility complex, a new approach to the problems of accurate visibility. In *Proc. EUROGRAPHICS '96*, pages 245–257. Springer-Verlag, June 1996. [ddp-3dvcn-96]

4496 Frédo Durand, George Drettakis, and Claude Puech. The 3D visibility complex: a unified data–structure for global visibility of scenes of polygons and smooth objects. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 153–158, 1997. [ddp-3dvcu-97]

4497 Frédo Durand, George Drettakis, and Claude Puech. The 3D visibility skeleton. In *Abstracts 14th European Workshop Comput. Geom.*, pages 69–71. Universitat Polytènica de Catalunya, Barcelona, 1998. [d-3dvs-98]

4498 Frédo Durand, Rachel Orti, Stéphane Riveière, and Claude Puech. Radiosity in flatland made visibly simple. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V11–V12, 1996. [dorp-rfmvs-96] *Cites:* c-irepr-90, sgg-rrde-90, cbwg-bbaer-86, dp-vcmvs-95, h-sgiua-91, h-rf-92, pv-vc-93, pv-cvgpt-95, dorp-rdsfv-96, rodp-uvcrc-96, sp-rgi-94, r-tsvcp-95, th-gvaic-93, ZZZ.

4499 F. Durand, R. Orti, S. Rivière, and C. Puech. Radiosity for dynamic scenes in flatland with the visibility complex. In *Eurographics '96*, 1996. Submitted. [dorp-rdsfv-96]

4500 Fredo Durand and Claude Puech. The visibility complex made visibly simple. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, page V2, 1995. [dp-vcmvs-95] *Keywords:* video review. *Cites:* pv-vc-93, r-cddcd-93, cg-vippg-89, cgl-pgd-85, gm-osacv-91, ow-nmcvg-88, p-gfr-90, v-vddsv-90, v-dmvg-91, ZZZ.

F. Durand. See also [11282].

4501 Albrecht Dürer. *The painter's manual: a manual of measurement of lines, areas, and solids by means of compass and ruler assembled by Albrecht Dürer for the use of all lovers of art with appropriate illustrations arranged to be printed in the year MDXXV*. New York: Abaris Books, 1977, 1538. Translated and with a commentary by Walter L. Strauss. [d-pm-1528] *Comments:* Found by Marty Demaine. Contains unfoldings of convex polyhedra.

4502 R. Durier. On Pareto optima, the Fermat-Weber problem, and polyhedral ... *Math. Program.*, 47(1):65–80, 1990. [d-pofwp-90] *Keywords:* facility location.

4503 R. Durier and C. Michelot. Geometrical properties of the Fermat-Weber problem. *European J. Oper. Res.*, 20(3):332–343, 1985. [dm-gpfwp-85] *Keywords:* facility location.

4504 H. Durrant-Whyte. Concerning uncertain geometry in robotics. In *International Workshop on Geometric Reasoning*, July 1986. [d-cugr-86]

4505 H. F. Durrant-Whyte. Uncertain geometry in robotics. *Internat. J. Robot. Autom.*, 4(1):23–31, 1988. [d-ugr-88]

4506 M. Dürst and T. L. Kunii. Integrated polytrees: a generalized model for the integration of spatial decomposition and boundary representation. In W. S. Strasser and H.-P. Seidel, editors, *Theory and Practice of Geometric Modelling*, pages 329–348. 1989. [dk-ipgmi-89] *Keywords:* data structuring, polygons.

4507 M. J. Dürst. Additional reference to Marching Cubes. *Comput. Graph.*, 22(4):72–73, 1988. [d-armc-88]

4508 Martin J. Dürst. On vertices and polyhedra without minimal boolean formulae. In *Abstracts 9th European Workshop Comput. Geom.*, pages 44–47. FernUniversität Hagen, 1993. [d-vpwmb-93]

4509 Martin J. Dürst. Preclassification and delayed classification of boundary entities in arbitrary dimensions. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 57–69. Springer-Verlag, 1991. [d-pdcbe-91] *Annote:* 7th Intern. Workshop Comput. Geom.

4510 M. J. Dürst and T. L. Kunii. Vertex classification using the convex hull on a sphere. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 25–32, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [dk-vcuch-89] *Keywords:* point-in-polyhedron, point location, Peterson-style boolean formula.

4511 B. Dushnik and E. W. Miller. Partially ordered sets. *Amer. J. Math.*, 63:600–610, 1941. [dm-pos-41]

J. P. Dussault. See also [2499].

4512 D. Dutta and P. K. Chaudhuri. Geometrical solution for a constrained minimax location problem. *Asia-Pacif. J. Oper. Res.*, 6(2):148–157, 1989. [dc-gscml-89] *Keywords:* facility location.

4513 D. Dutta and C. Hoffmann. On the skeleton of simple CSG objects. *ASME J. Mech. Design*, 115:87–94, 1993. [dh-ssco-93]

4514 D. Dutta and C. M. Hoffmann. A geometric investigation of the skeleton of CSG objects. In *Proc. ASME Conf. Design Automation*, 1990. [dh-gisco-90]

Deba Dutta. See also [508–510, 2831, 2832, 5847, 8400].

4515 G. Dutton. Fractal enhancement of cartographic line detail. *Amer. Cartogr.*, 8:23–40, 1981. [d-fecld-81] *Keywords:* implementing algorithms, computer graphics, cartography, algebraic geometry, fractals, construction, similarity, shape, boundary representation, curves.

4516 G. Dutton. Geodesic modelling of planetary relief. *Cartographica*, 21:188–207, 1984. [d-gmpr-84] *Keywords:* data structuring, terrain modelling, construction, approximation, geodesics, locus approach, implicit data structures, triangulations, polyhedra.

4517 G. Dutton and S. Morehouse. Extraction of polygonal information from gridded data. In *Proc. 4th Internat. Sympos. Comput.-Assist. Cartog.*, pages 320–327, 1980. [dm-epigd-80] *Keywords:* implementing algorithms, image processing, cartography, construction, shape, contours, polygonal chains, topological, curves.

4518 C. Dwork, M. Herlihy, and O. Waarts. Contention in shared memory algorithms. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 174–183, 1993. [dhw-csma-93]

C. Dwork. See also [3519].

4519 R. Dwyer. Convex hulls of samples from spherically symmetric distributions. *Discrete Appl. Math.*, 31(2):113–132, 1991. [d-chsss-91] *Keywords:* convex hull, probabilistic analysis.

4520 R. Dwyer. Maximal and minimal balls. *Comput. Geom. Theory Appl.*, 3:261–275, 1993. [d-mmb-93]

4521 R. Dwyer. On the convex hull of random points in a polytope. *J. Appl. Probab.*, 25(4):688–699, 1988. [d-chrpp-88] *Keywords:* convex hull, probabilistic analysis.

4522 R. Dwyer. The expected number of k-faces of a Voronoi diagram. *Internat. J. Comput. Math.*, 26(5):13–21, 1993. [d-enkfv-93] *Keywords:* d-dimensional, Voronoi diagram.

4523 R. Dwyer. The expected size of the sphere-of-influence graph. *Comput. Geom. Theory Appl.*, 5:155–164, 1995. [d-essig-95]

4524 R. Dwyer and W. Eddy. Maximal empty ellipsoids. *Internat. J. Comput. Geom. Appl.*, 6:169–186, 1996. [de-mee-96]

4525 R. A. Dwyer. A faster divide-and-conquer algorithm for constructing Delaunay triangulations. *Algorithmica*, 2:137–151, 1987. [d-fdcac-87] *Succeeds:* d-sdcac-86.

4526 R. A. Dwyer. A simple divide-and-conquer algorithm for computing Delaunay triangulations in $O(n \log \log n)$ expected time. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 276–284, 1986. [d-sdcac-86] *Precedes:* d-fdcac-87. *Cites:* bwy-oetac-80, f-savd-86, gs-pmgsc-85, h-oarms-79, l-tdvdl-80, ls-tacdt-80, lw-vdllm-80, m-dtchn-84, oim-iimvd-84, s-let-78, gs-cdtp-78, s-cg-78, ZZZ.

4527 R. A. Dwyer. *Average-case analysis of algorithms for convex hulls and Voronoi diagrams*. Ph.D. thesis, Comput. Sci. Dept., Carnegie-Mellon Univ., Pittsburgh, PA, 1988. Report CMU-CS-88-132. [d-acaac-88] *Keywords:* doctoral thesis.

4528 R. A. Dwyer. Convex hulls of points from spherically symmetric distributions. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 2, 1989. [d-chpss-89]

4529 R. A. Dwyer. Higher-dimensional Voronoi diagrams in linear expected time. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 326–333, 1989. [d-hdvdl-89] *Precedes:* d-hdvdl-91. *Cites:* ab-acddv-83, b-wcach-82, b-cdt-81, b-gtfga-80, bdf-cvp-78, ck-acp-70, d-fdcac-87, d-chrpp-88, e-chrsp-65, f-pcvp-79, g-rssc-62, m-dtchn-84, m-iaeln-53, m-irs-71, r-slcdn-70, s-cvdhd-82, s-nfhdv-87, s-chdch-86, s-fchff-85, too-natdv-83, t-pala-11, v-nadpc-08, w-cnddt-81, ZZZ.

4530 R. A. Dwyer. Higher-dimensional Voronoi diagrams in linear expected time. *Discrete Comput. Geom.*, 6:343–367, 1991. [d-hdvdl-91] *Succeeds:* d-hdvdl-89.

4531 R. A. Dwyer. Kinder, gentler average-case analysis for convex hulls and maximal vectors. *SIGACT News*, 21(2):64–71, 1990. [d-kgaca-90] *Keywords:* probabilistic analysis, expected-case analysis, convex hull, d-dimensional.

4532 R. A. Dwyer. Las Vegas gift-wrapping is twice as fast. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 261–264, 1990. [d-lvgwi-90] *Cites:* ck-acp-70, s-fchff-85, ZZZ.

4533 R. A. Dwyer. Voronoi diagrams and convex hulls of random moving points. *Discrete Comput. Geom.*, 23:343–365, 2000. [d-vdchr-00]

4534 R. A. Dwyer. Voronoi diagrams of random lines and flats. *Discrete Comput. Geom.*, 17:123–136, 1997. [d-vdrlf-97]

S. J. Dwyer, III. See also [1516, 3516].

4535 H. Dyckhoff. A typology of cutting and packing problems. *European J. Oper. Res.*, 44(2):145–160, 1990. [d-tcpp-90] *Keywords:* packing, covering.

C. Dyer. See also [10785].

4536 C. R. Dyer. A fast parallel algorithm for the closest pair problem. *Inform. Process. Lett.*, 11:49–52, 1980. [d-fpacp-80]

4537 C. R. Dyer. Computing the Euler number of an image from its quadtree. *Comput. Graph. Image Process.*, 13:270–276, 1980. [d-cenii-80]

4538 C. R. Dyer. The space efficiency of quadtrees. *Comput. Graph. Image Process.*, 19:335–348, 1982. [d-seq-82]

4539 C. R. Dyer, A. Rosenfeld, and H. Samet. Region representation: boundary codes from quadtrees. *Commun. ACM*, 23:171–179, 1980. [drs-rrbcq-80]

C. R. Dyer. See also [2355, 3211, 8197, 10783, 10784].

4540 Martin Dyer and Alan Frieze. Computing the volume of convex bodies: A case where randomness provably helps. In B. Bollobás, editor, *Probabilistic Combinatorics and Its Applications*, pages 123–169. American Mathematical Society, Providence, RI, 1991. [df-cvcbc-91]

4541 M. Dyer and N. Megiddo. Linear programming in low dimensions. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 38, pages 699–710. CRC Press LLC, Boca Raton, FL, 1997. [dm-lpld-97]

4542 M. E. Dyer. A class of convex programs with applications to computational geometry. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 9–15, 1992. [d-ccpac-92] *Cites:* c-sagcp-88, c-lpot-86, c-lvalp-88, dk-ladsc-85, d-mstia-86, gls-gaco-88, j-ba1-85, m-lpltw-84, m-bsb-89, m-mpta-86, p-mse-84, r-fpade-88, sw-cblpr-92, w-sedbe-91a, ZZZ.

4543 Martin E. Dyer. A geometric approach to two-constraint linear programming with generalized upper bounds. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 79–90. JAI Press, Greenwich, Conn., 1983. [d-gatcl-83] *Keywords:* linear programming.

4544 M. E. Dyer. A linear time algorithm for locating a point in the intersection of 2-polyhedra. Report ??, Dept. Math. Statist., Teesside Polytech., Middlesbrough, England, 1982. [d-ltalp-82]

4545 Martin E. Dyer. A parallel algorithm for linear programming in fixed dimension. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 345–349, 1995. [d-palpf-95] *Keywords: Cites:* akss-dsot-86, am-dptnp-92, am-plpfd-90, bh-obdpc-87, cm-ltdao-93, c-lvalp-88, c-lpot-86, c-pms-88, d-opalp-90, d-mstia-86, g-gpmee-93, kr-pasmm-90, m-lpltw-84, v-pcp-75, ZZZ.

4546 M. E. Dyer. A simplified $O(n \log n)$ algorithm for the intersection of 3-polyhedra. Report TPMR 80-5, Dept. Math. Statist., Teesside Polytech., Middlesbrough, England, 1980. [d-soai3-80]

4547 M. E. Dyer. An $o(n)$ algorithm for multiple-choice knapsack linear program. report, Math Dept. Teesside Polytechnic., Middlesbrough, England, 1981. [d-onamc-81] *Keywords:* prune and search, linear programming.

4548 M. E. Dyer. Linear time algorithms for two- and three-variable linear programs. *SIAM J. Comput.*, 13:31–45, 1984. [d-ltatt-84] *Keywords:* linear programming.

4549 M. E. Dyer. On a multidimensional search technique and its application to the Euclidean one-centre problem. *SIAM J. Comput.*, 15:725–738, 1986. [d-mstia-86]

4550 M. E. Dyer. On counting lattice points in polyhedra. *SIAM J. Comput.*, 20:695–707, 1991. [d-clpp-91]

4551 M. E. Dyer. The complexity of vertex enumeration methods. *Math. Oper. Res.*, 8:381–402, 1983. [d-cvem-83] *Keywords:* linear programming, convex hull.

4552 M. E. Dyer. Two-variable linear programs are solvable in linear time. Report ??, Dept. Math. Statist., Teesside Polytech., Middlesbrough, England, 1982. [d-tvlpa-82]

4553 M. E. Dyer and A. Frieze. On the complexity of computing volume. *SIAM J. Comput.*, 17:967–975, 1988. [df-ccv-88] *Keywords:* volume, convex, complexity theory.

4554 M. E. Dyer and A. Frieze. Planar 3DM is NP-complete. *J. Algorithms*, 7:174–184, 1986. [df-p3inc-86]

4555 M. E. Dyer, A. Frieze, and R. Kannan. A random polynomial time algorithm for approximating the volume of convex bodies. In *Proc. 21st Annu. ACM Sympos. Theory Comput.*, pages 375–381, 1989. [dfk-rptaa-89] *Keywords:* approximation, volume, convex. *Precedes:* dfk-rptaa-91.

4556 M. E. Dyer, A. Frieze, and R. Kannan. A random polynomial time algorithm for approximating the volume of convex bodies. *J. ACM*, 38:1–17, 1991. [dfk-rptaa-91] *Keywords:* approximation, volume, convex. *Succeeds:* dfk-rptaa-89.

4557 M. E. Dyer and A. M. Frieze. A partitioning algorithm for minimum weighted Euclidean matching. *Inform. Process. Lett.*, 18:59–62, 1984. [df-pamwe-84]

4558 M. E. Dyer and A. M. Frieze. A randomized algorithm for fixed-dimension linear programming. *Math. Program.*, 44(2):203–212, 1989. [df-rafdl-89] *Keywords:* linear programming, Las Vegas, d-dimensional.

4559 M. E. Dyer and A. M. Frieze. A randomized algorithm for fixed-dimensional linear programming. Manuscript, ??, 1987. [df-rafdl-87]

4560 M. E. Dyer and A. M. Frieze. A simple heuristic for the p-centre problem. *Oper. Res. Lett.*, 3:285–288, 1985. [df-shpcp-85] *Keywords:* facility location.

4561 M. E. Dyer, A. M. Frieze, and C. J. H. McDiarmid. Partitioning heuristics for two geometric maximization problems. *Oper. Res. Lett.*, 3:267–270, 1984. [dfm-phtgm-84] *Keywords:* heuristics.

4562 M. E. Dyer, P. Gritzmann, and A. Hufnagel. On the complexity of computing mixed volumes. Manuscript, ??, 1994. [dgh-ccmv-94]

4563 M. E. Dyer and L. G. Proll. An algorithm for determining all extreme points of a convex polytope. *Math. Program.*, 12:81–96, 1977. [dp-adaep-77]

M. E. Dyer. See also [2460, 10061].

4564 P. C. Dykstra and M. J. Muuss. The BRL-CAD package: An overview. In *Proc. BRL-CAD Symposium '89*, pages 1–9, 1989. [dm-bcpo-89]

4565 P. W. Dymon and S. A. Cook. Hardware complexity and parallel comuting. In *Proc. 21st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 360–372, 1980. [dc-hcpc-80]

P. Dymond. See also [3889].

4566 N. Dyn, D. Levin, and S. Rippa. Algorithms for the construction of data dependent triangulations. In J. C. Mason and M. G. Cox, editors, *Algorithms for Approximation II*, pages 185–192. Chapman and Hall, London, 1990. [dlr-acddt-90]

4567 Nira Dyn, David Levin, and Samuel Rippa. Data dependent triangulations for piecewise linear interpolation. *IMA Journal of Numerical Analysis*, 10:137–154, 1990. [dlr-ddtpl-90] *Annote:* Triangulation for fitting a surface over 3d data. Choose triangulation that depends on the 3d data rather than its projection to 2d. LOT based on minimizing the angle between adjacent triangles.

4568 P. Eades. A heuristic for graph drawing. *Congr. Numer.*, 42:149–160, 1984. [e-hgd-84] *Keywords:* graph drawing.

4569 P. Eades. Complexity issues in drawing directed graphs. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 9–15, Fukuoka, Japan, November 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [e-ciddg-89] *Keywords:* graph drawing.

4570 P. Eades. Symmetry finding algorithms. In G. T. Toussaint, editor, *Computational Morphology*, pages 41–51. North-Holland, Amsterdam, Netherlands, 1988. [e-sfa-88]

4571 Peter Eades, Robert F. Cohen, and Mao Lin Huang. Online animated graph drawing for web navigation. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 330–335. Springer-Verlag, 1997. [ech-oagdw-97] *Keywords:* graph drawing.

4572 Peter Eades and Qing-Wen Feng. Drawing clustered graphs on an orthogonal grid. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 146–157. Springer-Verlag, 1997. [ef-dcgog-97] *Keywords:* graph drawing.

4573 P. Eades, I. Fogg, and D. Kelly. SPREMB: a system for developing graph algorithms. *Congr. Numer.*, 66:123–140, 1988. [efk-ssdga-88] *Keywords:* graph drawing.

4574 P. Eades, L. Foulds, and J. Giffin. An efficient heuristic for identifying a maximal weight planar subgraph. In *Combinatorial Mathematics IX*, volume 952 of *Lecture Notes Comput. Sci.*, pages 239–251. Springer-Verlag, 1982. [efg-ehimw-82] *Keywords:* graph drawing.

4575 P. Eades and P. Garvan. Drawing stressed planar graphs in three dimensions. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1996. [eg-dspg-96] *Keywords:* graph drawing, 3D, convex, straight-line.

4576 Peter Eades, Michael E. Houle, and Richard Webber. Finding the best viewpoints for three-dimensional graph drawings. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 87–98. Springer-Verlag, 1997. [ehw-fbvtd-97] *Keywords:* graph drawing.

4577 P. Eades and D. Kelly. Heuristics for reducing crossings in 2-layered networks. *Ars Combin.*, 21.A:89–98, 1986. [ek-hrc2l-86] *Keywords:* graph drawing.

4578 P. Eades, W. Lai, K. Misue, and K. Sugiyama. Preserving the mental map of a diagram. In *Proceedings of Compugraphics 91*, pages 24–33, 1991. [elms-pmmd-91] *Keywords:* graph drawing.

4579 P. Eades and T. Lin. Algorithmic and declarative approaches to aesthetic layout. In *Graph Drawing '93 (Proc. ALCOM Workshop on Graph Drawing)*, September 1993. [el-adaal-93] *Keywords:* graph drawing.

4580 P. Eades, T. Lin, and X. Lin. Minimum size h-v drawings. In *Proc. Advanced Visual Interfaces*, volume 36 of *World Scientific Series in Computer Science*, pages 386–394, 1992. [ell-mshvd-92] *Keywords:* graph drawing.

4581 P. Eades, T. Lin, and X. Lin. Two tree drawing conventions. Technical Report 174, Department of Computer Science, University of Queensland, 1990. [ell-ttdc-90] *Keywords:* graph drawing. *Precedes:* ell-ttdc-93.

4582 P. Eades, T. Lin, and X. Lin. Two tree drawing conventions. *Internat. J. Comput. Geom. Appl.*, 3:133–153, 1993. [ell-ttdc-93] *Keywords:* layout, tree drawing, dynamic programming, classical convention, tip-over convention, NP-hardness. *Succeeds:* ell-ttdc-90.

4583 P. Eades and X. Lin. How to draw a directed graph. In *Proc. IEEE Workshop on Visual Languages*, pages 13–17, 1989. [el-hddg-89] *Keywords:* graph drawing.

4584 P. Eades and X. Lin. Notes on the layer assignment problem for drawing directed graphs. In *ACSC 14: Proceedings of the 14th Australian Computer Science Conference*, pages 26.1–26.10, 1991. [el-nlapd-91] *Keywords:* graph drawing.

4585 P. Eades, X. Lin, and B. D. McKay. Models for symmetric graph drawing. Manuscript, Univ. Queensland, 1990. [elm-msgd-90]

4586 P. Eades, X. Lin, and R. Tamassia. A new approach for drawing a hierarchical graph. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 143–146, 1990. [elt-nadhg-90] *Precedes:* elt-adhg-92, elt-adhg-96. *Cites:* bm-gta-76, dn-atphg-87, cpru-cdfs-87, el-hddg-89, elm-msgd-90, et-adgab-89, ew-ecdbg-, gnv-dptdd-88, gj-cninc-83, lrt-gnd-79, m-ed2lh-88, rdmmst-bdg-87, s-cagd-87, stt-mvuhs-81, t-eggmn-87, t-hdg-63, ZZZ.

4587 P. Eades, X. Lin, and R. Tamassia. An algorithm for drawing a hierarchical graph, 1992. [elt-adhg-92] *Keywords:* graph drawing. *Succeeds:* elt-nadhg-90. *Precedes:* elt-adhg-96.

4588 P. Eades, X. Lin, and R. Tamassia. An algorithm for drawing a hierarchical graph. *Internat. J. Comput. Geom. Appl.*, 6:145–156, 1996. [elt-adhg-96] *URL:* http://www.cs.brown.edu/cgc/papers/elt-adhg-96.ps.gz. *Succeeds:* elt-adhg-92.

4589 Peter Eades, Xuemin Lin, and Nicolas C. Wormald. Performance guarantees for motion planning with temporal uncertainty. Technical Report 173, Dept. of Computer Science, Univ. of Queensland, St. Lucia, Queensland, Australia, 1990. [elw-pgmpt-90] *Precedes:* elw-pgmpt-93.

4590 Peter Eades, Xuemin Lin, and Nicolas C. Wormald. Performance guarantees for motion planning with temporal uncertainty. *Australian Computer Journal*, 25(1):21–28, 1993. [elw-pgmpt-93] *Succeeds:* elw-pgmpt-90.

4591 P. Eades and J. Marks. Graph drawing contest report. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 143–146. Springer-Verlag, 1995. [em-gdcr-95] *Keywords:* graph drawing.

4592 Peter Eades, Joe Marks, and Stephen North. Graph-drawing contest report. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 438–445. Springer-Verlag, 1997. [emn-gdcr-97] *Keywords:* graph drawing.

4593 P. Eades, B. McKay, and N. Wormald. On an edge crossing problem. In *Proc. 9th Australian Computer Science Conference*, pages 327–334, 1986. [emw-ecp-86] *Keywords:* graph drawing.

4594 P. Eades and D. Rappaport. The complexity of computing minimum separating polygons. *Pattern Recogn. Lett.*, 14:715–718, 1993. [er-ccmsp-93]

4595 P. Eades, C. Stirk, and S. Whitesides. The techniques of Kolmogorov and Bardzin for three dimensional orthogonal graph drawings. *Inform. Process. Lett.*, 60:97–103, 1996. [esw-tkbtd-96] *Keywords:* graph drawing, orthogonal, 3D.

4596 P. Eades, C. Stirk, and S. Whitesides. The techniques of Komolgorov and Bardzin for three dimensional orthogonal graph drawings. Manuscript, Dept. of Computer Sci., Univ. of Newcastle, 1995. [esw-tkbtd-95] *Keywords:* graph drawing.

4597 P. Eades and K. Sugiyama. How to draw a directed graph. *J. Inform. Process.*, 13:424–437, 1991. [es-hddg-91] *Keywords:* graph drawing.

4598 P. Eades, A. Symvonis, and S. Whitesides. Two algorithms for three dimensional orthogonal graph drawing. In S. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 139–154. Springer-Verlag, 1997. [esw-tatdo-97] *Keywords:* graph drawing, 3D, orthogonal.

4599 P. Eades and R. Tamassia. Algorithms for automatic graph drawing: an annotated bibliography. Report 82, Department of Computer Science, University of Queensland, St. Lucia, Queensland, Australia, 1987. [et-aagda-87] *Keywords:* graph drawing. *Precedes:* et-adgab-89.

4600 P. Eades and R. Tamassia. Algorithms for drawing graphs: An annotated bibliography. Report CS-09-89, Department of Computer Science, Brown University, Providence, RI, February 1989. [et-adgab-89] *Keywords:* graph drawing, graph theory, computer graphics, bibliography. *Succeeds:* et-aagda-87. *Precedes:* dett-adgab-93. *Annote:* "lists about 180 papers, both theoretical and application oriented".

4601 P. Eades and S. Whitesides. Drawing graphs in two layers. *Theoret. Comput. Sci.*, 131(2):361–374, 1994. [ew-dgtl-94]

4602 P. Eades and S. Whitesides. The realization problem for Euclidean minimum spanning trees is NP-hard. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 49–56, 1994. [ew-rpems-94] *Keywords:* graph drawing, proximity, NP-hardness. *Cites:* bll-cpt-93, b-ndgta-88, ds-ltati-92, ds-smrdd-93, e-dft-92, gj-cigtn-79, i-dtg-90, mrh-dcaal-91, ms-tgmst-91, rt-tdt-81, s-rrddl-84, v-ucvc-81, ZZZ.

4603 P. Eades and S. Whitesides. The realization problem for Euclidean minimum spanning trees is NP-hard. *Algorithmica*, 16:60–82, 1996. (special issue on Graph Drawing, edited by G. Di Battista and R. Tamassia). [ew-rpems-96] *Keywords:* graph drawing, proximity, NP-hardness. *Succeeds:* ew-rpems-94.

4604 P. Eades and N. Wormald. Edge crossings in drawings of bipartite graphs. Technical Report 108, Department of Computer Science, University of Queensland. to appear in Algorithmica. [ew-ecdbg-] *Keywords:* graph drawing.

4605 P. Eades and N. Wormald. Fixed edge length graph drawing is NP-hard. *Discrete Appl. Math.*, 28:111–134, 1990. [ew-felgd-90] *Keywords:* graph drawing.

4606 P. Eades and N. Wormald. The median heuristic for drawing 2-layered networks. Technical Report 69, Department of Computer Science, University of Queensland, 1986. [ew-mhd2l-86] *Keywords:* graph drawing.

4607 P. Eades and N. C. Wormald. Edge crossings in drawings of bipartite graphs. *Algorithmica*, 11(4):379–403, 1994. [ew-ecdbg-94] *Keywords:* graph drawing, NP-complete, crossings, bipartite, layered. *Succeeds:* ew-ecdbg-.

P. Eades. See also [3426, 3427, 3628, 3711, 4118–4122, 7076, 7283, 7605, 8828, 8830, 9688, 13534].

4608 P. D. Eades. Drawing free trees. *Bulletin of the Institute for Combinatorics and its Applications*, 5:10–36, 1992. [e-dft-92] *Keywords:* graph drawing.

W. D. Eades. See also [805].

4609 R. A. Earnshaw, editor. *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATA ASI Series F*. Springer-Verlag, Berlin, West Germany, 1988. [e-tfcgc-88]

C. Eastman. See also [1214].

4610 C. M. Eastman. Optimal bucket size for nearest neighbor searching in k-d trees. *Inform. Process. Lett.*, 12:165–167, 1981. [e-obsnn-81]

4611 C. M. Eastman. Representations for space planing. *Commun. ACM*, 13:242–250, 1970. [e-rsp-70]

4612 C. M. Eastman and K. Weiler. Geometric modeling using the Euler operator. Research Report 78, Institute of Physical Planning, Carnegie Mellon Univ., Pittsburgh, PA, February 1979. [ew-gmueo-79]

4613 C. M. Eastman and C. I. Yessios. An efficient algorithm for finding the union, intersection, and differences of spatial domains. Technical report, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, September 1972. [ey-eafui-72]

4614 C. M. Eastman and M. Zemankova. Partially specified nearest neighbor searches using k-d trees. *Inform. Process. Lett.*, 15:53–56, 1982. [ez-psnns-82]

4615 H. Ebara, N. Fukuyama, H. Nakano, and Y. Nakanishi. Roundness algorithms using the Voronoi diagrams. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 41, 1989. [efnn-rauvd-89]

4616 H. Ebara, H. Nakano, and Y. Nakanishi. A polynomial-time algorithm to find the roundness. Report ??, Dept. Commun. Engrg., Osaka Univ., 1985. [enn-ptafr-85]

4617 J. Eckhoff. An upper bound theorem for families of convex sets. *Geom. Dedicata*, 19:217–227, 1985. [e-ubtfc-85]

4618 J. Eckhoff. Helly, Radon and Carathéodory type theorems. In *Handbook of Convex Geometry*, pages 389–448. North-Holland, 1993. [e-hrctt-93]

4619 J. Eckhoff. Radon's theorem. In J. Tölke and J. M. Wills, editors, *Contributions to Geometry*, pages 164–185. Birkhäuser, 1979. [e-rt-79]

4620 Ilya Eckstein, Vitaly Surazhsky, and Craig Gotsman. Compatible geometries by convex representations with applications to computer graphics. In *Abstracts 16th European Workshop Comput. Geom.*, pages 45–46. Ben-Gurion University of the Negev, 2000. [esg-cgcra-00]

4621 J. Eckstein. Heuristische Bewegungsplanungsstrategien im IR^3. M.Sc. thesis, Dept. Comput. Sci., University Saarland, Saarbrücken, Germany, 1994. [e-hbr-94] *URL:* http://hamster.cs.uni-sb.de/~eckstein/publications/Diplom-Eckstein.ps.%Z. *Keywords:* master thesis, motion planning, collision detection, heuristic.

4622 J. Eckstein, G. Hotz, and E. Schömer. Heuristische Bewegungsplanungsstrategien im IR^3. Report 95-05, Dept. Comput. Sci., University Saarland, Saarbrücken, Germany, 1995. [ehs-hbr-95] *URL:* http://hamster.cs.uni-sb.de/~eckstein/publications/FB14-95-05.ps.Z. *Keywords:* motion planning, collision detection, heuristic.

J. Eckstein. See also [2772, 2773].

4623 A. B. Ecoule, F. C. Peyrin, and C. L. Odet. A triangulation algorithm for arbitrary shaped multiple planar contours. *ACM Trans. Graph.*, 10(2):182–199, 1991. [epo-taasm-91] *Keywords:* polygons, triangulation, contours, surfaces.

4624 J. E. Castillo (ed). *Mathematical Aspects of Numerical Grid Generation*. Soc. for Industrial and Applied Math., Philadelphia, 1991. [c-mangg-91]

4625 M. Edahiro. A new bucketing technique for automatic/interactive layout design. In Carlo Sequin, editor, *Proc. Conf. VLSI '87*, pages 391–401, 1988. [e-nbtai-88] *Keywords:* bucketing, isothetic, VLSI design.

4626 M. Edahiro, M. Iri, and Ta. Asano. An algorithm for the range-search problem and its practical efficiency. Manuscript, ??, ?? [eia-arspi-??]

4627 M. Edahiro, I. Kokubo, and T. Asano. A new point-location algorithm and its practical efficiency — Comparison with existing algorithms. *ACM Trans. Graph.*, 3(2):86–109, 1984. [eka-nplai-84] *Keywords:* point location, bucketing, implementing algorithms.

4628 M. Edahiro, K. Tanaka, R. Hoshino, and Ta. Asano. A bucketing algorithm for the orthogonal segment intersection search problem and its practical efficiency. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 258–267, 1987. [etha-baosi-87] *Precedes:* etha-baosi-89. *Cites:* aeiim-pubtc-85, c-fsnaq-86, egs-oplms-86, m-pst-85, vw-rlsil-82, ZZZ.

4629 M. Edahiro, K. Tanaka, R. Hoshino, and Ta. Asano. A bucketing algorithm for the orthogonal segment intersection search problem and its practical efficiency. *Algorithmica*, 4:61–76, 1989. [etha-baosi-89] *Succeeds:* etha-baosi-87.

M. Edahiro. See also [944].

W. Eddy. See also [4524].

4630 W. F. Eddy. A new convex hull algorithm for planar sets. *ACM Trans. Math. Softw.*, 3:398–403 and 411–412, 1977. [e-nchap-77] *Keywords:* design of algorithms, convex hull, two-dimensional, expected-case analysis. *Annote:* $O(n)$ time.

4631 W. F. Eddy. Algorithm 523 CONVEX: A new convex hull algorithm for planar sets. *Collected Algorithms from ACM*, ??:523p1–523p6, 1977. [e-a523c-77] *Keywords:* convex hull, points.

4632 W. F. Eddy. Convex hull peeling. In *Proc. Sympos. on Computational Statistics, Part 1*, pages 42–47, 1982. [e-chp-82] *Keywords:* convex hull, pointset, peeling.

4633 W. F. Eddy. Discrete methods for statistical computation. In *Proc. Statist. Comput. Sec., Amer. Statist. Assoc.*, pages 27–31, 1980. [e-dmsc-80]

4634 W. F. Eddy. Distribution of the convex hull of a Gaussian sample. *J. Appl. Probab.*, 17(3):686–695, 1980. [e-dchgs-80] *Keywords:* convex hull, probabilistic geometry.

4635 P. Edelman and C. Greene. Balanced tableaux. *Adv. Math.*, 63:42–99, 1987. [eg-bt-87]

4636 P. Edelman and C. Greene. Combinatorial correspondences for young tableaux, balanced tableaux, and maximal chains in the Bruhat order of s_n. *Proc. Amer. Math. Soc.*, 34, 1984. Combinatorics and Algebra, Contemporary Math. [eg-ccytb-84]

P. H. Edelman. See also [2055].

4637 E. Edelsbrunner. *Geometry and Topology for Mesh Generation*. Cambridge, 2001. [e-gtmg-01]

4638 H. Edelsbrunner. A new approach to rectangle intersections, Part I. *Internat. J. Comput. Math.*, 13:209–219, 1983. [e-narip1-83] *Keywords:* data structuring, searching, reporting, dynamizing data structures, interval trees, worst-case analysis, intervals, one-dimensional.

4639 H. Edelsbrunner. A new approach to rectangle intersections, Part II. *Internat. J. Comput. Math.*, 13:221–229, 1983. [e-narip2-83] *Keywords:* design of algorithms, reporting, intersection, plane-sweep, repeated search, interval trees, intervals, rectangles, two-dimensional.

4640 H. Edelsbrunner. A note on dynamic range searching. *Bull. EATCS*, 15:34–40, 1981. [e-ndrs-81] *Keywords:* data structuring, searching, reporting, range search, range trees, priority search trees, points, hyperrectangles, d-dimensional.

4641 H. Edelsbrunner. Algebraic decomposition of non-convex polyhedra. Technical Report UIUCDCS-R-95-1928, University of Illinois at Urbana-Champaign, August 1995. [e-adncp-95]

4642 Herbert Edelsbrunner. Algebraic decomposition of non-convex polyhedra. In *Proc. 36th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 248–257, 1995. [e-adnp-95]

4643 H. Edelsbrunner. *Algorithms in Combinatorial Geometry*, volume 10 of *EATCS Monographs on Theoretical Computer Science*. Springer-Verlag, Heidelberg, West Germany, 1987. [e-acg-87] *Keywords:* design of algorithms, discrete geometry, book.

4644 H. Edelsbrunner. An acyclicity theorem for cell complexes in d dimensions. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 145–151, 1989. [e-atccd-89] *Precedes:* e-atccd-90. *Cites:* a-pdpaa-87, c-hsh-85, d-slsv-34, e-acg-87, eks-sspp-83, dfpn-stdt-88, fd-ficg-82, fkn-vsgpt-80, v-nadpc-07, ZZZ.

4645 H. Edelsbrunner. An acyclicity theorem for cell complexes in d dimensions. *Combinatorica*, 10(3):251–260, 1990. [e-atccd-90] *Succeeds:* e-atccd-89.

4646 H. Edelsbrunner. *Arrangements and geometric computations*. ??, ?? Forthcoming book. [e-agc-]

4647 H. Edelsbrunner. Computing the extreme distances between two convex polygons. *J. Algorithms*, 6:213–224, 1985. [e-cedbt-85] *Keywords:* design of algorithms, binary search, lower bounds, distance, polygons, convex, two-dimensional.

4648 H. Edelsbrunner. Constructing edge-skeletons in three dimensions with applications to power diagrams and dissecting three-dimensional point-sets. Technical Report F140, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1984. [e-cestd-84]

4649 H. Edelsbrunner. Deformable smooth surface design. *Discrete Comput. Geom.*, 19:to appear, 1998. [e-dssd-98]

4650 H. Edelsbrunner. Dynamic data structures for orthogonal intersection queries. Report F59, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1980. [e-ddsoi-80] *Keywords:* data structuring, searching, intersection, dynamizing data structures, range trees, segment trees, interval trees, hyperrectangles, d-dimensional.

4651 H. Edelsbrunner. Edge-skeletons in arrangements with applications. *Algorithmica*, 1:93–109, 1986. [e-esaa-86] *Keywords:* design of algorithms, implementing algorithms, combinatorial geometry, construction, repeated search, graph traversal, geometric transformations, planes, three-dimensional.

4652 H. Edelsbrunner. Finding transversals for sets of simple geometric figures. *Theoret. Comput. Sci.*, 35:55–69, 1985. [e-ftssg-85] *Keywords:* design of algorithms, combinatorial geometry, detection, intersection, convex hull, linear programming, geometric transformations, translates, homothets.

4653 H. Edelsbrunner. Geometric algorithms. In Peter M. Gruber and J. M. Wills, editors, *Handbook of Convex Geometry*, volume A, chapter 2.9, pages 699–735. North-Holland, Amsterdam, Netherlands, 1993. [e-ga-93] *Keywords:* survey paper.

4654 H. Edelsbrunner. Geometric structures in computational geometry. In *Proc. 15th Internat. Colloq. Automata Lang. Program.*, volume 317 of *Lecture Notes Comput. Sci.*, pages 201–213. Springer-Verlag, 1988. [e-gscg-88] *Keywords:* arrangements.

4655 H. Edelsbrunner. Geometrics and algorithmics: a tutorial in computational geometry. *Bull. EATCS*, 32:118–142, 1987. [e-gatcg-87] *Keywords:* convex hull, range search, tutorial.

4656 H. Edelsbrunner. Geometry of modeling biomolecules. In P. K. Agarwal, L. E. Kavraki, and M. Mason, editors, *Proc. Workshop Algorithmic Found. Robot.* A. K. Peters, Wellesley, MA, 1998. to appear. [e-gmb-98]

4657 H. Edelsbrunner. *Intersection problems in computational geometry*. Ph.D. thesis, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1982. Report F93. [e-ipcg-82] *Keywords:* doctoral thesis.

4658 H. Edelsbrunner. Key-problems and key-methods in computational geometry. In *Proc. 1st Sympos. Theoret. Aspects Comput. Sci.*, volume 166 of *Lecture Notes Comput. Sci.*, pages 1–13. Springer-Verlag, 1984. [e-kpkmc-84] *Keywords:* survey paper.

4659 H. Edelsbrunner. Lines in space: a collection of results. In *??*, volume 6 of *DIMACS Series Discrete. Math. Theoret. Computer Sci.*, pages 77–93. 1991. [e-lscr-91] *Keywords:* 3-dimensional, lines, arrangement, survey, weaving, incidence, intersection, envelope, terrain.

4660 H. Edelsbrunner. Minimum diameter partitioning of a planar point set in quadratic time. Report UIUCDCS-R-87-1378, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1987. [e-mdppp-87] *Keywords:* partition, stabbing, optimization, diameter, divide-and-conquer, worst-case analysis.

4661 H. Edelsbrunner. Modeling with simplicial complexes: Topology, geometry, and algorithms. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 36–44, 1994. [e-msctg-94] *Keywords:* solid modeling, combinatorial topology, grid generation, simplicial complexes, nerves, Voronoi cells, Delaunay simplicial complexes. *Cites:* as-dsdem-92, e-ubids-93, ef-msfdv-94, em-sstcd-90, es-tts-94, fku-osrpc-77, gghkk-vcem-89, g-gsh-81, lr-ipses-71, l-slfde-45, m-eat-84, pbcf-dimsc-93, r-avpps-77, ss-codmf-90, v-nadpc-07, y-stgd-90, c-mangg-91, d-slsv-34, ZZZ.

4662 H. Edelsbrunner. Neue Entwicklungen im Bereich Datenstrukturen. In H. A. Maurer, editor, *Überblicke Informationsverarbeitung*, pages 55–109. BI Wissenschaftsverlag, 1983. [e-neibd-83] *Keywords:* survey paper.

4663 H. Edelsbrunner. On computing the extreme distance between two convex polygons. Technical Report F96, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1982. [e-cedbt-82]

4664 H. Edelsbrunner. Optimizing the dynamization of decomposable searching problems. Report F35, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1978. [e-oddsp-78] *Keywords:* data structuring, searching, dynamizing data structures.

4665 H. Edelsbrunner. P103-P110: Problems in computational geometry and combinatorial geometry. *Bull. EATCS*, 26:239, 1985. [e-pppcg-85] *Keywords:* problem collection.

4666 H. Edelsbrunner. Problem 3 − 3. In *The 1986/87 Computational Geometry Days at Courant-Problems and Solutions*, 1987. [e-p33-87]

4667 H. Edelsbrunner. Problem P36. *Bull. EATCS*, 21:195, October 1983. [e-pp-83]

4668 H. Edelsbrunner. Reporting intersections of geometric objects by means of covering rectangles. *Bull. EATCS*, 13:7–11, 1981. [e-rigom-81] *Keywords:* combinatorial geometry, reporting, intersection, plane-sweep, space-sweep, trees, worst-case analysis, hyperrectangles.

4669 Herbert Edelsbrunner. Shape reconstruction with the Delaunay complex. In *LATIN'98: Theoretical Informatics*, volume 1380 of *Lecture Notes Comput. Sci.*, pages 119–132, 1998. [e-srdc-98]

4670 H. Edelsbrunner. Smooth surfaces for multi-scale shape representation. In *Proc. 15th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1026 of *Lecture Notes Comput. Sci.*, pages 391–412. Springer-Verlag, 1995. [e-ssmss-95]

4671 Herbert Edelsbrunner. Smooth surfaces for multi-scale shape representation. In *Abstracts 12th European Workshop Comput. Geom.*, page 25. Universität Münster, 1996. [e-ssmss-96] *Cites:* ZZZ.

4672 H. Edelsbrunner. Spatial triangulations with dihedral angle conditions. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 83–89, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [e-stdac-89] *Keywords:* mesh generation, Delaunay triangulation, non-obtuse dihedral angles, KJ-triangulations.

4673 H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 31:111–114, 1987. [e-cgc1-87] *Keywords:* column, bibliography. *Annote:* Announcement of community bibliography.

4674 H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 33:23–24, 1987. [e-cgc2-87] *Keywords:* column. *Annote:* Geometry conferences, journals, and books.

4675 H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 34:32–39, 1988. [e-cgc3-88] *Keywords:* column, complexity classes. *Annote:* "The disease of the *log*-factor.".

4676 H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 35:66–68, 1988. [e-cgc4-88] *Keywords:* column. *Annote:* Preview of 4th Annu. ACM Sympos.; robustness and randomization.

4677 H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 37:109–116, 1989. [e-cgc5-89] *Keywords:* column, tutorial. *Annote:* Geometric algorithms for the classroom.

4678 H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 38:74–78, 1989. [e-cgc6-89] *Keywords:* column. *Annote:* Orphan results: non-obtuse triangulations and stabbing planar triangles.

4679 H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 40:164–167, 1990. [e-cgc7-90] *Keywords:* column. *Annote:* Computational geometry research in Japan.

4680 H. Edelsbrunner. The computational geometry column. *Bull. EATCS*, 42:132–134, 1990. [e-cgc8-90] *Keywords:* column. *Annote:* Reviews of 6th Annu. ACM Sympos. and 2nd Canad. Conf.

4681 H. Edelsbrunner. The union of balls and its dual shape. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 218–231, 1993. [e-ubids-93] *Cites:* ah-tl-35, a-iadbu-88, abi-cvus-88, bm-sdcs-71, c-amsc-83, clr-ia-90, d-slsv-34, de-iabns-93, d-udrdp-50, dc-cchtt-91, e-acg-87, e-was-92, efm-ias-93, eks-sspp-83, em-sstcd-90, em-tdas-92, es-itfwr-92, f-nmc-71, g-cp-67, h-uzztu-53, kb-ptacs-79, m-htcsc-67, m-eat-84, nw-iebii-92, r-avpps-77, v-nadpc-07, w-sltdd-52, w-tl-62, ZZZ.

4682 H. Edelsbrunner. The union of balls and its dual shape. *Discrete Comput. Geom.*, 13:415–440, 1995. [e-ubids-95]

4683 H. Edelsbrunner. The upper envelope of piecewise linear functions: Tight complexity bounds in higher dimensions. *Discrete Comput. Geom.*, 4:337–343, 1989. [e-ueplf-89] *Keywords:* upper/lower envelope, arrangement of simplices.

4684 H. Edelsbrunner. Triangulations. Technical Report CS497, UIUC, 1991. [e-t-91]

4685 H. Edelsbrunner. Weighted alpha shapes. Technical Report UIUCDCS-R-92-1760, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1992. [e-was-92]

4686 H. Edelsbrunner, M. Facello, P. Fu, and J. Liang. Measuring proteins and voids in proteins. In *Proc. 28th Ann. Hawaii Internat. Conf. System Sciences*, volume V of *Biotechnology Computing*, pages 256–264, 1995. [effl-mpvp-95]

4687 H. Edelsbrunner, M. Facello, and J. Liang. On the definition and the construction of pockets in macromolecules. Tech. Report IULU-ENG-95-1736, Department of Computer Science, University of Illinois at Urbana-Champaign, 1995. [efl-dcpm-95]

4688 H. Edelsbrunner, M. Facello, and J. Liang. On the definition and the construction of pockets in macromolecules. *Discrete Appl. Math.*, 88:83–102, 1998. [efl-dcpm-98]

4689 H. Edelsbrunner and P. Fu. Measuring space filling diagrams and voids. Report UIUC-BI-MB-94-01, Beckman Institute, Univ. Illinois, Urbana, 1994. [ef-msfdv-94]

4690 H. Edelsbrunner, P. Fu, and E. P. Mücke. An introduction to alpha shapes, 1993. In preparation. [efm-ias-93]

4691 H. Edelsbrunner and Leonidas J. Guibas. Topologically sweeping an arrangement. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 389–403, 1986. [eg-tsa-86] *Keywords:* design of algorithms, combinatorial geometry, plane-sweep, dynamic programming, amortized analysis, arrangements, two-dimensional, *d*-dimensional. *Precedes:* eg-tsa-89.

4692 H. Edelsbrunner and Leonidas J. Guibas. Topologically sweeping an arrangement. *J. Comput. Syst. Sci.*, 38:165–194, 1989. Corrigendum in 42 (1991), 249–251. [eg-tsa-89] *Keywords:* design of algorithms, combinatorial geometry, plane-sweep, dynamic programming, amortized analysis, arrangements, two-dimensional, *d*-dimensional. *Succeeds:* eg-tsa-86.

4693 H. Edelsbrunner, Leonidas J. Guibas, J. Hershberger, J. Pach, R. Pollack, R. Seidel, Micha Sharir, and J. Snoeyink. Arrangements of Jordan arcs with three intersections per pair. *Discrete Comput. Geom.*, 4:523–539, 1989. [eghppsss-ajati-89] *Succeeds:* eghppsss-ajati-88.

4694 H. Edelsbrunner, Leonidas J. Guibas, J. Hershberger, J. Pach, R. Pollack, R. Seidel, Micha Sharir, and J. Snoeyink. On arrangements of Jordan arcs with three intersections per pair. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 258–265, 1988. [eghppsss-ajati-88] *Precedes:* eghppsss-ajati-89. *Cites:* a-dcg-83, e-acg-87, gss-gmppt-88, hs-ndssg-86, klps-ujrcf-86, m-ati-77, pss-stsps-86, s-alubl-87, s-at-66, s-irs-81, ws-prnds-88, ZZZ.

4695 H. Edelsbrunner, Leonidas J. Guibas, J. Hershberger, R. Seidel, Micha Sharir, J. Snoeyink, and Emo Welzl. Implicitly representing arrangements of lines or segments. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 56–69, 1988. [eghsssw-irals-88] *Precedes:* eghsssw-irals-89. *Cites:* as-tsbac-87, bo-arcgi-79, b-gtfga-80, ce-falsi-87, cg-vippg-85, cg-fc2a-86, cgl-pgd-85, c-narsc-87, e-acg-87, egppss-acptc-88, egs-oplms-86, egs-cmfal-88, eos-calha-86, ew-hrsls-86, gh-ospqs-87, ghs-btdsc-88, gos-ilsrs-88, hw-ensrq-87, k-osps-83, klps-ujrcf-86, k-ss-73, ol-mcp-81, ps-cgi-85, sh-gip-76, st-pplup-86, w-pttco-88, w-pr-82, ZZZ.

4696 H. Edelsbrunner, Leonidas J. Guibas, J. Hershberger, R. Seidel, Micha Sharir, J. Snoeyink, and Emo Welzl. Implicitly representing arrangements of lines or segments. *Discrete Comput. Geom.*, 4:433–466, 1989. [eghsssw-irals-89] *Succeeds:* eghsssw-irals-88. *Annote:* the bridge tree data structure used in this paper is replaced by an improved data structure of ghs-citds-91.

4697 H. Edelsbrunner, Leonidas J. Guibas, J. Pach, R. Pollack, R. Seidel, and Micha Sharir. Arrangements of curves in the plane: Topology, combinatorics, and algorithms. In *Proc. 15th Internat. Colloq. Automata Lang. Program.*, volume 317 of *Lecture Notes Comput. Sci.*, pages 214–229. Springer-Verlag, 1988. [egppss-acptc-88] *Keywords:* combinatorial geometry, construction, incrementation, arrangements, curves, two-dimensional. *Precedes:* egppss-acptc-92.

4698 H. Edelsbrunner, Leonidas J. Guibas, J. Pach, R. Pollack, R. Seidel, and Micha Sharir. Arrangements of curves in the plane: Topology, combinatorics, and algorithms. *Theoret. Comput. Sci.*, 92:319–336, 1992. [egppss-acptc-92] *Keywords:* combinatorial geometry, construction, incrementation, arrangements, curves, two-dimensional. *Succeeds:* egppss-acptc-88.

4699 H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. The complexity and construction of many faces in arrangements of lines and of segments. *Discrete Comput. Geom.*, 5:161–196, 1990. [egs-ccmfa-90] *Succeeds:* egs-cmfal-88.

4700 H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. The complexity of many cells in arrangements of planes and related problems. In *Proc. Int. Conf. Mathematical Prog.*, page 147, 1988. [egs-cmcap-88]

4701 H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. The complexity of many cells in arrangements of planes and related problems. *Discrete Comput. Geom.*, 5:197–216, 1990. [egs-cmcap-90] *Keywords:* arrangements, complexity of faces, divide-and-conquer.

4702 H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. The complexity of many faces in arrangements of lines and of segments. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 44–55, 1988. [egs-cmfal-88] *Precedes:* egs-ccmfa-90. *Cites:* c-talp-69, cd-icott-87, c-narsc-87, cegsw-ccbac-88t, csy-khrp-87, e-acg-87, egs-cmcap-88, es-mnwsn-90, ew-mnemf-86, ew-hrsls-86, g-cp-67, gos-rsipl-89, gss-gmppt-88, hs-ndssg-86, hw-ensrq-87, o-spc-86, pss-stsps-88, ps-cgi-85, sml-rtatp-88, st-epdg-83, ws-prnds-88, ZZZ.

4703 H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. The upper envelope of piecewise linear functions: Algorithms and applications. Technical Report UIUCDCDS-R-87-1390, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, November 1987. [egs-ueplf-87]

4704 H. Edelsbrunner, Leonidas J. Guibas, and Micha Sharir. The upper envelope of piecewise linear functions: algorithms and applications. *Discrete Comput. Geom.*, 4:311–336, 1989. [egs-ueplf-89] *Keywords:* upper/lower envelope, arrangement of simplices.

4705 H. Edelsbrunner, Leonidas J. Guibas, and J. Stolfi. Optimal point location in a monotone subdivision. *SIAM J. Comput.*, 15(2):317–340, 1986. [egs-oplms-86] *Keywords:* data structuring, searching, point location, binary search, directed acyclic graphs, subdivisions, two-dimensional.

4706 H. Edelsbrunner, Leonidas J. Guibas, and J. Stolfi. Optimal point location in monotone subdivisions. Technical Report 2, DEC/SRC, 1984. [egs-oplms-84]

4707 H. Edelsbrunner and P. Hajnal. A lower bound on the number of unit distances between the vertices of a convex polygon. Report UIUCDCS-R-88-1412, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1988. [eh-lbnud-88]

4708 H. Edelsbrunner and P. Hajnal. A lower bound on the number of unit distances between the vertices of a convex polygon. *J. Combin. Theory Ser. A*, 56:312–316, 1991. [eh-lbnud-91]

4709 Herbert Edelsbrunner, John Harer, and Alfra Zomorodian. Hierarchical Morse complexes for piecewise linear 2-manifolds. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 70–79, 2001. [ehz-hmcpl-01]

4710 H. Edelsbrunner, G. Haring, and D. Hilbert. Rectangular point location in d dimensions with applications. *Comput. J.*, 29:76–82, 1986. [ehh-rpldd-86] *Keywords:* data structuring, searching, point location, interval trees, hyperrectangles, d-dimensional.

4711 H. Edelsbrunner, N. Hasan, and X. J. Shen. Circles through two points that always enclose many points. Report UIUCDCS-R-88-1400, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1988. [ehs-cttpt-88]

4712 H. Edelsbrunner and D. Haussler. The complexity of cells in three-dimensional arrangements. *Discrete Math.*, 60:139–146, 1986. [eh-cctda-86] *Keywords:* combinatorial geometry, 3-dimensional, lines, arrangement.

4713 H. Edelsbrunner and F. Huber. Dissecting sets of points in two and three dimensions. Report F138, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1984. [eh-dsptt-84] *Keywords:* data structuring, discrete geometry, range search, trees, partition, cell complexes, two-dimensional, three-dimensional.

4714 H. Edelsbrunner and J. W. Jaromczyk. How often can you see yourself in a convex configuration of mirrors? Report UIUCDCS-R-86-1256, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1986. [ej-hocys-86]

4715 H. Edelsbrunner, J. W. Jaromczyk, J. W. Penny, and G. Świątek. Primal canoes: optimal arrangements of segments. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 224–227, August 1991. [ejps-pcoas-91] *Cites:* e-acg-87, ejs-ccidw-89, elss-dgpps-73, emprww-sls-82, es-mnwsn-90, ew-nlsfs-85, js-rfccg-91, klz-gpcs-85, pss-ubnpk-89, ZZZ.

4716 H. Edelsbrunner, J. W. Jaromczyk, and G. Świątek. The complexity of the common intersection of n double wedges, 1989. [ejs-ccidw-89]

4717 H. Edelsbrunner, D. G. Kirkpatrick, and H. A. Maurer. Polygonal intersection searching. *Inform. Process. Lett.*, 14:74–79, 1982. [ekm-pis-82] *Keywords:* data structuring, reporting, intersection, range search, geometric transformations, points, line segments, polygons.

4718 H. Edelsbrunner, D. G. Kirkpatrick, and R. Seidel. On the shape of a set of points in the plane. *IEEE Trans. Inform. Theory*, IT-29:551–559, 1983. [eks-sspp-83] *Keywords:* design of algorithms, discrete geometry, construction, interval trees, subdivisions, Voronoi diagrams, shape, disks.

4719 H. Edelsbrunner and J. van Leeuwen. Multidimensional data structures and algorithms: a bibliography. Report F104, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1983. [el-mdsab-83] *Keywords:* bibliography.

4720 H. Edelsbrunner, J. van Leeuwen, T. Ottmann, and D. Wood. Computing the connected components of simple rectilinear geometrical objects in d-space. *RAIRO Inform. Theor.*, 18:171–183, 1984. [elow-cccsr-84] *Keywords:* design of algorithms, construction, plane-sweep, priority search trees, worst-case analysis, rectangles, hyperrectangles, connected, two-dimensional, d-dimensional.

4721 Herbert Edelsbrunner, D. Letscher, and Alfra Zomorodian. Topological persistence and simplification. In *Proc. 41st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 454–463, 2000. [elz-tps-00]

4722 H. Edelsbrunner and H. A. Maurer. A space-optimal solution of general region location. *Theoret. Comput. Sci.*, 16:329–336, 1981. [em-sosgr-81] *Keywords:* data structuring, searching, point location, interval trees.

4723 H. Edelsbrunner and H. A. Maurer. Finding extreme points in three dimensions and solving the post-office problem in the plane. *Inform. Process. Lett.*, 21:39–47, 1985. [em-feptd-85] *Keywords:* data structuring, searching, point location, convex hull, geometric transformations, directed acyclic graphs, polytopes, convex, three-dimensional.

4724 H. Edelsbrunner and H. A. Maurer. On the intersection of orthogonal objects. *Inform. Process. Lett.*, 13:177–181, 1981. [em-ioo-81] *Keywords:* data structuring, searching, intersection, range trees, segment trees, interval trees, hyperrectangles, d-dimensional.

4725 H. Edelsbrunner, H. A. Maurer, F. P. Preparata, A. L. Rosenberg, Emo Welzl, and D. Wood. Stabbing line segments. *BIT*, 22:274–281, 1982. [emprww-sls-82] *Keywords:* design of algorithms, combinatorial geometry, construction, intersection, plane-sweep, divide-and-conquer, geometric transformations, line segments, two-dimensional, worst-case analysis.

4726 H. Edelsbrunner and E. P. Mücke. Simulation of simplicity: a technique to cope with degenerate cases in geometric algorithms. Technical Report UIUCDCD-R-87-1393, Dept. Comput. Sci., Univ. Illinois, Urbana-Champaign, IL, December 1987. [em-sstcd-87]

4727 H. Edelsbrunner and E. P. Mücke. Simulation of simplicity: a technique to cope with degenerate cases in geometric algorithms. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 118–133, 1988. [em-sstcd-88] *Precedes:* em-sstcd-90. *Cites:* ahu-daca-74, ai-grvd-86, c-odlp-52, c-lp-83, ck-flcs-80, d-lpe-63, dow-gsmml-55, e-esaa-86, e-acg-87, eg-tsa-86, ew-chsct-86, f-cgpractice-85, gp-ms-83, gs-pmgsc-85, gl-mc-83, k-sa-69, m-emzed-85, ph-chfsp-77, ps-cgi-85, s-chaop-81, s-scpvd-82, s-chdch-86, y-stgd-87, y-gctsp-88, ZZZ.

4728 H. Edelsbrunner and E. P. Mücke. Simulation of simplicity: A technique to cope with degenerate cases in geometric algorithms. *ACM Trans. Graph.*, 9(1):66–104, 1990. [em-sstcd-90] *Succeeds:* em-sstcd-88.

4729 H. Edelsbrunner and E. P. Mücke. Three-dimensional alpha shapes. Manuscript UIUCDCS-R-92-1734, Dept. Comput. Sci., Univ. Illinois, Urbana-Champaign, IL, 1992. [em-tdas-92]

4730 H. Edelsbrunner and E. P. Mücke. Three-dimensional alpha shapes. *ACM Trans. Graph.*, 13(1):43–72, January 1994. [em-tdas-94] *URL:* ftp://cs.uiuc.edu/pub/edels/geometry/shapes-94.tar.Z. *Comments:* Software in ftp://cs.uiuc.edu/pub/edels/geometry/alpha-2.1a.tar.Z.

4731 H. Edelsbrunner, J. O'Rourke, and R. Seidel. Constructing arrangements of lines and hyperplanes with applications. Report F123, Inst. Informationsverarb., Univ. Graz, Graz, Austria, 1983. [eos-calha-83t]

4732 H. Edelsbrunner, J. O'Rourke, and R. Seidel. Constructing arrangements of lines and hyperplanes with applications. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 83–91, 1983. [eos-calha-83] *Precedes:* eos-calha-86.

4733 H. Edelsbrunner, J. O'Rourke, and R. Seidel. Constructing arrangements of lines and hyperplanes with applications. *SIAM J. Comput.*, 15:341–363, 1986. [eos-calha-86] *Keywords:* design of algorithms, combinatorial geometry, construction, incrementation, geometric transformations, incidence graph, arrangements, d-dimensional. *Comments:* buggy proof fixed in [4752]. *Succeeds:* eos-calha-83.

4734 H. Edelsbrunner, J. O'Rourke, and Emo Welzl. Stationing guards in rectilinear art galleries. *Comput. Vision Graph. Image Process.*, 27:167–176, 1984. [eow-sgrag-84] *Keywords:* design of algorithms, construction, decomposition, visibility, subdivisions, polygons, c-oriented, two-dimensional.

4735 H. Edelsbrunner and M. H. Overmars. Batched dynamic solutions to decomposable searching problems. *J. Algorithms*, 6:515–542, 1985. [eo-bdsds-85] *Keywords:* design of algorithms, construction, reporting, divide-and-conquer, range trees, segment trees, d-dimensional.

4736 H. Edelsbrunner and M. H. Overmars. On the equivalence of some rectangle problems. *Inform. Process. Lett.*, 14:124–127, 1982. [eo-esrp-82] *Keywords:* reporting, counting, range search, geometric transformations, lower bounds, intervals, one-dimensional, two-dimensional.

4737 H. Edelsbrunner and M. H. Overmars. Zooming by repeated range detection. *Inform. Process. Lett.*, 24:413–417, 1987. [eo-zrrd-87] *Keywords:* data structuring, computer graphics, reporting, range search, repeated search, trees, line segments, rectangles, two-dimensional.

4738 H. Edelsbrunner, M. H. Overmars, and R. Seidel. Some methods of computational geometry applied to computer graphics. report F-117, Technical University of Graz, June 1983. [eos-smcga-84t] *Precedes:* eos-smcga-84a.

4739 H. Edelsbrunner, M. H. Overmars, and R. Seidel. Some methods of computational geometry applied to computer graphics. *Comput. Vision Graph. Image Process.*, 28:92–108, 1984. [eos-smcga-84a] *Keywords:* data structuring, computer graphics, construction, searching, point location, range search, trees, subdivisions, two-dimensional. *Succeeds:* eos-smcga-84t.

4740 H. Edelsbrunner, M. H. Overmars, Emo Welzl, Ben-Arroyo, I. Hartman, and J. A. Feldman. Ranking intervals under visibility constraints. *Internat. J. Comput. Math.*, 34(3–4):129–144, 1990. [eowbhf-rivc-90]

4741 Herbert Edelsbrunner, Mark H. Overmars, and Derick Wood. Graphics in Flatland: A case study. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 35–59. JAI Press, Greenwich, Conn., 1983. [eow-gfcs-83] *Keywords:* design of algorithms, computer graphics, visibility, plane-sweep, trees, two-dimensional.

4742 H. Edelsbrunner, J. Pach, J. T. Schwartz, and Micha Sharir. On the lower envelope of bivariate functions and its applications. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 27–37, 1987. [epss-lebfi-87] *Keywords:* discrete geometry, Davenport-Schinzel sequences, polyhedra, convex, arrangements, divide-and-conquer, hidden line/surface elimination, Voronoi diagrams, stabbing. *Comments:* In three journal papers: [10541], [4683], [4704].

4743 H. Edelsbrunner and F. P. Preparata. Minimum polygonal separation. *Inform. Comput.*, 77:218–232, 1988. [ep-mps-88] *Keywords:* design of algorithms, construction, separation, prune-and-search, polygons, convex, two-dimensional.

4744 H. Edelsbrunner, F. P. Preparata, and D. B. West. Tetrahedrizing point sets in three dimensions. Report UIUCDCS-R-86-1310, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1986. [epw-tpstd-86] *Keywords:* design of algorithms, combinatorial geometry, construction, decomposition, incrementation, cell complexes, Voronoi diagrams, points, tetrahedra, three-dimensional. *Precedes:* epw-tpstd-90.

4745 H. Edelsbrunner, F. P. Preparata, and D. B. West. Tetrahedrizing point sets in three dimensions. *J. Symbolic Comput.*, 10(3–4):335–347, 1990. [epw-tpstd-90] *Succeeds:* epw-tpstd-86.

4746 H. Edelsbrunner, A. D. Robison, and X. Shen. Covering convex sets with non-overlapping polygons. *Discrete Math.*, 81:153–164, 1990. [ers-ccsno-90] *Comments:* replaces the techreport ers-ccsno-87.

4747 H. Edelsbrunner, Günter Rote, and Emo Welzl. Testing the necklace condition for shortest tours and optimal factors in the plane. In *Proc. 14th Internat. Colloq. Automata Lang. Program.*, volume 267 of *Lecture Notes Comput. Sci.*, pages 364–375. Springer-Verlag, 1987. [erw-tncst-87] *Precedes:* erw-tncst-89.

4748 H. Edelsbrunner, Günter Rote, and Emo Welzl. Testing the necklace condition for shortest tours and optimal factors in the plane. *Theoret. Comput. Sci.*, 66:157–180, 1989. [erw-tncst-89] *Keywords:* combinatorial geometry, operations research, construction, linear programming, geometric graphs, traveling salesman tours, matchings, points, two-dimensional, cluster analysis. *Succeeds:* erw-tncst-87.

4749 H. Edelsbrunner and R. Seidel. Voronoi diagrams and arrangements. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 251–263, 1985. [es-vda-85] *Precedes:* es-vda-86. *Cites:* a-pdpaa-83, ab-gdt-86, ae-oacwv-84, b-acokv-83, b-cdt-81, b-fihs-78, b-vdch-79, b-gtfga-80, cd-vdsle-84, cy-grp-83, d-oacav-82, d-gvdgs-79, e-agc-, eos-calha-83, ew-nlsfs-82, elss-dgpps-73, g-ah-71, g-as-72, iim-vdlgi-85, k-eccs-79, l-fknnp-76, l-tdvdl-80, ld-gvdp-81, lw-vdllm-80, m-mnfcp-70, m-tom-82, p-kpudz-82, ph-chfsp-77, pm-finhs-79, s-chaop-81, sh-cpp-75, ls-ippvd-87, w-cnddt-81, y-oavds-84, z-fuafc-75, ZZZ.

4750 H. Edelsbrunner and R. Seidel. Voronoi diagrams and arrangements. *Discrete Comput. Geom.*, 1:25–44, 1986. [es-vda-86] *Keywords:* discrete geometry, geometric transformations, cell complexes, arrangements, Voronoi diagrams, hyperplanes, spheres, *d*-dimensional. *Succeeds:* es-vda-85.

4751 H. Edelsbrunner, R. Seidel, and Micha Sharir. New proofs of the zone theorem for arrangements of hyperplanes. In preparation. [ess-npzta-]

4752 H. Edelsbrunner, R. Seidel, and Micha Sharir. On the zone theorem for hyperplane arrangements. In H. Maurer, editor, *New Results and New Trends in Computer Science*, volume 555 of *Lecture Notes Comput. Sci.*, pages 108–123. Springer-Verlag, 1991. [ess-ztha-91] *Comments:* Fixes bug in original proof [4733].

4753 H. Edelsbrunner, R. Seidel, and Micha Sharir. On the zone theorem for hyperplane arrangements. *SIAM J. Comput.*, 22(2):418–429, 1993. [ess-ztha-93] *Comments:* Fixes bug in original proof [4733]. *Succeeds:* ess-ztha-91.

4754 H. Edelsbrunner and N. R. Shah. Incremental topological flipping works for regular triangulations. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 43–52, 1992. [es-itfwr-92] *Cites:* a-pdpaa-87, a-vdsfg-91, bm-sdcs-71, cs-arscg-89, d-slsv-34, e-acg-87, e-atccd-90, eks-sspp-83, em-sstcd-90, em-tdas-92, gks-ricdv-90, j-3dtlt-89, j-ctddt-91, l-gtgac-72, l-scsi-77, l-pndt-86, l-rtp-91, ps-cgi-85, r-mkkde-21, r-odtr-91, s-udzvd-28, s-chdch-86, v-nadpc-07, ZZZ.

4755 H. Edelsbrunner and N. R. Shah. Incremental topological flipping works for regular triangulations. *Algorithmica*, 15:223–241, 1996. [es-itfwr-96]

4756 H. Edelsbrunner and N. R. Shah. Triangulating topological spaces. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 285–292, 1994. [es-tts-94] *Precedes:* es-tts-97. *Cites:* b-sat3m-64, bt-dfat-82, b-rgsdd-93, c-gqmgc-93, cf-hcc-67, d-slsv-34, e-acg-87, e-ubids-93, em-sstcd-90, gp-dt-74, h-dt-76, ks-sts-93, l-slfde-45, lw-tcc-69, ms-chrfm-, m-tfc-75, m-eat-84, ps-cgi-85, r-iat-88, rs-iplt-72, sf-afem-73, v-nadpc-07, w-tl-62, y-stgd-90, ZZZ.

4757 H. Edelsbrunner and N. R. Shah. Triangulating topological spaces. *Int. J. on Comp. Geom.*, 7:365–378, 1997. [es-tts-97] *Succeeds:* es-tts-94.

4758 H. Edelsbrunner and Micha Sharir. A hyperplane incidence problem with applications to counting distances. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 419–428. Springer-Verlag, 1990. [es-hipac-90] *Precedes:* es-hipac-91.

4759 H. Edelsbrunner and Micha Sharir. A hyperplane incidence problem with applications to counting distances. In P. Gritzman and B. Sturmfels, editors, *Applied Geometry and Discrete Mathematics: The Victor Klee Festschrift*, volume 4 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 253–263, Providence, RI, 1991. AMS Press. [es-hipac-91] *Succeeds:* es-hipac-90.

4760 H. Edelsbrunner and Micha Sharir. The maximum number of ways to stab n convex non-intersecting sets in the plane is $2n-2$. Report 281, Courant Inst. Math. Sci., New York Univ., New York, NY, 1987. [es-mnwsn-87] *Keywords:* combinatorial geometry, stabbing, convex, Davenport-Schinzel sequences, divide-and-conquer. *Precedes:* es-mnwsn-90.

4761 Herbert Edelsbrunner and Micha Sharir. The maximum number of ways to stab n convex non-intersecting sets in the plane is $2n-2$. *Discrete Comput. Geom.*, 5:35–42, 1990. [es-mnwsn-90] *Keywords:* combinatorial geometry, stabbing, convex, Davenport-Schinzel sequences, divide-and-conquer. *Succeeds:* es-mnwsn-87.

4762 H. Edelsbrunner and W. Shi. An $O(n \log^2 h)$ time algorithm for the three-dimensional convex hull problem. *SIAM J. Comput.*, 20:259–277, 1991. [es-otatd-91]

4763 H. Edelsbrunner and Steven S. Skiena. On the number of furthest neighbour pairs in a point set. *Amer. Math. Monthly*, ?:?, ? [es-nfnpp-?] *Keywords:* pointset, furthest pair. *Succeeds:* es-nfnpp-86.

4764 H. Edelsbrunner and Steven S. Skiena. On the number of furthest neighbour pairs in a point set. Report UIUCDCS-R-86-1312, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1986. [es-nfnpp-86] *Precedes:* es-nfnpp-?

4765 H. Edelsbrunner and Steven S. Skiena. Probing convex polygons with x-rays. Report UIUCDCS-R-86-1306, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1986. [es-pcpxr-86] *Keywords:* discrete geometry, robotics, probing, worst-case analysis, polygons, convex, two-dimensional. *Precedes:* es-pcpxr-88.

4766 H. Edelsbrunner and Steven S. Skiena. Probing convex polygons with x-rays. *SIAM J. Comput.*, 17:870–882, 1988. [es-pcpxr-88] *Keywords:* discrete geometry, robotics, probing, worst-case analysis, polygons, convex, two-dimensional. *Succeeds:* es-pcpxr-86.

4767 H. Edelsbrunner and D. L. Souvaine. Computing median-of-squares regression lines and guided topological sweep. *J. Amer. Statist. Assoc.*, 85:115–119, 1990. [es-cmsrl-90] *Keywords:* statistics, optimization, plane-sweep, topological sweep, geometric transformations, binary search, points, lines.

4768 H. Edelsbrunner and G. Stöckl. The number of extreme pairs of finite point sets in Euclidean spaces. *J. Combin. Theory*, 43(2):344–349, 1986. [es-nepfp-86] *Keywords:* points, combinatorial geometry.

4769 H. Edelsbrunner and T. S. Tan. A quadratic time algorithm for the minmax length triangulation. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 414–423, 1991. [et-qtaml-91] *Precedes:* et-qtaml-93.

4770 H. Edelsbrunner and T. S. Tan. A quadratic time algorithm for the minmax length triangulation. *SIAM J. Comput.*, 22:527–551, 1993. [et-qtaml-93] *Succeeds:* et-qtaml-91.

4771 H. Edelsbrunner and T. S. Tan. An upper bound for conforming Delaunay triangulations. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 53–62, 1992. [et-ubcdt-92] *Succeeds:* et-ubcdt-93. *Cites:* beg-pgmg-90, be-psntp-91, bfl-rsddt-88i, b-srpcs-88, c-atapd-74, clr-ia-90, ds-oiti-89, d-slsv-34, e-acg-87, ea-lacvp-81, f-savd-87, gks-ricdv-90, gs-pmgsc-85, js-clvpa-87, l-scsi-77, l-vsp-83, ll-gdtpg-86, ns-ppdtp-91, o-tavc-91, ps-cgi-85, r-odtr-91, r-mrpdt-90, s-der-91, s-cdtvd-88, s-let-78, sf-afem-73, v-nadpc-08, ZZZ.

4772 H. Edelsbrunner and T. S. Tan. An upper bound for conforming Delaunay triangulations. *Discrete Comput. Geom.*, 10(2):197–213, 1993. [et-ubcdt-93]

4773 H. Edelsbrunner, T. S. Tan, and R. Waupotitsch. An $O(n^2 \log n)$ time algorithm for the minmax angle triangulation. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 44–52, 1990. [etw-otama-90] *Cites:* ahu-daca-74, ba-acfem-76, c-atapd-74, d-slsv-34, e-acg-87, f-savd-87, gs-pmgsc-85, h-ep-82, k-mtpd-80, l-gtgac-72, l-scsi-77, ll-gdtpg-86, ph-hta-87, ps-pqat-77, ps-cgi-85, s-cdtvd-88, sh-cpp-75, s-let-78, sf-afem-73, ZZZ.

4774 Herbert Edelsbrunner, Tiow Seng Tan, and Roman Waupotitsch. $O(N^2 \log N)$ time algorithm for the minmax angle triangulation. *SIAM J. Sci. Statist. Comput.*, 13(4):994–1008, July 1992. [etw-otama-92] *Succeeds:* etw-otama-90. *Annote:* Basicly a generalization of switching. If we can't improve the worst triangle by a switching look for a an edge splitting the largest angle that crosses several edges.

4775 H. Edelsbrunner, P. Valtr, and Emo Welzl. Cutting dense point sets in half. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 203–210, 1994. [evw-cdpsh-94] *Cites:* a-gmtud-90, akp-mscpr-89, ap-ieggs-86, acegsw-ptphp-91, bfl-nhp-89, c-sscg-86, cp-hrsaa-86, csy-khrp-87, de-ctchp-93, e-ibith-91, ew-nlsfs-85, ew-cbtda-86, elss-dgpps-73, gps-crotr-89, gps-iscir-90, l-nhl-71, pss-ubnpk-92, r-n3sfp-93, s-iggp-76, v-ppsbr-94, v-cis7h-92, vz-ctpci-92, ZZZ.

4776 H. Edelsbrunner, P. Valtr, and Emo Welzl. Cutting dense point sets in half. *Discrete Comput. Geom.*, 17:243–255, 1997. [evw-cdpsh-97]

4777 H. Edelsbrunner and J. van Leeuwen. Multidimensional algorithms and data structures (bibliography). *Bull. EATCS*, 11:46–74, 1980. [evl-madsb-80] *Keywords:* searching, data structuring, *d*-dimensional.

4778 H. Edelsbrunner and E. Waupotitsch. A combinatorial approach to cartograms. *Comput. Geom. Theory Appl.*, 7:343–360, 1997. [ew-cac-97] *Succeeds:* ew-cac-95.

4779 Herbert Edelsbrunner and Roman Waupotitsch. A combinatorial approach to cartograms. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 98–108, 1995. [ew-cac-95] *Keywords:* topology, homeomorphism. *Precedes:* ew-cac-97. *Cites:* clr-ia-90, d-mdcm-93, dcn-accac-85, g-gsh-81, gl-mc-89, gw-hcg-93a, gw-hcg-93b, m-mdscg-84, m-eat-84, s-t-93, t-ctud-73, t-aciho-88, wg-plrsm-85, ZZZ.

4780 H. Edelsbrunner and R. Waupotitsch. Computing a ham-sandwich cut in two dimensions. *J. Symbolic Comput.*, 2:171–178, 1986. [ew-chsct-86] *Keywords:* design of algorithms, construction, partition, prune-and-search, geometric transformations, worst-case analysis, points, lines, two-dimensional.

4781 H. Edelsbrunner and Emo Welzl. Constructing belts in two-dimensional arrangements with applications. *SIAM J. Comput.*, 15:271–284, 1986. [ew-cbtda-86] *Keywords:* design of algorithms, combinatorial geometry, plane-sweep, repeated search, arrangements, two-dimensional, counting, approximation, range search, arrangements.

4782 H. Edelsbrunner and Emo Welzl. Halfplanar range estimation. Report F98, Inst. Informationsverarb., Univ. Graz, Graz, Austria, 1982. [ew-hre-82]

4783 H. Edelsbrunner and Emo Welzl. Halfplanar range search in linear space and $O(n^{0.695})$ query time. Report F111, Inst. Informationsverarb., Univ. Graz, Graz, Austria, 1983. [ew-hrsls-83]

4784 H. Edelsbrunner and Emo Welzl. Halfplanar range search in linear space and $O(n^{0.695})$ query time. *Inform. Process. Lett.*, 23:289–293, 1986. [ew-hrsls-86] *Keywords:* data structuring, discrete geometry, searching, partition, range search, trees, subdivisions, two-dimensional, reporting, counting.

4785 H. Edelsbrunner and Emo Welzl. Monotone edge sequences in line arrangements, with applications. In *??*, volume 176 of *Lecture Notes Comput. Sci.*, pages 265–273. 1984. [ew-mesla-84] *Keywords:* lines, arrangement.

4786 H. Edelsbrunner and Emo Welzl. On the maximal number of edges of many faces in an arrangement. *J. Combin. Theory Ser. A*, 41:159–166, 1986. [ew-mnemf-86] *Keywords:* arrangements, complexity of faces.

4787 H. Edelsbrunner and Emo Welzl. On the number of equal-sized semispaces of a set of points in the plane. In *??*, volume 154 of *Lecture Notes Comput. Sci.*, pages 182–187. 1983. [ew-nessp-83] *Keywords:* points, combinatorial geometry.

4788 H. Edelsbrunner and Emo Welzl. On the number of line-separations of a finite set in the plane. Report F97, Inst. Informationsverarb., Univ. Graz, Graz, Austria, 1982. [ew-nlsfs-82]

4789 H. Edelsbrunner and Emo Welzl. On the number of line separations of a finite set in the plane. *J. Combin. Theory Ser. A*, 40:15–29, 1985. [ew-nlsfs-85]

Herbert Edelsbrunner. See also [163, 164, 286, 833, 834, 839–841, 1101, 1798–1800, 1810, 2568, 2951–2983, 3104, 3109, 3332, 3359, 3360, 3827–3829, 3945, 4081, 4097–4100, 4262, 4280–4286, 12096, 12097, 13793, 13915].

M. Eden. See also [4883].

F. W. Edge. See also [5531].

J. Edington. See also [8731].

4790 J. Edmonds. Decomposition using Minkowski. In *Abstracts of the 14th Internat. Sympos. on Mathematical Programming*, 1991. [e-dum-91]

4791 J. Edmonds. Maximum matching and a polyhedron with (0,1) vertices. *J. Res. National Bureau of Standards*, ??:125–130, 1965. [e-mmpv-65]

4792 J. Edmonds. Minimum partition of a matroid into independent sets. *Research of th NBS*, 69:67–72, 1965. [e-mpmis-65]

4793 J. Edmonds. Systems of distinct representatives and linear algebra. *J. Res. National Bureau of Standards*, 71(B):241–245, 1967. [e-sdrla-67]

4794 J. Edmonds and R. M. Karp. Theoretical improvements in algorithmic efficiency for network flow problems. *J. ACM*, 19:248–264, 1972. [ek-tiaen-72]

4795 R. Edmonds. A combinatorial representation for polyhedral surfaces. *Notices Amer. Math. Soc.*, 7:646, 1960. [e-crps-60]

4796 S. Edmondson, J. Christensen, J. Marks, and S. M. Schieber. A general cartographic labeling algorithm. *Cartographica*, ??, 1997. To appear. [ecms-gcla-97]

4797 C. H. Edwards, Jr. and D. E. Penny. *Calculus and Analytic Geometry*. Prentice Hall, Englewood Cliffs, NJ, 2nd edition, 1986. [ep-cag-86]

J. Edwards. See also [1903].

T. L. Edwards. See also [2061].

4798 P. Effernan. Linear time algorithms for weakly monotone polygons. *Comput. Geom. Theory Appl.*, 3:121–137, 1993. [e-ltawm-93]

4799 A. Efrat. A simple algorithm for maintaining the center of a planar point set. Master's thesis, Technion IIT, Haifa, Israel, 1993. [e-samcp-93] *Keywords:* master thesis. *Precedes:* bei-samcp-93.

4800 A. Efrat. Finding approximate matching of points and segments under translation. Unpublished manuscript, 1995. [e-famps-95]

4801 A. Efrat and C. Gotsman. Subpixel image registration using circular fiducials. In *Proc. 2nd Israel Sympos. Theory Computing and Systems*, pages 48–47, 1993. [eg-siruc-93] *Precedes:* eg-siruc-94.

4802 A. Efrat and C. Gotsman. Subpixel image registration using circular fiducials. *Internat. J. Comput. Geom. Appl.*, 4:403–422, 1994. [eg-siruc-94] *Keywords:* computer vision, registration, fiducials, lattice geometry, number theory. *Succeeds:* eg-siruc-93.

4803 Alon Efrat and Sariel Har-Peled. Fly cheaply: On the minimum fuel-consumption problem. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, page to appear, 1998. [eh-fcmfc-98]

4804 Alon Efrat, Frank Hoffmann, Klaus Kriegel, and Christof Schultz. Covering simple polygonal regions by ellipses. In *Abstracts 16th European Workshop Comput. Geom.*, pages 89–92. Ben-Gurion University of the Negev, 2000. [ehks-cspre-00]

4805 Alon Efrat and Alon Itai. Improvements on bottleneck matching and related problems using geometry. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 301–310, 1996. [ei-ibmrp-96] *Cites:* aass-sdp-93, aes-vdsl3-95, am-rsps-93, aks-scps-83, abb-amps-91, amww-cssgo-88, akmsw-mpnrc-91, amnsw-oaann-94, b-ttgt-57, by-lotmc-94, ctl-sebmp-92, ck-igpmp-92, cdek-gpmds-95, cghkkk-gpmem-93, c-sdsno-87, d-aspmf-70, egs-oplms-86, ek-tiaen-72, esz-cskec-94, e-famps-95, fj-gsrsm-84, hs-adaps-92, h-gaaps-93, hs-asdch-90, hs-ftp-91, hk-nammb-73, hk-cmhdp-90, hks-uevsi-93, ia-eaggs-86, k-ecbmf-73, k-iagoe-95, k-hmap-55, l-conm-76, lp-mt-86, m-apcad-83, t-dsna-83, v-ghm-88, ZZZ.

4806 A. Efrat, A. Itai, and M. J. Katz. Improvements on bottleneck matching and related problems using geometry. Unpublished manuscript, 1997. [ei-ibmrp-97] *Succeeds:* ei-ibmrp-96.

4807 A. Efrat and M. J. Katz. Computing fair and bottleneck matchings in geometric graphs. In *Proc. 7th Annu. Internat. Sympos. Algorithms Comput.*, pages 115–125, 1996. [ek-cfbmg-96]

4808 A. Efrat and M. J. Katz. Euclidean bottleneck matching in higher dimensions. Unpublished manuscript, 1997. [ek-ebmhd-97]

4809 A. Efrat, M. J. Katz, F. Nielsen, and M. Sharir. Dynamic data structures for fat objects and their applications. In *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 297–306. Springer-Verlag, 1997. [ekns-ddsfo-97] *Precedes:* ekns-ddsfo-00.

4810 A. Efrat, M. J. Katz, F. Nielsen, and M. Sharir. Dynamic data structures for fat objects and their applications. *Comput. Geom. Theory Appl.*, 15:215–227, 2000. [ekns-ddsfo-00] *Succeeds:* ekns-ddsfo-97.

4811 A. Efrat, M. Lindenbaum, and Micha Sharir. Finding maximally consistent sets of halfspaces. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 432–436, 1993. [els-fmcsh-93] *Cites:* boo-dspir-91, bklo-gasra-87, ce-oails-92, cs-arscg-89, csy-khrp-87, dk-fdpi-83, e-acg-87, ew-cbtda-86, eg-siruc-93, es-blbda-93t, lb-rpdcd-, m-lpltw-84, m-fppa-90, m-lavd-91, o-olafs-81, pss-ubnpk-92, s-ksacs-91, sd-ddcps-91, w-mksfs-86, ZZZ.

4812 A. Efrat, Günter Rote, and Micha Sharir. On the union of fat wedges and separating a collection of segments by a line. manuscript. [ers-ufwsc-] *Precedes:* ers-ufwsc-93a, ers-ufwsc-93b.

4813 A. Efrat, Günter Rote, and Micha Sharir. On the union of fat wedges and separating a collection of segments by a line. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 115–120, 1993. [ers-ufwsc-93a] *Succeeds:* ers-ufwsc-. *Precedes:* ers-ufwsc-93b. *Cites:* afkmnsu-ampcb-90, abp-oabcu-90, ce-oails-92, cs-arscg-89, e-acg-87, egs-ccmfa-90, es-blbda-93, fmp-csua-90, go-nhpcg-93t, gm-osacv-91, h-fuenl-89, k-fpfcu-93t, ms-ericu-91, m-fppa-90, mpssw-ftdlm-94, ZZZ.

4814 A. Efrat, Günter Rote, and Micha Sharir. On the union of fat wedges and separating a collection of segments by a line. *Comput. Geom. Theory Appl.*, 3:277–288, 1993. [ers-ufwsc-93b] *Succeeds:* ers-ufwsc-93a, ers-ufwsc-. *Cites:* mpssw-ftdlm-94. *Abstract:* We call a line l a separator for a set S of objects in the plane if l avoids all the objects and partitions S into two nonempty subsets, one consisting of objects lying above l and the other of objects lying below l. We present an $O(nlogn)$-time algorithm for finding a separator line for a set of n segments, provided the ratio between the diameter of the set of segments and the length of the smallest segment is bounded. No subquadratic algorithms are known for the general case. Our algorithm is based on the recent results of Matousek, Pach, Sharir, Sifrony, and Welzl (1994) concerning the union of fat triangles, but we also include an analysis which improves the bounds obtained by Matousek et al.

4815 A. Efrat and Micha Sharir. A near-linear algorithm for the planar segment center problem. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 87–97, 1994. [es-nlaps-94]

4816 A. Efrat and Micha Sharir. A near-linear algorithm for the planar segment center problem. *Discrete Comput. Geom.*, 16:239–257, 1996. [es-nlaps-96]

4817 A. Efrat and M. Sharir. On the complexity of the union of fat objects in the plane. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 104–112, 1997. [es-cufop-97] *Cites:* aks-cdorp-95, cs-arscg-89, esz-cskec-94, hs-atubs-95, k-3vrs2-??, kos-ehsro-92, klps-ujrcf-86, lps-ctc-95, mpssw-ftdlm-94, ps-rivbu-97, s-ksacs-91, s-atubl-94, s-mpafo-94, k-fpfcu-93, ZZZ.

4818 A. Efrat and M. Sharir. On the complexity of the union of fat objects in the plane. *Discrete Comput. Geom.*, 23:171–189, 2000. [es-cufop-00]

4819 A. Efrat, Micha Sharir, and A. Ziv. Computing the smallest k-enclosing circle and related problems. Report CIS-9309, Faculty of Computer Science, Technion - IIT, Haifa, Israel, 1993. [esz-cskec-93t]

4820 A. Efrat, Micha Sharir, and A. Ziv. Computing the smallest k-enclosing circle and related problems. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 325–336. Springer-Verlag, 1993. [esz-cskec-93i] *Precedes:* esz-cskec-94.

4821 A. Efrat, Micha Sharir, and A. Ziv. Computing the smallest k-enclosing circle and related problems. *Comput. Geom. Theory Appl.*, 4:119–136, 1994. [esz-cskec-94] *Succeeds:* esz-cskec-93i.

A. Efrat. See also [165–168, 842, 843, 1349, 3152].

4822 B. Efron. The convex hull of a random set of points. *Biometrika*, 52(3):331–343, 1965. [e-chrsp-65]

4823 B. Efron. The problem of the two nearest neighbors (abstract). *Ann. Math. Statist.*, 38:298, 1967. [e-ptnna-67]

4824 Ö. Eğecioğlu and T. Gonzalez. A computationally intractable problem on simplicial complexes. *Comput. Geom. Theory Appl.*, 6:85–98, 1996. [eg-cipsc-96]

4825 O. Egecioglu and B. Kalantari. Approximating the diameter of a set of points in the Euclidean space. *Inform. Process. Lett.*, 32:205–211, 1989. [ek-adspe-89] *Keywords:* approximation, diameter, points, d-dimensional.

Ö. Eğecioğlu. See also [44–46].

4826 D. Eggert, L. Stark, and K. Bowyer. Aspect graphs and their use in object recognition. *Ann. Math. Artif. Intell.*, 13:347–376, 1995. [esb-agtuo-95] *Keywords:* matching, shape recognition, vision.

4827 H. G. Eggleston. *Convexity*. Cambridge University Press, Cambridge, England, 1958. [e-c-58]

4828 R. B. Eggleton. Rectilinear drawings of graphs. *Utilitas Math.*, 29:146–172, 1986. [e-rdg-86] *Keywords:* graph drawing.

4829 V. M. Egorov and E. G. Kostov. Integrated optical digital computers. *Appl. Optics*, 29(8):1178–1185, 1990. [ek-iodc-90]

4830 P. Egyed. Hidden-surface removal in polyhedral cross-sections. *Visual Comput.*, 3:329–343, 1988. [e-hsrpc-88] *Keywords:* hidden line/surface elimination. *Succeeds:* e-trpah-88.

4831 P. Egyed. Theoretical results on the priority approach to hidden-surface removal. In *Proc. Graphics Interface '88*, pages 236–245, 1988. [e-trpah-88] *Precedes:* e-hsrpc-88.

4832 P. Egyed and R. Wenger. Ordered stabbing of pairwise disjoint convex sets in linear time. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 23, 1989. [ew-ospdc-89] *Succeeds:* ew-ospdc-91.

4833 P. Egyed and R. Wenger. Ordered stabbing of pairwise disjoint convex sets in linear time. *Discrete Appl. Math.*, 31(2):133–140, 1991. [ew-ospdc-91] *Keywords:* stabbing convex line transversal. *Precedes:* ew-ospdc-89.

4834 P. Egyed and R. Wenger. Stabbing pairwise-disjoint translates in linear time. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 364–369, 1989. [ew-spdtl-89] *Cites:* ahu-daca-74, ab-eact-87, ad-ahdsp-87, arw-lbls-89, d-ltatt-84, e-ftssg-85, e-acg-87, egs-ueplf-87, emprww-sls-82, es-mnwsn-87, hdk-cgp-64, h-fuenl-89, k-cgct-86, kll-gpct-86, kll-gpdt-87, klz-gpcs-85, ks-upcha-86, l-tcctc-80, m-ltalp-83, m-lpltw-84, o-olafs-81, ps-cgi-85, s-ossac-86, t-pgcct-89, w-ghtti-90, ZZZ.

P. Egyed. See also [1938–1941, 1957, 3672].

A. Ehrenfeucht. See also [2113, 2114].

4835 E. Ehrhart. Solution to advanced problems. *Amer. Math. Monthly*, 87(10):826, December 1980. [e-sap-80]

4836 C. Ehrlich, S. Even, and R. E. Tarjan. Intersection graphs of curves in the plane. *J. Combin. Theory Ser. B*, 21(1):8–20, 1976. [eet-igcp-76] *Keywords:* intersection graph, curves, graph.

4837 P. E. Ehrlich and H.-C. Im Hof. Dirichlet regions in manifolds without conjugate points. *Comment. Math. Helvetici*, 54:642–658, 1979. [ei-drmwc-79]

4838 N. Eichhorn and H. Kieselwetter. INTEGER analysis of two-dimensional polygonal objects. *Computing*, 42(1):1–16, 1989. [ek-iatdp-89]

4839 G. Eichman and B. Z. Dong. Coherent optical production of the Hough transform. *Appl. Optics*, 22(6):830–834, 1983. [ed-copht-83]

T. von Eicken. See also [3647].

F. C. Eigler. See also [3510].

4840 Paul H. C. Eilers. Smoothing and interpolation with finite differences. In Paul Heckbert, editor, *Graphics Gems IV*, pages 241–250. Academic Press, Boston, MA, 1994. [e-sifd-94] *Keywords:* data smoothing, curve smoothing. *Annote:* Gives simple techniques for smoothing a set of uniformly spaced samples. This can be used to remove noise from input data. Contains C code.

P. R. Eiseman. See also [11490].

4841 F. Eisenhaber and P. J. Argos. ?? *J. Comp. Chem.*, 14(11):1272–1280, 1993. [ea--93]

4842 Rudolf Eisenstöck. Visualization of algebraic surfaces using the Dexel model. In *Abstracts 9th European Workshop Comput. Geom.*, pages 48–51. FernUniversität Hagen, 1993. [e-vasud-93]

M. T. Eismann. See also [5832].

4843 M. Eisner and D. Severance. Mathematical techniques for efficient record segmentation in large shared databases. *J. ACM*, 23:619–635, 1976. [es-mters-76]

4844 Steven Eker. Faster linear interpolation. In Paul Heckbert, editor, *Graphics Gems IV*, pages 526–533. Academic Press, Boston, MA, 1994. [e-fli-94] *Keywords:* line drawing, Gouraud shading, integer arithmetic, image resampling. *Annote:* Gives optimized code for generic linear interpolation. This is most useful for assembler language programming of graphics operations such as Gouraud shading and image scaling. Contains C code.

4845 H. El-Gindy, M. Houle, W. Lenhart, Miller, D. Rappaport, and S. Whitesides. Dominance drawings of bipartite graphs. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 187–191, 1993. [ehlmrw-ddbg-93] *Cites:* bcdtt-hdspd-92, bl-tcopi-76, dm-pos-41, et-adgab-89, g-agtpg-80, h-dpos-51, k-vrrpd-75, k-3ipos-77, ple-togip-71, t-dapsg, dtt-arsdp-92, y-cpodp-82, ZZZ.

4846 J. El-Sana and A. Varshney. Topology simplification for polygonal virtual environments. *IEEE Trans. Visualizat. Comput. Graph.*, 4(2):133–144, April 1998. [ev-tspve-98]

J. El-Sana. See also [13723].

4847 M. Elbaz and J.-C. Spehner. Construction of Voronoi diagrams in the plane by using maps. *Theoret. Comput. Sci.*, 77(3):331–343, 1990. [es-cvdpu-90] *Annote:* Basic d&c algorithm for DT ala Guibas Stolfi. Only difference is that it uses DCEL as data structure (it calls this maps), and omits diagonals in cyclic quads. *Abstract:* An algorithm by Guibas and Stolfi (1985) constructs, for a finite set S of n sites in the plane, a triangulation T(S) of S that strictly refines the Delaunay diagram Del(S) when there exists a circle passing through at least four points of S and none of the sites is contained in its interior. For this triangulation T(S) there exist isometries T such that T(T(S)) does not equal T(S). The Voronoi diagram Vor(S) is the straight-line dual of Del(S) and the substitution of T(S) into Del(S) leads to needless calculus, indeed to the creation of imaginary vertices for Vor(S). We present here a variant of the Guibas and Stolfi algorithm that determines, with the same complexity, Del(S) and not a triangulation, and uses a simpler data structure. We also give approximation tests of collinearity and cocircularity so that for any similitude T of the plane, Del(T(S)) equals T(Del(S)). (Author abstract) 15 Refs.

4848 G. Elber and E. Cohen. Error bounded variable distance offset operator for free form curves and surfaces. *Internat. J. Comput. Geom. Appl.*, 1(1):67–78, 1991. [ec-ebvdo-91] *Keywords:* curve, surface, NURBS, offset.

4849 G. Elber and M. S. Kim. The bisector surface of freedom rational space curves. Technical Report CIS 9619, Dept. Comput. Sci., Technion, 1996. [ek-bsfrs-96]

4850 G. Elber and M.-S. Kim. The bisector surface of freeform rational space curves. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 473–474, 1997. [ek-bsfrs-97] *Keywords:* video review. *Cites:* dh-ssco-93, ek-bsfrs-96, fj-bpppc-94, fj-cpccc-94, h-dpsi-90, hv-eescs-91, -i6um-96, spb-amat3-96, ZZZ.

Gershon Elber. See also [1411].

Y. Eldar. See also [8100].

4851 G. Elekes. A geometric inequality and the complexity of computing the volume. *Discrete Comput. Geom.*, 1:289–292, 1986. [e-giccv-86] *Keywords:* approximation, volume, convex.

4852 G. Elekes. n points in the plane can determine $n^3/2$ unit circles. *Combinatorica*, 4(2–3):131, 1984. [e-nppcd-84] *Keywords:* points, circle, combinatorial geometry.

4853 G. Elekes and P. Erdős. Similar configurations and pseudo grids. In *Intuitive Geometry*, volume 63 of *Colloq. MAth. Sco. Janos Bolyai*, pages 85–104. North-Holland, Amsterdam, Netherlands, 1994. [ee-scpg-94]

4854 G. Elekes and P. Erdős. Similar configurations in planar point sets. ? [ee-scpps-]

Alberto Elfes. See also [7433].

4855 M. H. Elfick. Contouring by use of a triangular mesh. *The Cartographic Journal*, 16(1):24–29, 1979. [e-cutm-79] *Annote:* DT by circumcircle algorithm. Points are ordered by x coordinate to limit search. Forced edges are dealt with by extra points.

4856 H. ElGindy. A parallel algorithm for the shortest path problem in monotone polygons. Report MC-CIS-86-49, Dept. Comput. Inform. Sci., Univ. Pennsylvania, Philadelphia, PA, May 1986. [e-paspp-86]

4857 H. ElGindy. A parallel algorithm for triangulating simplicial point sets in space with optimal speed-up. (Manuscript), April 1986. [e-patsp-86] *Succeeds:* e-patsp-86-c.

4858 H. ElGindy. A parallel algorithm for triangulating simplicial point sets in space with optimal speedup. In *Proc. 24th Allerton Conf. Commun. Control Comput.*, pages 768–776, 1986. [e-patsp-86-c] *Keywords:* parallel computations, 3-dimensional, triangulation. *Precedes:* e-patsp-86.

4859 H. ElGindy. An efficient algorithm for computing the weak visibility polygon from an edge in simple polygons. Manuscript, School Comput. Sci., McGill Univ., Montreal, PQ, 1984. [e-eacwv-84]

4860 H. ElGindy. An optimal speedup parallel algorithm for triangulating simplicial point sets in space. *Internat. J. Parallel Process.*, 15:389–398, 1986. [e-ospat-86] *Keywords:* parallel computations, 3-dimensional, triangulation. *Abstract:* Zbl. Math. Vol. 681 no. 68069.

4861 H. ElGindy. One more time: a convex hull algorithm for simple polygons. Internal Report, School Comput. Sci., McGill Univ., Montreal, PQ, 1981. [e-omtch-81]

4862 H. ElGindy. Optimal parallel algorithms for triangulating certain classes of polygons. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 131–135, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [e-opatc-89] *Keywords:* star-shaped, edge visible, monotone, radially monotone, polygons.

4863 H. ElGindy and D. Avis. A linear algorithm for computing the visibility polygon from a point. *J. Algorithms*, 2:186–197, 1981. [ea-lacvp-81] *Keywords:* polygons, visibility, visibility graphs.

4864 H. ElGindy, D. Avis, and G. T. Toussaint. Applications of a two-dimensional hidden-line algorithm to other geometric problems. *Computing*, 31:191–202, 1983. [eat-atdhl-83] *Keywords:* visibility, polygons, triangulation, convex hull.

4865 H. ElGindy and M. T. Goodrich. Parallel algorithms for shortest path problems in polygons. Report MS-CIS-87-20, Dept. Comput. Inform. Sci., Univ. Pennsylvania, Philadelphia, PA, 1987. [eg-paspp-87] *Precedes:* eg-paspp-88.

4866 H. ElGindy and M. T. Goodrich. Parallel algorithms for shortest path problems in polygons. *Visual Comput.*, 3:371–378, 1988. [eg-paspp-88] *Keywords:* parallel computation, geodesic distance, polygons, simple, divide-and-conquer, two-dimensional. *Succeeds:* eg-paspp-87.

4867 H. ElGindy and J. M. Keil. Efficient algorithms for the capacitated 1-median problem. *ORSA J. Comput.*, 4(4):418–425, 1992. [ek-eacmp-92] *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

4868 H. ElGindy, G. Liotta, A. Lubiw, H. Meijer, and S. H. Whitesides. Recognizing rectangle of influence drawable graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 352–363. Springer-Verlag, 1995. [ellmw-rridg-95] *Keywords:* graph drawing, proximity.

4869 H. ElGindy and P. Mitra. Orthogonal shortest route queries among axis parallel rectangular obstacles. Technical Report SOCS 91.07, July 1991. [em-osrqa-91] *Keywords:* shortest path, parallel algorithm, computational geometry. *Precedes:* em-osrqa-94.

4870 H. ElGindy and P. Mitra. Orthogonal shortest route queries among axis parallel rectangular obstacles. *Internat. J. Comput. Geom. Appl.*, 4:3–24, 1994. [em-osrqa-94] *Keywords:* shortest path, parallel algorithm, computational geometry. *Succeeds:* em-osrqa-91.

4871 H. ElGindy and G. T. Toussaint. Link Voronoi diagrams inside a simple polygon with applications. In *Internat. Symp. Math. Progr. Tokyo*, 1988. [et-lvdis-88] *Keywords:* Voronoi diagram, polygons, link distance.

4872 Hossam ElGindy and Godfried T. Toussaint. On geodesic properties of polygons relevant to linear time triangulation. *Visual Comput.*, 5(1–2):68–74, 1989. [et-gpprl-89] *Abstract:* The paper provides a contribution to the problem of finding optimal (linear time) algorithm for triangulating simple polygons. Two new classes of polygons, called palm polygons and crab polygons are introduced. The class of palm polygons contains many known classes of polygons for which linear time triangulation algorithms are known and a linear time algorithm for triangulating palm polygons is presented. The class of crab polygons is shown to contain all classes of polygons for which linear time triangulation algorithms are known up to now. However, the problem of linear time identification and triangulation of crab polygons remains open.

4873 H. ElGindy and G. T. Toussaint. On triangulating palm polygons in linear time. In N. Magnenat-Thalmann and D. Thalmann, editors, *New Trends in Computer Graphics*, pages 308–317. Springer-Verlag, 1988. [et-tpplt-88] *Keywords:* polygons, triangulation.

H. ElGindy. See also [1135–1137, 1150–1153, 1942, 1958, 13032–13034].

4874 H. A. ElGindy. *Hierarchical Decomposition of Polygons with Applications.* PhD thesis, School of Computer Science, McGill University, 1985. [e-hdpa-85] *Keywords:* doctoral thesis.

4875 H. A. ElGindy and G. T. Toussaint. Computing the relative neighbor decomposition of a simple polygon. In G. T. Toussaint, editor, *Computational Morphology*, pages 53–70. North-Holland, Amsterdam, Netherlands, 1988. [et-crnds-88]

4876 Hossam A. ElGindy and Godfried T. Toussaint. Efficient algorithms for inserting and deleting edges from triangulations. In *Proceedings, Foundations of Data Organization.*, pages 163–169, Jpn, 1985. Organizing Committee of the Int Conference on Foundations of Data Organization. [et-eaide-85] *Keywords:* line segments, triangulations, geometric complexity. *Abstract:* We address the problem of edge-updating a triangulation of a point set efficiently. Given a suitable representation of the triangulation of a finite set P, how can one construct a triangulation of P union left brace 1 right brace for some line segment 1 (insertion problem), or how can one construct a triangulation of P - left brace p,q right brace where p and q are points in P that are connected by an edge in the triangulation (deletion problem). (Author abstract) 13 refs.

4877 Hossam A. ElGindy and Godfried T. Toussaint. On computing and updating triangulations. In S. P. Ghosh, Y. Kanbayashi, and K. Tanaka, editors, *Proc. Internat. Conf. Found. Data Organization*, pages 249–262, New York, 1987. Plenum Press. [et-cut-87] *Annote:* $O(n \log n)$ algorithm for triangulation of a set of line segments, and algorithms for inserting and deleting from a set of line segments.

4878 H. A. ElGindy and G. T. Toussaint. On triangulations of line segments. Technical Report SOCS 84.9, McGill University, 1984. [et-tls-84] *Annote:* Algorithms for constructing and modifying *a* triangulation of line segments.

4879 R. Elliott. *Cast iron technology.* Butterworths, London, UK, 1988. [e-cit-88]

4880 R. J. Elliott and M. E. Lesk. Data structures for street maps. Technical report, ?? [el-dssm-??]

4881 R. J. Elliott and M. E. Lesk. Route finding in street maps by computers and people. Technical report, ?? [el-rfsmc-??]

4882 J. L. Ellis, G. Kedem, T. C. Lyerly, D. G. Thielman, R. J. Marisa, J. P. Menon, and H. B. Voelcker. The ray casting engine and ray representations: a technical summary. *Internat. J. Comput. Geom. Appl.*, 1(4):347–380, 1991. [ekltmmv-rcerr-91] *Keywords:* mechanical CAD CAM, solid modeling, parallel computation, ray representation.

4883 J. R. Ellis and M. Eden. On the number of sides necessary for polygonal approximation of black-and-white figures in a plane. *Inform. Control*, 30:169–186, 1976. [ee-nsnpa-76] *Keywords:* polygons, fitting.

4884 R. E. Ellis. Acquiring tactile data for the recognition of planar objects. In *Proc. Internat. Conf. Robots Autom.*, volume 3, pages 1799–1805, 1987. [e-atdrp-87] *Keywords:* probing, shape.

D. Ellsworth. See also [5637].

K. A. Elmquist. See also [13331].

4885 H. Elter and P. Lienhardt. Extension of the notion of map for the representation of the topology of cellular complexes. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 65–70, 1992. [el-enmrt-92] *Cites:* adf-gmsou-85, ak-mdspl-89, b-prcv-75, b-rgsdd-89, dl-pmtds-87, e-acg-87, el-ascac-, fp-ebemp-91, fp-cst-90, gs-pmgsc-85, l-sndsn-89, l-tmbrc-91, m-ism-88, rosdimp-89i, s-ebrtd-89, s-mmp-91, w-ebdss-85, w-redst-86, ZZZ.

4886 H. Elter and P. Lienhardt. Form abstract simplicial complexes to abstract cellular complexes: construction of combinatorial models. Research Report, Dept. Comput. Sci., Louis Pasteur Univ., Strasbourg, France, ?? [el-ascac-]

4887 J. Elzinga and D. Hearn. The minimum covering sphere problem. *Manage. Sci.*, 19:96–104, 1972. [eh-mcsp-72] *Keywords:* facility location, optimization, points, sphere.

4888 J. Elzinga and D. Hearn. The minimum sphere covering a convex polyhedron. *Naval Res. Logist. Quart.*, 21:715–718, 1974. [eh-msccp-74]

4889 J. Elzinga and D. W. Hearn. Geometrical solutions to some minimax location problems. *Transp. Sci.*, 6:379–394, 1972. [eh-gssml-72] *Keywords:* optimization, facility location, minmax.

4890 A. Emch. On the medians of a closed convex polygon. *Amer. J. Math.*, 37:19–28, 1915. [e-mccp-15]

4891 A. Emch. Some properties of closed convex curves in a plane. *Amer. J. Math.*, 35:407–412, 1913. [e-spccc-13]

4892 P. van Emde Boas. Another NP-complete covering problem. Report ??, Univ. Amsterdam, Amsterdam, Netherlands, 1982. [e-anccp-82]

4893 P. van Emde Boas. On the $\Omega(n \log n)$ lower-bound for convex hull and maximal vector determination. *Inform. Process. Lett.*, 10:132–136, 1980. [e-olbch-80]

4894 P. van Emde Boas. Preserving order in a forest in less than logarithmic time and linear space. *Inform. Process. Lett.*, 6:80–82, 1977. [e-pofll-77]

4895 P. van Emde Boas, R. Kaas, and E. Zijlstra. Design and implementation of an efficient priority queue. *Math. Syst. Theory*, 10:99–127, 1977. [ekz-diepq-77]

P. van Emde Boas. See also [8012].

M. Emerling. See also [12234].

J. Emert. See also [1223].

4896 A. F. Emery, O. Johansson, M. Lobo, and A. Abrous. A comparative study of methods for computing the diffuse radiation viewfactors for complex structures. *Journal of Heath Transfer*, 113:412–421, 1991. [ejla-csmcd-91]

4897 I. Emiris. A complete implementation for computing general dimensional convex hulls. Research Report 2551, INRIA, 1996. [e-cicgd-96] *URL:* http://www.inria.fr/rapports/sophia/RR-2551.html. *Precedes:* e-cicgd-98. *Abstract:* We study two important, and often complementary, issues in the implementation of geometric algorithms, namely exact arithmetic and degeneracy. We focus on integer arithmetic and propose a general and efficient method for its implementation based on modular arithmetic. We suggest that probabilistic modular arithmetic may be of wide interest, as it combines the advantages of modular arithmetic with randomization in order to speed up the lifting of residues to an integer. We derive general error bounds and discuss the implementation of this approach in our general-dimension convex hull program. The use of perturbations as a method to cope with input degeneracy is also illustrated. We present the implementation of a computationally efficient scheme that, moreover, greatly simplifies the task of programming. We concentrate on postprocessing, often perceived as the Achilles heel of perturbations. Starting in the context of a specific application in robotics, we examine the complexity of postprocessing and attempt to delimit the cases where perturbations become a hindrance rather than an enhancement. Lastly, we discuss the visualization capabilities of our software and illustrate them for problems in computational algebraic geometry.

4898 I. Emiris. A complete implementation for computing general dimensional convex hulls. *Internat. J. Comput. Geom. Appl.*, 8:33–36, 1998. [e-cicgd-98] *Succeeds:* e-cicgd-96.

4899 I. Emiris. An efficient approach to removing geometric degeneracies. Master's thesis, Comput. Sci. Div., Univ. California, Berkeley, CA, May 1991. [e-eargd-91] *Keywords:* master thesis.

4900 I. Emiris and J. Canny. A general approach to removing degeneracies. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 405–413, 1991. [ec-gard-91] *Precedes:* ec-gard-95.

4901 I. Emiris and J. Canny. A general approach to removing degeneracies. *SIAM J. Comput.*, 24:650–664, 1995. [ec-gard-95] *Keywords:* input degeneracy, ill-conditioned problems, symbolic perturbation, infinitesimals, randomization, determinants, roots of polynomials, algorithmic complexity. *Succeeds:* ec-gard-91,ec-eargd-92.

4902 I. Emiris and J. Canny. An efficient approach to removing geometric degeneracies. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 74–82, 1992. [ec-eargd-92] *Precedes:* ec-gard-95. *Cites:* ahu-daca-74, c-crsas-91, cl-rzp-82, d-lpe-63, d-afp-90, e-acg-87, eg-tsa-86, em-sstcd-90, ew-chsct-86, e-eargd-91, ec-gard-91, k-facp-85, ps-cgi-85, y-stgd-87, y-gctsp-88, ZZZ.

Ioannis Emiris. See also [2477, 2478].

4903 Ioannis Z. Emiris. Computing integer points in Minkowski sums. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 29–36, 2000. [e-cipms-00]

4904 I. Z. Emiris, J. F. Canny, and R. Seidel. Efficient perturbations for handling geometric degeneracies. *Algorithmica*, 19(1–2):219–242, September 1997. [ecs-ephgd-97]

4905 Ioannis Z. Emiris and Thierry Giordano. Distributed computation of mixed volume. In *Abstracts 13th European Workshop Comput. Geom.*, pages 48–50. Universität Würzburg, 1997. [eg-dcmv-97]

Ioannis Z. Emiris. See also [13872].

4906 J. L. Encarnacao. A survey of solutions of the hidden line problem. In *Proc. Interactive Comput. Graphics Conf.*, page ??, 1970. [e-sshlp-70]

4907 J. L. Encarnacao. *Computer-Graphics: Programmierung and Anwendung von graphischen Systemen*. R. Oldenburg Verlag, München, West Germany, 1975. [e-cgpav-75]

A. Enge. See also [2577].

4908 Peter Engel. On the morphology of polytopes in R^d. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 71–83. Springer-Verlag, 1991. [e-mpr-91] *Keywords:* combinatorial enumeration. *Annote:* 7th Intern. Workshop Comput. Geom. *Abstract:* An algorithm to enumerate the combinatorial types of d-spheres is described. A purely geometric condition is given to determine the nonpolytopal spheres. New results are presented for $d = 4$ and 5.

4909 P. Engel. *Origami from Angelfish to Zen.* Dover, 1994. [e-oaz-94]

4910 P. Engel and H. Syta, editors. *Voronoi's Impact on Modern Science.* Institute of Mathematics of the National Academy of Sciences of Ukraine, Kyiv, 1998. [es-vims-98] *Annote:* Two books, contains a biography of Voronoi.

4911 J. Engelfriet, G. Leih, and Emo Welzl. Boundary graph grammars with dynamic edge relabeling. *J. Comput. Syst. Sci.*, 40:307–345, 1990. [elw-bggde-90]

4912 H. Englisch. The circumpolygon with maximal area. *Optimization*, 20(4):503–508, 1989. [e-cma-89] *Keywords:* polygon, circuscribed, area, optimization.

4913 H. Englisch and H. Voigt. The inpolygon with minimal area and the circumpolygon with maximal perimeter. *Optimization*, 19(2):229–233, 1988. [ev-imacm-88] *Keywords:* polygon, circuscribed, inscribed, area, optimization, perimeter.

4914 T. C. Enns. An efficient algorithm determining when fabrics hang together. *Geom. Dedicata*, 15:259–260, 1984. [e-eadwf-84] *Keywords:* fabrics, weavings.

4915 M. T. Ensz, D. W. Storti, and M. A. Ganter. Implicit methods for geometry creation. *Internat. J. Comput. Geom. Appl.*, 8:509–536, 1998. [esg-imgc-98]

C. D. Enyon. See also [7596].

4916 K. S. Eo and C. M. Kyung. A two-dimensional geometric processor for design rule check applications. In *TENCON'87. IEEE Per.10 Conf.?*, volume 1, pages 266–270, 1987. [ek-tgpdr-87] *Keywords:* parallel computations, isothetic, VLSI design.

4917 D. Eppstein. Approximating the minimum weight Steiner triangulation. *Discrete Comput. Geom.*, 11:163–191, 1994. [e-amwst-94] *Succeeds:* e-amwt-92.

4918 D. Eppstein. Approximating the minimum weight triangulation. Tech. Report 91-55, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1991. [e-amwt-91] *Precedes:* e-amwt-92.

4919 D. Eppstein. Approximating the minimum weight triangulation. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 48–57, 1992. [e-amwt-92] *Succeeds:* e-amwt-91. *Precedes:* e-amwst-94.

4920 D. Eppstein. Average case analysis of dynamic geometric optimization. *Comput. Geom. Theory Appl.*, 6:45–68, 1996. [e-acadg-96]

4921 D. Eppstein. Dynamic Euclidean minimum spanning trees and extrema of binary functions. *Discrete Comput. Geom.*, 13:111–122, 1995. [e-demst-95]

4922 D. Eppstein. Dynamic three-dimensional linear programming. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 488–494, 1991. [e-dtdlp-91] *Precedes:* e-dtdlp-92.

4923 D. Eppstein. Dynamic three-dimensional linear programming. *ORSA J. Comput.*, 4(4):360–368, 1992. [e-dtdlp-92] *Keywords:* optimization, cluster analysis. *Succeeds:* e-dtdlp-91. *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

4924 David Eppstein. Fast hierarchical clustering and other applications of dynamic closest pairs. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 619–628, 1998. [e-fhcoa-98]

4925 D. Eppstein. Faster circle packing with application to non-obtuse triangulation. *Internat. J. Comput. Geom. Appl.*, 7:485–492, 1997. [e-fcpan-97]

4926 D. Eppstein. Faster construction of planar two-centers. Tech. Report 96-12, Dept. Comput. Sci., University of California, Irvine, 1996. [e-fcptc-96]

4927 D. Eppstein. Faster construction of planar two-centers. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, 1997. [e-fcptc-97]

4928 D. Eppstein. Faster geometric k-point MST approximation. Tech. Report 95-13, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1995. [e-fgkma-95] *Keywords:* k-MST. *Precedes:* e-fgkma-97.

4929 D. Eppstein. Faster geometric k-point MST approximation. *Comput. Geom. Theory Appl.*, 8(5):231–240, October 1997. [e-fgkma-97] *Keywords:* k-MST. *Succeeds:* e-fgkma-95.

4930 D. Eppstein. Finding the k smallest spanning trees. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 38–47. Springer-Verlag, 1990. [e-fksst-90]

4931 D. Eppstein. Finding the k smallest spanning trees. *BIT*, 32:237–248, 1992. [e-fksst-92]

4932 D. Eppstein. Fully dynamic maintenance of Euclidean minimum spanning trees. Tech. Report 92-05, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1992. [e-fdmem-92]

4933 D. Eppstein. Geometric lower bounds for parametric matroid optimization. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 662–671, 1995. [e-glbpm-95]

4934 David Eppstein. Geometry in action. http://www.ics.uci.edu/~eppstein/geom.html. [e-ga-] *URL:* http://www.ics.uci.edu/~eppstein/geom.html.

4935 D. Eppstein. Improved bounds for intersecting triangles and halving planes. Tech. Report 91-53, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1991. [e-ibith-91] *Comments:* To appear in J. Comb. Theory Ser. A.

4936 D. Eppstein. Improved bounds for intersecting triangles and halving planes. *J. Combin. Theory Ser. A*, 62:176–182, 1993. [e-ibith-93]

4937 David Eppstein. Linear complexity hexahedral mesh generation. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 58–67, 1996. [e-lchmg-96] *Cites:* bpmcs-cahat-95, b-ct-93, be-mgot-95, cs-bst-94, h-mgasi-83, h-srcc-95, jsk-actfm-91, bbmmt-hmgd-95, m-cqmsw-95, rrt-ctq-95, s-op-, t-hdp-93, ZZZ.

4938 D. Eppstein. New algorithms for minimum area k-gons. Tech. Report 91-59, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1991. [e-namak-91]

4939 D. Eppstein. New algorithms for minimum area k-gons. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 83–88, 1992. [e-namak-92]

4940 D. Eppstein. Offline algorithms for dynamic minimum spanning tree problems. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 392–399. Springer-Verlag, 1991. [e-oadms-91] *Keywords:* proximity, minimum spanning tree. *Precedes:* e-oadms-92.

4941 D. Eppstein. Offline algorithms for dynamic minimum spanning tree problems. Tech. Report 92-04, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1992. [e-oadms-92] *Succeeds:* e-oadms-91.

4942 D. Eppstein. Persistence, offline algorithms, and space compaction. Tech. Report 91-54, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1991. [e-poasc-91]

4943 David Eppstein. Spanning trees and spanners. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 425–461. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [e-sts-00] *Annote:* Chapter 9 of su-hcg-00.

4944 D. Eppstein. Speed-ups in constructive solid geometry. Report 92-87, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1992. [e-sucsg-92]

4945 D. Eppstein. Subquadratic nonobtuse triangulation of convex polygons. Tech. Report 91-61, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1991. [e-sntcp-91]

4946 D. Eppstein. The diameter of nearest neighbor graphs. Tech. Report 92-76, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, July 1992. [e-dnng-92]

4947 D. Eppstein. The farthest point Delaunay triangulation minimizes angles. Manuscript, 1990. [e-fpdtm-90]

4948 D. Eppstein. The farthest point Delaunay triangulation minimizes angles. *Comput. Geom. Theory Appl.*, 1:143–148, 1992. [e-fpdtm-92] *Keywords:* Delaunay triangulation, Voronoi diagrams.

4949 D. Eppstein. Tree-weighted neighbors and geometric k smallest spanning trees. Tech. Report 92-77, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1992. [e-twngk-92] *Precedes:* e-twngk-94.

4950 D. Eppstein. Tree-weighted neighbors and geometric k smallest spanning trees. *Internat. J. Comput. Geom. Appl.*, 4:229–238, 1994. [e-twngk-94] *Keywords:* minimum spanning trees, spanning tree enumeration, geometric optimization, nearest neighbors. *Succeeds:* e-twngk-92.

4951 D. Eppstein and J. Erickson. Iterated nearest neighbors and finding minimal polytopes. Tech. Report 92-71, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1992. [ee-innfm-92] *Precedes:* ee-innfm-93.

4952 D. Eppstein and J. Erickson. Iterated nearest neighbors and finding minimal polytopes. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 64–73, 1993. [ee-innfm-93] *Keywords:* optimization. *Succeeds:* ee-innfm-92.

4953 D. Eppstein and J. Erickson. Iterated nearest neighbors and finding minimal polytopes. *Discrete Comput. Geom.*, 11:321–350, 1994. [ee-innfm-94] *Succeeds:* ee-innfm-93.

4954 D. Eppstein and J. Erickson. New algorithms for minimum measure simplices and one-dimensional weighted Voronoi diagrams. Tech. Report 92-55, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1992. [ee-namms-92]

4955 D. Eppstein and Z. Galil. Parallel algorithmic techniques for combinatorial computation. *Annu. Rev. Comput. Sci.*, 3:233–283, 1988. [eg-patcc-88]

4956 D. Eppstein, Z. Galil, and R. Giancarlo. Speeding up dynamic programming. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 488–496, 1988. [egg-sudp-88]

4957 D. Eppstein, Z. Galil, R. Giancarlo, and G. F. Italiano. Sparse dynamic programming. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 513–522, 1990. [eggi-sdp-90]

4958 D. Eppstein, Z. Galil, G. Italiano, and T. Spencer. Separator based sparsification for dynamic planar graph algorithms. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 208–217, 1993. [egis-sbsdp-93]

4959 D. Eppstein, Z. Galil, G. F. Italiano, and A. Nissenzweig. Sparsification: A technique for speeding up dynamic graph algorithms. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 60–69, 1992. [egin-stsud-92]

4960 D. Eppstein, Z. Galil, G. F. Italiano, and T. i. Spencer. Separator based sparsification i. planarity testing and minimum spanning trees. *J. Comput. Syst. Sci.*, 52:3–27, 1996. [egis-sbspt-96]

4961 David Eppstein and David Hart. Shortest paths in an arrangement with k line orientations. Manuscript, University of California, Irvine, 1997. [eh-spakl-97]

4962 D. Eppstein, G. F. Italiano, R. Tamassia, R. E. Tarjan, J. Westbrook, and M. Yung. Corrigendum (Maintenance of a minimum spanning forest in a dynamic plane graph). *J. Algorithms*, 15(1):173, 1993. [eittwy-cmmsf-93]

4963 D. Eppstein, G. F. Italiano, R. Tamassia, R. E. Tarjan, J. Westbrook, and M. Yung. Maintenance of a minimum spanning forest in a dynamic planar graph. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 1–11, 1990. [eittwy-mmsfd-90] *Precedes:* eittwy-mmsfd-92.

4964 D. Eppstein, G. F. Italiano, R. Tamassia, R. E. Tarjan, J. Westbrook, and M. Yung. Maintenance of a minimum spanning forest in a dynamic plane graph. *J. Algorithms*, 13(1):33–54, 1992. [eittwy-mmsfd-92] *Succeeds:* eittwy-mmsfd-90. *Annote:* Corrigendum in 15(1):173, 1993.

4965 D. Eppstein, G. L. Miller, and S.-H. Teng. A deterministic linear time algorithm for geometric separators and its applications. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 99–108, 1993. [emt-dltag-93] *Cites:* b-mdc-80, beg-pgmg-90, cs-splg-88, d-scpps-92, dfn-mgma-84, fj-sbsem-86, fmt-sbpdc-92, g-ndrfe-73, gl-cslsp-81, ght-stgbg-84, gt-anda-87, hs-sugpm-90, hlp-i-52, hw-ensrq-87, hc-gi-52, jp-dhp-78, k-fa-73, k-sa-81, k-ss-73, lrt-gnd-79, lt-stpg-79, lt-apst-80, m-aogdc-91, mt-cppd-90, mttv-amp-92, mt-sttd-90, mtv-ugags-91, mv-dgs-91, pr-epsls-85, sf-afem-73, t-pssug-90, t-gt3m-88, vc-ucrfe-71, v-adptd-91, v-oaann-89, y-3spia-83, ZZZ.

4966 D. Eppstein, M. H. Overmars, Günter Rote, and G. Woeginger. Finding minimum area k-gons. *Discrete Comput. Geom.*, 7:45–58, 1992. [eorw-fmakg-92] *Keywords:* optimization, reporting.

D. Eppstein. See also [169, 170, 638–641, 830, 831, 1405, 1406, 1789–1818, 3361, 3362, 3961, 3962, 4184, 4263].

D. Epstein. See also [832].

Leah Epstein. See also [1204].

4967 P. Epstein. Generating geometric objects at random. Master's thesis, School of Computer Science, Carleton University, April 1992. [e-ggor-92] *Keywords:* master thesis.

4968 P. Epstein, J. Kavanagh, A. Knight, J. May, T. Nguyen, and J.-R. Sack. A workbench for computational geometry. *Algorithmica*, 11(4):404–428, April 1994. [ekkmns-wcg-94]

4969 P. Epstein, A. Knight, J. May, T. Nguyen, and J.-R. Sack. A workbench for computational geometry. Technical Report SCS-TR-180, School Comput. Sci., Carleton Univ., Ottawa, ON, 1990. [ekmns-wcg-90]

4970 P. Epstein and J.-R. Sack. Generating triangulations at random. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 305–310, 1992. [es-gtr-92] *Cites:* as-gbtr-92, e-ggor-92, u-igfpc-80, ZZZ.

4971 P. Epstein and J.-R. Sack. Generating triangulations at random. *ACM Transaction on Modeling and Computer Simulation*, 4(3):267–278, 1994. [es-gtr-94]

P. Epstein. See also [4058].

4972 M. Erdmann. On motion planning with uncertainty. Technical Report MIT-AI-TR 810, Artificial Intelligence Laboratory, MIT, 1984. [e-mpu-84]

4973 M. Erdmann. Using backprojections for fine motion planning with uncertainty. *Internat. J. Robot. Res.*, 5(1):??, 1986. [e-ubfmp-86]

4974 M. Erdmann and T. Lozano-Pérez. On multiple moving objects. *Algorithmica*, 2:477–521, 1987. [el-mmo-87]

4975 M. Erdmann and M. T. Mason. An exploration of sensorless manipulation. In *Proc. 3rd IEEE Internat. Conf. Robot. Autom.*, April 1986. [em-esm-86]

Michael Erdmann. See also [7536, 7537].

4976 M. A. Erdmann and M. Mason. An exploration of sensorless manipulation. *Internat. J. Robot. Autom.*, 4(4):367–379, 1988. [em-esm-88]

M. A. Erdmann. See also [6021].

4977 P. Erdős. Combinatorial problems in geometry and number theory. In *??*, volume 34 of *Proc. Symp. Pure Math.*, pages 149–62. American Mathematical Society, 1979. [e-cpgnt-79]

4978 P. Erdős. Graph theory and probability. *Canad. J. Math.*, 11:34–38, 1959. [e-gtp-59]

4979 P. Erdős. On extremal problems of graphs and generalized graphs. *Israel J. Math.*, 2:183–190, 1964. [e-epggg-64]

4980 P. Erdős. On sets of distances of n points. *Amer. Math. Monthly*, 53:248–250, 1946. [e-sdnp-46] *Keywords:* combinatorial geometry, number theory, unit distances.

4981 P. Erdős. On sets of distances of n points in Euclidean space. *Publications Mathematical Institute of Hungarian Academy of Sciences*, 5:165–169, 1960. [e-sdnpe-60] *Keywords:* combinatorial geometry, number theory, unit distance.

4982 P. Erdős. On some applications of graph theory to geometry. *Canad. J. Math.*, 19:968–971, 1967. [e-sagtg-67] *Keywords:* unit distance, extremal graph theory.

4983 P. Erdős. On the integers relatively prime to n and on a number theoretic function considered by Jacobsthal. *Math. Scand.*, 10:163–170, 1962. [e-irpnn-62]

4984 P. Erdős. *Paul Erdős: The Art of Counting.* MIT Press, 1973. [e-peac-73]

4985 P. Erdős. Problem 3763. *Amer. Math. Monthly*, 42:627, 1935. [e-p3763-35] *Comments:* See sn-sp3763-39. *Annote:* Flipping polygon pockets.

4986 P. Erdős. Problem no 4065. *Amer. Math. Monthly*, 51:169, 1944. [e-pn4-44]

4987 Paul Erdős. Some more problems on elementary geometry. *Austral. Math. Soc. Gaz.*, 5:52–54, 1978. [e-smpeg-78]

4988 P. Erdős, R. J. Faudree, C. C. Rousseau, and R. H. Schelp. The size Ramsey number. *Periodica Mathematica Hungarica*, 9:145–161, 1978. [efrs-srn-78]

4989 P. Erdős and P. Fishburn. Minimum planar sets with maximum equidistance counts. *Comput. Geom. Theory Appl.*, 7:207–218, 1997. [ef-mpsme-97]

4990 P. Erdős, P. M. Gruber, and J. Hammer. *Lattice Points.* Longman Scientific & Technical, 1989. [egh-lp-89]

4991 P. Erdős and R. K. Guy. Crossing number problems. *Amer. Math. Monthly*, 80:52–58, 1973. [eg-cnp-73]

4992 P. Erdős and A. Gyárfás. Vertex covering with monochromatic paths. *Mathematica Pannonica*, 6:7–10, 1995. [eg-vcmp-95]

4993 P. Erdős, A. Gyárfás, and L. Pyber. Vertex coverings by monochromatic cycles and trees. *J. Combin. Theory Ser. B*, 51:90–95, 1991. [egp-vcmct-91]

4994 P. Erdős and P. Komjáth. Countable decompositions of $\Re^2$ and $\Re^3$. *Discrete Comput. Geom.*, 5:325–331, 1990. [ek-cdrr-90]

4995 P. Erdős, L. Lovász, A. Simmons, and E. Straus. Dissection graphs of planar point sets. In J. N. Srivastava, editor, *A Survey of Combinatorial Theory*, pages 139–154. North-Holland, Amsterdam, Netherlands, 1973. [elss-dgpps-73] *Keywords:* k-sets.

4996 P. Erdős, L. Lovász, and K. Vesztergombi. On the graph of large distances. *Discrete Comput. Geom.*, 4:541–549, 1989. [elv-gld-89]

4997 P. Erdős and J. Pach. Variations on the theme of repeated distances. *Combinatorica*, 10:261–269, 1990. [ep-vtrd-90] *Keywords:* combinatorial geometry, unit distance.

4998 P. Erdős and G. Purdy. Some extremal problems in geometry. *J. Combin. Theory*, 10(3):246–252, 1971. [ep-sepg-71]

4999 P. Erdős and A. Renyi. Asymmetric graphs. *Acta Math. Acad. Sci. Hungar.*, 14:295–315, 1963. [er-ag-63]

5000 P. Erdős and M. Simonovits. Supersaturated graphs and hypergraphs. *Combinatorica*, 3:181–192, 1983. [es-sgh-83]

5001 P. Erdős and J. Spencer. *Probabilistic Methods in Combinatorics.* Academic Press, 1974. [es-pmc-74]

5002 P. Erdős and G. Szekeres. A combinatorial problem in geometry. *Compositio Math.*, 2:463–470, 1935. [es-cpg-35]

5003 P. Erdős and G. Szekeres. On some extremeum problem in geometry. *Ann. Univ. Sci. Budapest*, 3-4:53–62, 1960. [es-sepeg-60]

5004 P. Erdős and P. Turán. On aproblem of Sidon in additive number theory, and on some related problems. *Proc. London Math. Soc.*, 16:212–215, 1941. [et-psant-41]

P. Erdős. See also [327, 328, 534, 844, 845, 1154, 1155, 2541, 2619, 4853, 4854].

5005 W. Eric and L. Grimson. *Object Recognition by Computer: The Role of Geometric Constraints.* MIT Press, Cambridge, MA, 1990. [eg-orcrg-90]

5006 Jeff Erickson. Computational geometry pages. http://www.cs.duke.edu/~jeffe/compgeom/. [e-cgp-] *URL:* http://www.cs.duke.edu/~jeffe/compgeom/.

5007 Jeff Erickson. Lower bounds for linear satisfiability problems. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 388–395, 1995. [e-lblsp-95] *Keywords:* lower bounds, decision trees.

5008 Jeff Erickson. New lower bounds for convex hull problems in odd dimensions. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 1–9, 1996. [e-nlbch-96] *Cites:* am-rsps-93, af-pachv-92, b-lbact-83, c-osrch-95, csy-oscpf-95, ck-acp-70, c-ochaa-93, cm-dosch-92, c-mosga-94, cs-arscg-89, e-lblsp-95, es-blbda-95, go-copcg-95, g-ncp-63, g-eadch-72, g-cp-67, j-dfaed-41, ks-upcha-86, ms-rscp-93, m-loq-93, ph-chfsp-77, r-dchhd-92, s-uekvm-01, s-chaop-81, s-mplbc-85, s-chdch-86, s-sdlpc-91, s-opgfg-91, s-fchff-85, y-lbfch-81, z-lp-94, ZZZ.

5009 J. Erickson. New lower bounds for convex hull problems in odd dimensions. *SIAM J. Comput.*, 28:1198–1214, 1999. [e-nlbch-99]

5010 Jeff Erickson. New lower bounds for halfspace emptiness. In *Proc. 37th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 472–481, 1996. [e-nlbhe-96] *Keywords:* partition graph, partitioning algorithm, range searching, incidences.

5011 Jeff Erickson. New lower bounds for Hopcroft's problem. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 127–137, 1995. [e-nlbhp-95] *Keywords:* partitioning algorithms. *Cites:* a-pal2a-90, aaas-cvgbr-93, b-lbact-83, bos-cvdo-92, bs-ca-92, c-rcsi-86, c-lbcpr-89, c-chdc-93, c-lbolr-95, csw-qoubs-92, cegsw-ccbac-90, csy-khrp-87, e-acg-87, eghsssw-irals-89, egs-cmcap-90, es-hipac-91, e-rcsgp-95, es-blbda-95, f-lbcso-81, hw-tn-65, l-ccs-90, m-rsehc-93, sy-lbadt-82, s-opgfg-91, st-epdg-83, t-clc-75, t-cgcbs-84, ZZZ.

5012 Jeff Erickson. New lower bounds for Hopcroft's problem. *Discrete Comput. Geom.*, 16:389–418, 1996. [e-nlbhp-96] *Keywords:* range searching, incidence, partitioning algorithm, partition graph.

5013 Jeff Erickson. Nice point sets can have nasty Delaunay triangulations. Technical report, University of Illinois, Urbana-Champaign, 2001. [e-npsch-01]

5014 Jeff Erickson. Nice point sets can have nasty Delaunay triangulations. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 96–105, 2001. [e-npsch-01i]

5015 Jeff Erickson. On the relative complexities of some geometric problems. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 85–90, 1995. [e-rcsgp-95]

5016 Jeff Erickson. Plücker coordinates. *Ray Tracing News*, 10(3):electronic, December 1997. [e-pc-97] *URL:* http://www.acm.org/tog/resources/RTNews/html/rtnv10n3.html.

5017 Jeff Erickson. Space-time tradeoffs for emptiness queries. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 304–313, 1997. [e-stteq-97] *Keywords:* lower bounds, range searching, partition graph. *Cites:* a-rs-96, am-rsps-93, ahl-sqrpc-90, b-lbact-83, bos-cvdo-94, bcp-hhihr-93, c-fdlpq-96, c-osrch-96, c-lbcpr-89, c-chdc-93, cegs-ablsp-94, cf-plhur-94, cgl-pgd-85, cr-srrpm-96, c-lbolr-97, dk-dsppu-90, de-mee-96, e-nlbhe-96, e-nlbhp-96, f-lbcso-81, m-ept-92, m-rph-92, m-loq-93, m-vrsa-93, m-rsehc-93, m-grs-94, ms-rscp-93, pa-cg-95, ps-cgi-85, t-cawrn-79, y-cmps-85, ZZZ.

5018 J. Erickson. Space-time tradeoffs for emptiness queries. *SIAM J. Comput.*, 29:1968–1996, 2000. [e-stteq-00]

5019 Jeff Erickson and Raimund Seidel. Better lower bounds on detecting affine and spherical degeneracies. manuscript, 1993. [es-blbda-93t] *Precedes:* es-blbda-93, es-blbda-95.

5020 Jeff Erickson and Raimund Seidel. Better lower bounds on detecting affine and spherical degeneracies. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 528–536, 1993. [es-blbda-93] *Succeeds:* es-blbda-93t.

5021 J. Erickson and R. Seidel. Better lower bounds on detecting affine and spherical degeneracies. *Discrete Comput. Geom.*, 13:41–57, 1995. [es-blbda-95] *Succeeds:* es-blbda-93t.

J. Erickson. See also [131, 132, 171–174, 379, 380, 3961, 3962, 4951–4954].

5022 L. Ericson and C. Ó'Dúnlaing. Enumeration of tree properties by naive methods. *Algorithms Rev.*, 1(3):119–124, 1990. [eo-etpnm-90]

5023 L. W. Ericson. Topologically correct graphical editing in the plane. Technical Report 97, Courant Inst. Math. Sci., New York Univ., New York, NY, January 1987. [e-tcgep-87]

5024 L. W. Ericson and C. K. Yap. The design of LINETOOL, a geometric editor. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 83–92, 1988. [ey-dlge-88] *Cites:* -pltc-85, a-ggar-88, a-grla-88, b-tcosl-79, bdmpw-gas-87, b-bdn-87, b-wcgbd-89, b-gbamp-85, bcla-casac-83, bl-as-83, cgh-snebc-88, c-pegtu-84, c-cmpr-71, c-qercf-75, cb-enaaa-80, d-smbgb-87, dmy-aobgn-86, e-tfcgc-88, e-tcgep-87, f-gcest-88, g-seppi-84, g-ac-83, km-gr-89, ks-agtpu-86, l-cae-83, m-vigau-89i, my-ngb-86, mm-chf-83, n-jcbgs-85, n-cte-83, p-lfg-66, ram-tm-84, s-fpavp-80, ss-pmp2g-83, ss-ccsm-85, s-rmes-40, s-dicpl-80, sb-ooptv-85, s-smmgc-63, u-te-48, w-eidag-73, v-ltg-80, y-snegi-79, gy-frcg-86, -m4rm-85, ZZZ.

Carl Erikson. See also [9023].

5025 Ulf Erikson. Implementing main-memory point-enclosure algorithms. In *Abstracts 15th European Workshop Comput. Geom.*, pages 117–118. INRIA Sophia-Antipolis, 1999. [e-immpe-99]

M. Erion. See also [6437].

5026 E. Erkut. The discrete p-dispersion problem. *European J. Oper. Res.*, 46(1):48–60, 1990. [e-dpp-90] *Keywords:* facility location, points, minmax, NP-completeness.

5027 E. Erkut, T. Baptie, and B. von Hohenbalken. The discrete p-maxian location problem. *Comput. Oper. Res.*, 17(1):51–61, 1990. [ebh-dplp-90] *Keywords:* facility location, points.

5028 E. Erkut and S. Neuman. Analytical models for locating undesirable facilities. *European J. Oper. Res.*, 40(3):275–291, 1989. [en-amluf-89] *Keywords:* facility location, points, maxmin.

5029 J. Ernvall, J. Katajainen, and O. Nevalainen. A minimal spanning tree algorithm for a point set in Euclidean space. Report 24, Dept. Comput. Sci., Univ. Turku, Turku, Finland, 1980. [ekn-mstap-80]

5030 J. Ernvall and O. Nevalainen. Estimating the length of minimal spanning trees in compression of files. *BIT*, 24:19–32, 1984. [en-elmst-84]

J. Ernvall. See also [10110, 10111].

5031 Martin Erwig. Encoding shortest paths in spatial networks. *Networks*, 26:291–303, 1995. [e-espsn-95] *Keywords:* point location, shortest paths, subdivision simplification.

5032 G. Eshel, M. M. Barash, and V. Chandru. Automatic design of a deep-drawn circumscribing preform. *Internat. J. Robot. Autom.*, 5(2):208–222, 1989. [ebc-adddc-89]

5033 W. Espelage and E. Wanke. Movement optimization in conveyor flow shop processing with one worker. Manuscript, University of Düsseldorf, Department of Computer Science, 1999. [ew-mmcfs-99]

5034 C. Esperanca and H. Samet. Representing orthogonal multidimensional objects by vertex lists. In C. Arcelli, L. P. Cordella, and G. Sanniti di Baja, editors, *Aspects of Visual Form Processing*, pages 209–220, Singapore, 1994. World Scientific. [es-romov-94]

5035 M. Espie. Computing efficiently shortest paths for degenerate metrics. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 149–152, August 1991. [e-cespd-91] *Cites:* f-gmt-70, c-pt-90i, b-sdg-87, ps-cgi-85, bm-sg-70, rlw-rsppr-89, ZZZ.

5036 M. Espie. Un algorithme simple de calcul de plus court chemin en norme l_1 dans des regions simplement connexes. In *Journees de Geometrie Algorithmique. Pap. Conf. Sophia-Antipolis. INRIA*, pages 72–79, 1990. [e-uasdc-90] *Keywords:* L_1-metrics, shortest paths.

5037 C. Esposito. Graph graphics: Theory and practice. *Comput. Math. Appl.*, 15(4):247–253, 1988. [e-ggtp-88] *Keywords:* graph drawing.

D. M. Esterling. See also [8917].

J. Estes. See also [12468].

5038 V. Estivill-Castro, J. O'Rourke, J. Urrutia, and D. Xu. Illumination of polygons with vertex floodlights. Technical Report 037, Dept. Comput. Sci., Smith College, August 1994. [eoux-ipvf-94] *Keywords:* visibility, floodlights. *Precedes:* eoux-ipvf-95.

5039 V. Estivill-Castro, J. O'Rourke, J. Urrutia, and D. Xu. Illumination of polygons with vertex floodlights. *Inform. Process. Lett.*, 56:9–13, 1995. [eoux-ipvf-95] *Keywords:* visibility, floodlights. *Succeeds:* eoux-ipvf-94.

5040 V. Estivill-Castro and V. Raman. Edge visibility for finitely oriented figures. Technical Report, Dept. Comput. Sci., Univ. Waterloo, 1990. In preparation. [er-evfof-90]

5041 V. Estivill-Castro and V. Raman. Visibility in finitely oriented polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 181–185, 1990. [er-vfop-90] *Precedes:* er-vfop-93. *Cites:* at-oadvp-81, deo-secp-88, er-evfof-90, g-scop-83, g-dcopi-84a, js-clvpa-87, l-vsp-83, lw-apcfp-79, o-agta-87, rw-ocfoc-87, rw-rocs-89, srw-gtv-89, www-dpcgf-85, wwsw-suipp-86, ZZZ.

5042 V. Estivill-Castro and V. Raman. Visibility in finitely oriented polygons. Technical Report LANIA RT-7-93, Laboratorio Nacional de Informática Avanzada, 1993. also in: Proc. 2nd Canad. Conf. Comput. Geom. [er-vfop-93] *Succeeds:* er-vfop-90.

5043 V. Estivill-Castro and J. Urrutia. Optimal floodlight illumination of orthogonal art galleries. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 81–86, 1994. [eu-ofioa-94] *Keywords:* visibility, floodlights. *Cites:* bglosu-fp-93, c-tsplt-91a, cru-ofipt-93, er-vfop-93, o-agta-87, r-erog-87, s-rrag-92, kkk-tgrfw-83, ZZZ.

5044 V. Estivill-Castro and J. Urrutia. Two-floodlight illumination of convex polygons. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 62–73. Springer-Verlag, 1995. [eu-tficp-95]

Vladimir Estivill-Castro. See also [47, 48, 3050].

Matthias Ettrich. See also [8512].

5045 Michal Etzion and Ari Rappoport. A boundary sampling algorithm for computing the Voronoi graph of a 2-D polygon. Technical report, Institute of Computer Science, The Hebrew University, 1996. [er-bsacv-96] *Abstract:* The Voronoi graph of a set of sites contains the complete symbolic information of the Voronoi diagram of the sites without the latter's geometry. The Voronoi graph is important for two reasons. First, there are applications that need only the symbolic proximity information of a shape, without requiring geometry. Second, the graph can be used as a starting structure for a robust and efficient global or local computation of the Voronoi diagram.

In this paper we present an algorithm that computes the Voronoi graph of a 2-D polygon (with holes) by generating the Voronoi diagram of a finite set of points on the polygon's boundary. Unlike algorithms for computing the Voronoi diagram of a polygon, our algorithm avoids manipulation of non-linear entities and is simple to implement. The operations used by the algorithm are line intersections and comparisons of distances between points and lines.

5046 Michal Etzion and Ari Rappoport. On compatible star decompositions of simple polygons. *IEEE Trans. Visualizat. Comput. Graph.*, 3(1):87–95, 1997. [er-csdsp-97] *Abstract:* We introduce the notion of compatible star decompositions of simple polygons. In general, given two polygons with a correspondence between their vertices, two polygonal decompositions of the two polygons are said to be compatible if there exists a one-to-one mapping between them such that the corresponding pieces are defined by corresponding vertices. For compatible star decompositions we also require correspondence between star points of the star pieces. Compatible star decompositions have applications in computer animation and shape representation and analysis.

We present two algorithms for constructing compatible star decompositions of two simple polygons. The first algorithm is optimal in the number of pieces in the decomposition, providing that such a decomposition exists without adding Steiner vertices. The second algorithm constructs compatible star decompositions with Steiner vertices, which are not minimal in the number of pieces but are worst case optimal in this number and in the number of added Steiner vertices. We prove that some pairs of polygons require $O(n^2)$ pieces, and that the decompositions computed by the second algorithm possess no more than $O(n^2)$ pieces.

In addition to the contributions regarding compatible star decompositions, the paper also corrects an error in the only previously published polynomial algorithm for constructing a minimal star decomposition of a simple polygon, an error which might lead to a non-minimal decomposition.

5047 Michal Shapira (Etzion) and Ari Rappoport. Shape blending using the star-skeleton representation. *IEEE Comput. Graph. Appl.*, 15(2):44–50, March 1995. [sr-sbuss-95] *Abstract:* We present a novel approach to the problem of generating a polygon sequence that blends two simple polygons given a correspondence between their boundaries. Previous approaches to this problem, including direct vertex interpolation and an interpolation based on edge lengths and angles between edges, tend to produce self intersections and shape distortions. Our approach introduces the star-skeleton representation, a structure comprised of equivalent decompositions of the two polygons into star-shaped pieces and a skeleton connecting the star pieces. We utilized the concept of a star polygon since two star polygons can be fairly blended without any self intersections.

We present algorithms for creating equivalent star-skeletons for the two polygons and for blending two star-skeletons by interpolating their skeletons and unfolding intermediate polygons from the skeletons. We also demonstrate the usage of the star-skeleton for blending multiple polygons and images. We show examples from a working system that demonstrate the improved blend sequences generated by the method.

The intrinsic reasons for the good results obtained are the fact that the interiors of the polygons are considered, not only the boundaries, and that the star-skeleton explicitly models an interdependence between all the vertices of the polygons.

5048 D. Eu, E. Guévremont, and G. Toussaint. On classes of arrangements of lines. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 109–114, 1992. [egt-cal-92] *Cites:* cl-fdsl-85, csss-otass-89, eat-atdhl-83, et-gpprl-89, hv-splsp-49, k-sades-91a, s-cesl-85, t-slaic-85, v-cbrdf-87, z-fuafc-75, ZZZ.

5049 D. Eu, E. Guévremont, and G. T. Toussaint. On envelopes of arrangements of lines. Technical Report SOCS 93.10, McGill University, School of Computer Science, November 1993. [egt-eal-93] *Precedes:* egt-eal-96.

5050 D. Eu, E. Guévremont, and G. T. Toussaint. On envelopes of arrangements of lines. *J. Algorithms*, 21:111–148, 1996. [egt-eal-96] *Succeeds:* egt-eal-93.

5051 D. Eu and G. T. Toussaint. On approximating polygonal curves in two and three dimensions. *CVGIP: Graph. Models Image Process.*, 56(3):231–246, May 1994. [et-apctt-94]

5052 Euclid. *Elements*. Dover, 1956. Translated by Sir Thomas L. Heath. [e-e-56]

5053 G. Evangelidis, D. B. Lomet, and B. Salzberg. The hB$^{\Pi}$-tree: A multi-attribute index supporting concurrency, recovery and node consolidation. *VLDB Journal*, 6:1–25, 1997. [els-htmai-97]

B. Evans. See also [11881].

5054 B. L. Evans, J. Teich, and C. Schwarz. Automated design of two-dimensional rational decimation systems. In *IEEE Asilomar Conference on Signals, Systems, and Computers*, pages 498–502, 1994. [ets-adtdr-94] *URL:* http://ptolemy.eecs.berkeley.edu.

Brian L. Evans. See also [11880].

5055 D. G. Evans and S. M. Jones. Detecting Voronoi (area-of-influence) polygons. *Mathematical Geology*, 19(6):523–537, 1987. [ej-dvaip-87] *Annote:* Least squares to find the points that would have a given set of polygons as their VPs. Gives a simple measure to find the closeness of fit.

5056 D. J. Evans and S. Mai. Two parallel algorithms for the convex hull problem in a two dimensional space. *Parallel Comput.*, 2:313–326, 1985. [em-tpach-85]

5057 D. J. Evans and I. Stojmenovic. On parallel computation of Voronoi diagrams. *Parallel Comput.*, 12(1):121–125, 1989. [es-pcvd-89] *Keywords:* Voronoi diagram, parallel computations.

5058 D. J. Evans and N. Y. Yousif. Analysis of the performance of the parallel quicksort method. *BIT*, 25:106–112, 1985. [ey-appqm-85]

5059 F. Evans, Steven S. Skiena, and A. Varshney. Optimizing triangle strips for fast rendering. In *IEEE Visualization '96 Proceedings*, pages 319–326, October 1996. [esv-otsfr-96]

5060 G. Evans, A. Middleditch, and N. Miles. Stable computation of the 2d medial axis transform. *Internat. J. Comput. Geom. Appl.*, 8:577–598, 1998. [emm-sc2ma-98]

5061 I. S. Evans. The selection of class intervals. *Trans. Inst. Br. Geogrs.*, 2:98–124, 1977. [e-sci-77]

5062 R. C. Evans, G. Koppelman, and V. T. Rajan. Shaping geometric objects by cumulative translational sweeps. *IBM J. Res. Develop.*, 31:343–360, 1987. [ekr-sgoct-87]

S. Evans. See also [1288].

5063 William Evans. Regular polygons are most tolerant. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 109–113, 1995. [e-rpamt-95]

W. Evans. See also [2304, 2305, 2308].

G. Even. See also [5066].

5064 S. Even. *Algorithmic Combinatorics*. Macmillan, New York, NY, 1973. [e-ac-73]

5065 S. Even. *Graph Algorithms*. Computer Science Press, Potomac, Maryland, 1979. [e-ga-79] *Keywords:* graph drawing.

5066 S. Even and G. Even. Embedding interconnection networks in grids via the layered cross product. In *Algorithms and Complexity (Proc. CIAC' 97)*, volume 1203 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1997. [ee-eingl-97] *Keywords:* Invited talk.

5067 S. Even and G. Granot. Grid layouts of block diagrams — bounding the number of bends in each connection. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 64–75. Springer-Verlag, 1995. [eg-glbdb-95] *Keywords:* graph drawing, orthogonal, planar.

5068 S. Even and G. Granot. Rectilinear planar drawings with few bends in each edge. Technical Report 797, Computer Science Dept., Technion, 1994. [eg-rpdfb-94] *Keywords:* graph drawing.

5069 S. Even, A. Itai, and A. Shamir. On the complexity of timetable and multicommodity flow problems. *SIAM J. Comput.*, 5:691–703, 1976. [eis-ctmfp-76]

5070 S. Even and Y. Shiloach. An on-line edge deletion problem. *J. ACM*, 28:1–4, 1981. [es-oledp-81]

5071 S. Even and R. E. Tarjan. Computing an st-numbering. *Theoret. Comput. Sci.*, 2:339–344, 1976. [et-csn-76] *Keywords:* graph drawing.

5072 S. Even and R. E. Tarjan. Network flow and testing graph connectivity. *SIAM J. Comput.*, 4:507–518, 1975. [et-nftgc-75]

S. Even. See also [1350, 1351, 4836, 8696, 10793].

5073 H. Everett. Hamiltonian paths in nonrectangular grid graphs. Report 86-1, Dept. Comput. Sci., Univ. Toronto, Toronto, ON, 1986. [e-hpnrg-86]

5074 H. Everett. The visibility graphs of spiral polygons. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 47, 1989. [e-vgsp-89] *Precedes:* ec-rvgsp-90.

5075 H. Everett. Visibility graph recognition. Report 231/90, Dept. Comput. Sci., Univ. Toronto, Toronto, ON, 1990. Ph.D. Thesis. [e-vgr-90]

5076 H. Everett and D. G. Corneil. Negative results on characterizing visibility graphs. *Comput. Geom. Theory Appl.*, 5:51–63, 1995. [ec-nrcvg-95]

5077 H. Everett and D. G. Corneil. Recognizing visibility graphs of spiral polygons. *J. Algorithms*, 11:1–26, 1990. [ec-rvgsp-90] *Succeeds:* e-vgsp-89.

5078 Hazel Everett, Chinh Hoang, Kyri Kilakos, and Marc Noy. Planar segment visibility graphs. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 65–69, 1997. [ehkn-psvg-97]

5079 H. Everett, C. T. Hoang, K. Kilakos, and M. Noy. Planar segment visibility graphs. *Comput. Geom. Theory Appl.*, 16:235–243, 2000. [ehkn-psvg-00]

5080 H. Everett, F. Hurtado, and M. Noy. Stabbing information of a simple polygon. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 74–79. Carleton University Press, Ottawa, Canada, 1996. [ehn-sisp-96]

5081 H. Everett, S. Lazard, S. Robbins, H. Schröder, and S. Whitesides. Convexifying star-shaped polygons. In *Proc. 10th Canad. Conf. Comput. Geom.*, pages 2–3, 1998. [elrss-cssp-98]

5082 H. Everett, W. Lenhart, M. H. Overmars, T. Shermer, and J. Urrutia. Strictly convex quadrilateralizations of polygons. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 77–83, 1992. [elosu-scqp-92] *Cites:* bg-tph-90, beg-pgmg-90, c-tsplt-90i, kkk-tgrfw-83, l-dprcq-85, o-agta-87, st-ltadr-81, ZZZ.

5083 H. Everett, A. Lubiw, and J. O'Rourke. Recovery of convex hulls from external visibility graphs. Technical Report 024, Smith College, January 1993. [elo-rchev-93t] *Precedes:* elo-rchev-93.

5084 H. Everett, A. Lubiw, and J. O'Rourke. Recovery of convex hulls from external visibility graphs. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 309–314, 1993. [elo-rchev-93] *Succeeds:* elo-rchev-93t. *Cites:* elo-rchev-93t, o-agta-87, o-rcvg-90, o-cgc18-93, ZZZ.

5085 H. Everett, K. Lyons, B. Reed, and D. Souvaine. Illuminating squares on a transversal. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 118–121, 1991. [elrs-ist-91] *Cites:* cru-irtp-89, e-ftssg-85, eos-smcga-84t, f-icd-77, h-ragp-90, ZZZ.

5086 H. Everett and E. Rivera-Campo. Edge guarding a triangulated polyhedral terrain. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 293–295, 1994. [er-egtpt-94] *Precedes:* er-egpt-97. *Cites:* ah-epmfc-77, bstz-gpt-92, o-agta-87, ZZZ.

5087 H. Everett and E. Rivera-Campo. Edge guarding polyhedral terrain. *Comput. Geom. Theory Appl.*, 7:201–203, 1997. [er-egpt-97] *Succeeds:* er-egtpt-94.

5088 H. Everett, J.-M. Robert, and M. van Kreveld. An optimal algorithm for the ($\leq k$)-levels, with applications to separation and transversal problems. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 38–46, 1993. [erk-oalla-93] *Cites:* ass-sulbl-89, ag-nssfs-86, c-clps-85, ce-oails-92, c-narsc-87, csy-khrp-87, e-acg-87, eg-tsa-89, emprww-sls-82, ew-cbtda-86, elss-dgpps-73, h-awwss-89b, m-ltalp-83, m-fppa1-88, m-fppa2-89, m-lavd-91, o-olafs-81, ol-mcp-81, pss-ubnpk-89, s-ksacs-91, ZZZ.

5089 H. Everett, J.-M. Robert, and M. van Kreveld. An optimal algorithm for the ($\leq k$)-levels, with applications to separation and transversal problems. *Internat. J. Comput. Geom. Appl.*, 6:247–261, 1996. [erk-oalla-96] *Succeeds:* erk-oalla-93.

5090 H. Everett and S. Whitesides. Finding all the largest circles in a 3-dimensional box. Technical Report TR-SOCS-91.4, School of Computer Science, McGill University, Montreal, June 1991. [ew-falc3-91t] *Precedes:* ew-falc3-91.

5091 H. Everett and S. Whitesides. Finding all the largest circles in a 3-dimensional box. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 84–87, 1991. [ew-falc3-91] *Succeeds:* ew-falc3-91t. *Cites:* agss-ltacv-87, k-nptal-84a, m-lpltw-84, ZZZ.

H. Everett. See also [1698, 1699, 1943, 2309–2311, 2646, 3672–3674].

Frederick T. Evers. See also [3868].

5092 K. Ewacha, W. Li, and I. Rival. Order, genus and diagram invariance. *Order*, 8:107–113, 1991. [elr-ogdi-91]

5093 G. Ewald. Hamiltonian circuits in simplicial complexes. *Geom. Dedicata*, 2(1):115–125, September 1973. [e-hcsc-73]

5094 G. Ewald. On the classification of toric Fano varieties. *Discrete Comput. Geom.*, 3:49–54, 1988. [e-ctfv-88]

5095 G. Ewald. Spherical complexes and nonprojective toric varieties. *Discrete Comput. Geom.*, 1:115–122, 1986. [e-scntv-86]

5096 G. Ewald, D. G. Larman, and C. A. Rogers. The directions of the line segments and of the r-dimensional balls on the boundary of a convex body in Euclidean space. *Mathematika*, 17:1–20, 1970. [elr-dlsrd-70]

5097 G. M. Ewing. *Calculus of variations with applications*. MIT Press, 1985. [e-cva-85]

J. Eyles. See also [5637].

5098 G. Fabella and J. O'Rourke. Twenty-two points with no empty hexagon. Report JHU 86-03, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, January 1986. [fo-ttpne-86] *Keywords:* arrangements.

5099 A. Fabri. *Géométrie algorithmique en parallèle sur des machines réelles.* Thèse de doctorat en sciences, École Nationale Supérieure des Mines de Paris, France, 1994. [f-gapmr] *Keywords:* doctoral thesis.

5100 A. Fabri, G.-J. Giezeman, L. Kettner, S. Schirra, and S. Schönherr. On the design of CGAL a computational geometry algorithms library. *Softw. – Pract. Exp.*, 30(11):1167–1202, 2000. [fgkss-dccga-00] *Succeeds:* fgkss-ckbgc-96, fgkss-dccga-98. *Annote:* Special Issue on Discrete Algorithm Engineering.

5101 A. Fabri, G.-J. Giezeman, L. Kettner, S. Schirra, and S. Schönherr. On the design of CGAL, the Computational Geometry Algorithms Library. Research Report MPI-I-98-1-007, Max–Planck–Institut für Informatik, February 1998. [fgkss-dccga-98] *URL:* http://data.mpi-sb.mpg.de/internet/reports.nsf/NumberView/1998-1-007.

5102 Andreas Fabri, Geert-Jan Giezeman, Lutz Kettner, Stefan Schirra, and Sven Schönherr. The CGAL kernel: A basis for geometric computation. In M. C. Lin and D. Manocha, editors, *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, volume 1148 of *Lecture Notes Comput. Sci.*, pages 191–202. Springer-Verlag, 1996. [fgkss-ckbgc-96] *URL:* http://www.cs.ruu.nl/CGAL/Papers/wacg.ps.gz.

Andreas Fabri. See also [1028, 1029, 3889, 3891–3895, 3910, 4020, 4021].

5103 Fr. Fabricius-Bjerre. On enclosing and enclosed conics for convex polygons and curves. *Geom. Dedicata*, 12:131–136, 1982. [f-eeccp-82]

5104 A. E. Fabris and A. R. Forrest. Antialiasing of curves by discrete pre-filtering. In *Proc. SIGGRAPH '97*, pages 317–326, Los Angeles, California, August 1997. ACM SIGGRAPH, ACM Press/Addison-Wesley. ISBN 0-89791-896-7. [ff-acdpf-97] *Keywords:* anti-aliasing, curves, Bezier curves, sampling, filtering, reconstruction.

5105 A. E. Fabris and A. R. Forrest. High quality rendering of two-dimensional continuous curves. In L. H. de Figueiredo and M. Lobo Nt., editors, *Proceedings of SIBGRAPI '97*, pages 10–17, Campos do Jordão, October 1997. SBC-Sociedade Brasileira de Computa cão, IEEE Computer Society. ISBN 0-8186-8102-0. [ff-hqrtd-97] *ISBN:* 0-8186-8102-0. *Keywords:* rendering, anti-aliasing, curves.

5106 A. E. Fabris, L. Silva, and A. R. Forrest. An efficient filling algorithm for non-simple closed curves using the point containment paradigm. In L. H. de Figueiredo and M. Lobo Nt., editors, *Proceedings of SIBGRAPI '97*, pages 2–9, Campos do Jordão, October 1997. SBC-Sociedade Brasileira de Computa cão, IEEE Computer Society. ISBN 0-8186-8102-0. [fsf-efans-97] *ISBN:* 0-8186-8102-0. *Keywords:* area filling, point containment, rendering.

5107 A. E. Fabris, L. Silva, and A. R. Forrest. Stroking discrete polynomial bézier curves via point containment paradigm. In L. da F. Cost and G. Câmara, editors, *Proceedings of SIBGRAPI '98*, pages 94–101, Rio de Janeiro, October 1998. SBC-Sociedade Brasileira de Computa cão, IEEE Computer Society. International Symposium of Computer Graphics and Image Processing. [fsf-sdpbc-98] *ISBN:* 0-8186-9215-4. *Keywords:* area filling, point containment, rendering.

M. Facello. See also [4686–4688].

5108 M. A. Facello. Implementation of a randomized algorithm for Delaunay and regular triangulations in three dimensions. *Comput. Aided Geom. Design*, 12(4):349–370, June 1995. [f-iradr-95]

5109 M. A. Facello. Improved ray tracing methods for CSG modeling systems. Report JHU-90/05, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1990. [f-irtmc-90]

G. M. Fadel. See also [9867].

5110 K. M. Fairchild, S. E. Poltrock, and G. W. Furnas. Semnet: Three-dimensional graphic representation of large knowledge bases. In R. Guindon, editor, *Cognitive Science and its Applications for Human-Computer Interaction*, pages 201–233. Lawrence Erlbaum Associates, 1988. [fpf-stgrl-88] *Keywords:* graph drawing, 3D.

5111 John Fairfield. Cellular approach for image segmentation using Voronoi diagrams. In *1985 IEEE Computer Society Workshop on Computer Architecture for Pattern Analysis and Image Database Management.*, pages 237–241, New York, NY, 1985. IEEE. [f-caisu-85] *Keywords:* image segmentation, cellular automata, Voronoi diagrams, Delaunay triangulation. *Annote:* Cellular automata to compute VD. *Abstract:* Cellular representations of Voronoi diagrams are calculated simply by cellular automata. A cellular automation is presented that segments the image on the basis of a cellular representation of the Voronoi diagram. The output of the automation is a fuzzy subset of the Delaunay triangulation, which, when graphed with the strength of the line proportional to the strength of membership, segments the image. To within cell granularity, the segmentation is independent of rotation, translation, and magnification of the image. 5 refs.

5112 J. Fairfield. Contoured shape generation: forms that people see in dot patterns. In *Proc. IEEE Conf. Systems Man Cybernet.*, pages 60–64, 1979. [f-csgft-79]

5113 J. Fairfield. Segmenting dot patterns by Voronoi diagram concavity. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-32:104–110, 1983. [f-sdpvd-83]

5114 B. Falcidieno and C. Pienovi. Natural surface approximation by constrained stochastic interpolation. *Comput. Aided Design*, 22(3):167–172, 1990. [fp-nsacs-90] *Annote:* First we build a CDT of constraint edges and important points. Then any points where error is too high are inserted in the triangulation by dividing the relevant triangle into three pieces. Then any triangles that are too big are broken into four with the midpoint randomly perturbed (like with fractals).

B. Falcidieno. See also [698, 699, 3836–3843, 5342].

5115 K. J. Falconer. Hammer's x-ray problem and the stable manifold theorem. *J. London Math. Soc.*, 2(28):149–160, 1983. [f-hxpsm-83]

5116 K. J. Falconer. X-ray problems for point sources. *Proc. London Math. Soc.*, 3(46):241–262, 1983. [f-xpps-83]

K. J. Falconer. See also [3616].

5117 M. Falk and R. Randell. On the homotopy theory in arrangements. In *Complex Analytic Singularities*, pages 101–124. North-Holland, Amsterdam, 1987. [fr-hta-87]

5118 C. Faloutsos. Gray codes for partial match and range queries. *IEEE Trans. Softw. Eng.*, 44:1381–1393, 1988. [f-gcpmr-88]

5119 C. Faloutsos and V. Gaede. Analysis of n-dimensional quadtrees using the Hausdorff fractal dimension. In *Proc. 22nd VLDB Conference*, pages 40–50, 1996. [fg-andqu-96]

5120 C. Faloutsos and K.-I. Lin. FastMap: A fast algorithm for indexing, data-mining and visualization of traditional and multimedia databases. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 163–173, 1995. [fl-ffaid-95]

5121 C. Faloutsos, M. Ranganathan, and Y. Manolopoulos. Fast subsequence matching in time-series databases. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 86–93, 1994. [frm-fsmts-94]

5122 C. Faloutsos and Y. Rong. DOT: A spatial access method using fractals. In *Proc. 7th IEEE Internat. Conf. Data Eng.*, pages 152–158, 1991. [fr-dsamu-91]

5123 C. Faloutsos and S. Roseman. Fractals for secondary key retrieval. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 247–252, 1989. [fr-fskr-89]

5124 C. Faloutsos, T. Sellis, and N. Roussopoulos. Analysis of object oriented spatial access methods. In *Proc. SIGMOD Conf. on Management of Data*, pages 426–439, 1987. [fsr-aoosa-87]

C. Faloutsos. See also [323, 7703–7705, 8267, 8817, 11976].

5125 B. Faltings. Qualitative place vocabularies for mechanisms in configuration space. Report 1360, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1987. [f-qpvmc-87] *Keywords:* artificial intelligence.

K. Fan. See also [5530].

5126 J. Q. Fang and T. S. Huang. A corner finding algorithm for image analysis and registration. In *Proc. AAAI Conf.*, pages 46–49, 1982. [fh-cfaia-82]

5127 Shiaofen Fang and Beat Brüderlin. Robustness in geometric modeling — tolerance-based methods. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 85–101. Springer-Verlag, 1991. [fb-rgmtb-91] *Annote:* 7th Intern. Workshop Comput. Geom.

5128 T.-P. Fang and L. A. Piegl. Algorithm for constrained Delaunay triangulation. *Visual Comput.*, 10(5):255–265, 1994. [fp-acdt-94]

5129 T.-P. Fang and L. A. Piegl. Algorithm for Delaunay triangulation and convex-hull computation using sparse matrix. *Comput. Aided Design*, 24(8):425–436, August 1992. [fp-adtch-92] *Annote:* Circumcircle algorithm. Sorts by x-coord to speed search. Timings given seem to fit this pattern.

5130 T. P. Fang and L. A. Piegl. Delaunay triangulation in three dimensions. *IEEE Comput. Graph. Appl.*, 15(5):62–69, September 1995. [fp-dttd-95]

5131 T.-P. Fang and L. A. Piegl. Delaunay triangulation using a uniform grid. *IEEE Comput. Graph. Appl.*, 13(3):36–48, May 1993. [fp-dtuug-93] *Annote:* Circumcircle algorithm with buckets. DFS starting at middle point, deleting points as they are surrounded. Claims that 16/9 points per bucket (on average) is fastest.

Jody Fanto. See also [2441].

M. Farach-Colton. See also [1609, 7383].

M. Farach. See also [651].

5132 A. O. Farahat, P. F. Stiller, and J. C. Trinkle. On the geometry of contact formation cells for systems of polygons. *IEEE Trans. Robot. Autom.*, 11(4):522–536, August 1995. [fst-gcfcs-95]

Rodrigo Farias. See also [6954].

5133 G. Farin. A construction for visual C^1 continuity of polynomial surface patches. *Comput. Graph. Image Process.*, 20:272–282, 1982. [f-cvccp-82]

5134 G. Farin. *Curves and Surfaces for Computer Aided Geometric Design: A Practical Guide*. Academic Press, 1993. [f-cscag-93]

5135 G. Farin. *NURB Curves and Surfaces, from Projective Geometry to Practical Use*. A.K. Peters, 1995. [f-ncspg-95]

5136 Gerald Farin. Surfaces based on Voronoi diagrams. In *Abstracts 13th European Workshop Comput. Geom.*, page 33. Universität Würzburg, 1997. [f-sbvd-97] *Cites:* ZZZ.

5137 G. Farin. Surfaces over Dirichlet tesselations. *Comput. Aided Geom. Design*, 7:281–292, 1990. [f-sodt-90]

G. Farin. See also [1435, 2126].

5138 R. Farouki. Exact offset procedures for simple solids. *Comput. Aided Geom. Design*, 2:257–279, 1985. [f-eopss-85]

5139 R. Farouki and J. Johnstone. Computing point/curve and curve/curve bisectors. In R. B. Fisher, editor, *Design and Application of Curves and Surfaces: Mathematics of Surfaces V*, 327–354. Oxford University Press, 1994. [fj-cpccc-94]

5140 R. Farouki and J. K. Johnstone. The bisector of a point and a plane parametric curve. Technical Report JHU-91-21, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, November 1991. [fj-bpppc-91]

R. Farouki. See also [1553, 7917].

5141 R. T. Farouki. Trimmed surface algorithms for the evaluation and interrogation of solid boundary representations. Report RC 12052, Manufacturing Res. Dept., IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1986. [f-tsaei-86]

5142 R. T. Farouki and J. K. Johnstone. The bisector of a point and a plane parametric curve. *Comput. Aided Geom. Design*, 11:117–151, 1994. [fj-bpppc-94]

5143 R. T. Farouki and C. A. Neff. Analytic properties of plane offset curves. *Comput. Aided Geom. Design*, 7(1–4):83–99, June 1990. [fn-appoc-90]

5144 R. T. Farouki and V. T. Rajan. Algorithms for polynomials in Bernstein form. Report ??, Manufacturing Res. Dept., IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1987. [fr-apbf-87]

5145 R. T. Farouki and R. Ramamurthy. Specified-precision computation of curve/curve bisectors. *Internat. J. Comput. Geom. Appl.*, 8:599–619, 1998. [fr-spccc-98]

5146 N. Farvardin and J. W. Modestino. Rate-distortion performance of DPCM schemes for autoregresssive sources. *IEEE Trans. Inform. Theory*, 31:402–418, 1985. [fm-rpdsa-85]

5147 I. Fary. On straight lines representation of planar graphs. *Acta Sci. Math. Szeged*, 11:229–233, 1948. [f-slrpg-48] *Keywords:* graph drawing.

R. J. Faudree. See also [4988].

5148 Olivier Faugeras. *Three-Dimensional Computer Vision: A Geometric Viewpoint*. MIT Press, Cambridge, MA, 1993. [f-tdcvg-93]

5149 O. Faugeras, M. Hebert, P. Mussi, and J.-D. Boissonnat. Polyhedral approximation of 3-D objects without holes. *Comput. Vision Graph. Image Process.*, 25:169–183, 1984. [fhmb-pa3do-84]

5150 O. D. Faugeras, E. Le Bras-Mehlman, and J. D. Boissonnat. Representing stereo data with the Delaunay triangulation. *Artif. Intell.*, 44(1–2):41–87, July 1990. [flb-rsddt-90] *Keywords:* stereo data, Delaunay triangulation, stereo vision, probabilistic geometry. *Annote:* CDT algorithm via inserting extra points on compulsory line segments. Uses bucketing for speed. *Abstract:* This article proposes a coherent way of interpolating three-dimensional data obtained by stero, for example, with a simplical polyhedral surface. The proposed method is based on the use of the constrained Delaunay triangulation; the polyhedral surface is obtained by using a simple visibility property to mark tetrahedra likely to be empty. The method is intrinsically discontinuity-preserving, works for multiple viewpoints and yields both a surface representation of objects and a volume representation of free space which may be useful in robotics. Algorithms to implement the method are described and their complexity analyzed in the worst-case and average-case situations where tools of probabilistic geometry are used. (Author abstract) 37 Refs.

5151 O. D. Faugeras and J. Ponce. An object-centered hierarchical representation for 3-d objects: The prism-tree. *Special Issue of Topics on Computational Geometry*, 38(1), April 1984. [fp-ochr3-84]

O. D. Faugeras. See also [2200–2202, 8561].

G. M. Faust. See also [1639, 1640].

5152 I. D. Faux and M. J. Pratt. *Computational Geometry for Design and Manufacture*. Ellis Horwood, Chichester, UK, 1979. [fp-cgdm-79]

Bernard Faverjon. See also [1188, 1189, 1199, 10832].

5153 J.-P. Faye and J. Vignes. Stochastic approach of the permutation-perturbation method for round-off error analysis. *Applied Numerical Mathematics*, 1:349–362, 1985. [fv-sappm-85]

J. A. Fayman. See also [6208].

Elias Fayyad. See also [12094].

5154 R. Featherstone. The calculation of robot dynamics using articulated-body inertias. *Internat. J. Robot. Res.*, 2(1):13–30, 1983. [f-crdua-83]

5155 T. Feder and D. H. Greene. Optimal algorithms for approximate clustering. Technical report, Dept. of Computer Science, Stanford University, 1988. [fg-oaac-88t] *Keywords:* clustering.

5156 T. Feder and D. H. Greene. Optimal algorithms for approximate clustering. In *Proc. 20th Annu. ACM Sympos. Theory Comput.*, pages 434–444, 1988. [fg-oaac-88i]

5157 T. Feder and R. Motwani. Clique partitions, graph compression, and speeding up algorithms. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 123–133, 1991. [fm-cpgcs-91]

Tomás Feder. See also [2858].

5158 H. Federer. *Geometric Measure Theory*. Springer-Verlag, 1970. [f-gmt-70]

5159 P. J. Federico. Descartes on polyhedra: A study of the De Solidorum Elementis. In *Sources in the History of Mathematics and Physical Sciences*, volume 4. Springer-Verlag, New York, NY, 1982. [f-dpsds-82]

R. Fegeas. See also [2406].

E. Feig. See also [554].

5160 E. B. Feinberg. Characterizing the shortest path of an object among obstacles. Manuscript, AT& T Bell Labs, 1987. [f-cspoo-87] *Succeeds:* f-cspoo-89.

5161 E. B. Feinberg. Characterizing the shortest path of an object among obstacles. *Inform. Process. Lett.*, 31:257–264, 1989. [f-cspoo-89] *Keywords:* motion planning, ladder. *Precedes:* f-cspoo-87.

5162 E. B. Feinberg and C. H. Papadimitriou. Finding feasible paths for a two-point body. *J. Algorithms*, 10:109–119, 1989. [fp-ffptp-89]

Steven Feiner. See also [3209, 3210].

S. K. Feiner. See also [5355, 5356].

O. Feingold. See also [7338].

5163 D. G. Feitelson. *Optical computing: A survey for computer scientists*. MIT Press, Cambridge, Massachusetts, London, England, 1988. [f-ocscs-88]

5164 F. R. Feito and J. C. Torres. Inclusion test for general polyhedra. *Comput. & Graphics*, 21(1):23–30, January 1997. [ft-itgp-97]

5165 G. Fejes Tóth. Finite covering by translates of centrally symmetric convex domains. *Discrete Comput. Geom.*, 2:353–363, 1987. [f-fctcs-87]

5166 G. Fejes Tóth, P. Gritzmann, and J. M. Wills. Finite sphere packing and sphere covering. *Discrete Comput. Geom.*, 4:19–40, 1989. [fgw-fspsc-89]

5167 G. Fejes Tóth and W. Kuperberg. A survey of recent results in the theory of packing and covering. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 251–279. Springer-Verlag, 1993. [fk-srrtp-93] *Keywords:* survey paper, discrete geometry, packing, covering, tiling.

5168 L. Fejes Tóth. Densest packing of translates of the union of two circles. *Discrete Comput. Geom.*, 1:307–314, 1986. [f-dptut-86]

5169 L. Fejes Tóth. Evading convex discs. *Studia Scientiarum Mathematicarum Hungarica*, 13:453–461, 1978. [f-ecd-78]

5170 L. Fejes Tóth. Illumination of convex discs. *Acta Math. Acad. Sci. Hungar.*, 29(3–4):355–360, 1977. [f-icd-77]

5171 L. Fejes Tóth. *Lagerungen in der Ebene, auf der Kugel und im Raum*. Springer-Verlag, 1st edition, 1953. [f-lidea-53]

5172 L. Fejes Tóth. *Lagerungen in der Ebene, auf der Kugel und im Raum*. Springer-Verlag, Berlin, West Germany, 2nd edition, 1972. [f-ldead-72]

5173 L. Fejes Tóth. On the permeability of a layer of circle-layer. *Studia Scientiarum Mathematicarum Hungarica*, 1:5–10, 1966. [f-plcl-66]

5174 L. Fejes Tóth. On the permeability of a layer of parallelograms. *Studia Scientiarum Mathematicarum Hungarica*, 3:195–200, 1968. [f-plp-68]

5175 L. Fejes Tóth. Some packing and covering theorems. *Acta Sci. Math. Szeged*, 12/A:62–67, 1950. [f-icd-50]

5176 L. Fejes Tóth and A. Heppes. Über stabile Körpersysteme. *Compositio Mathematica*, 15(2):119–126, 1963. [fh-usk-63]

5177 Sándor P. Fekete. Das piano movers' problem. Diplom thesis, Mathematisches Institut der Universität zu Köln, 1989. [f-dpmp-89] *Keywords:* master thesis.

5178 Sándor P. Fekete. Finding all anchored squares in a convex polygon in subquadratic time. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 71–76, 1992. [f-faasc-92] *Cites:* c-kiikf-50, dko-fliet-87, dj-nlbma-89, e-spccc-13, e-mccp-15, kw-onupp-91, ZZZ.

5179 Sándor P. Fekete. Finding maximum length tours under Euclidean metrics. Technical Report 98-317, Mathematisches Institut, Universität zu Köln, 1998. [f-fmlte-98] *Annote:* Proves NP-hardness of max-TSP under Euclidean norms in 3 or higher dimension. Contrast with the recent polynomial-time algorithm of Barvinoki et al [1473] for polytope distance functions, for any fixed number of facets and any fixed dimension.

5180 Sándor P. Fekete. *Geometry and the Travelling Salesman Problem*. Ph.D. thesis, Department of Combinatorics and Optimization, University of Waterloo, Waterloo, ON, 1992. [f-gtsp-92] *Keywords:* doctoral thesis.

5181 Sándor P. Fekete. On the complexity of min-link red-blue separation. Manuscript, Department of Applied Mathematics, SUNY Stony Brook, NY, 1992. [f-cmlrb-92]

5182 Sándor P. Fekete. Optimizing the area of simple polygons. Technical Report 97-256, Mathematisches Institut, Universität zu Köln, 1997. [f-oasp-97] *URL:* ftp://ftp.zpr.uni-koeln.de/pub/paper/zpr97-256.ps.gz. *Keywords:* geometric optimization, area, simple polygons, point separation, complexity, approximation, Traveling Salesman Problem, Pick's theorem, grid points, polyhedra; 90C28, 68Q25. *Succeeds:* fp-aosp-93. *Annote:* Submitted to DCG for publication. *Abstract:* We discuss problems of optimizing the area of a simple polygon for a given set of vertices P and show that these problems are very closely related to problems of optimizing the number of points from a set Q in a simple polygon with vertex set P. We prove that it is NP-complete to find a minimum weight polygon or a maximum weight polygon for a given vertex set, resulting in a proof of NP-completeness for the corresponding area optimization problems. This answers a generalization of a question stated by Suri in 1989. We give evidence that it is unlikely that the minimization problem can be approximated. For the maximiation problem, we show that we can find in optimal time O(n log n) a polygon of more than half the area AR(conv(P)) of the convex hull conv(P) of P, yielding a fast 1/2 approximation method for the problem. We demonstrate that it is NP-complete to decide whether there is a simple polygon of at least (2/3+eps)(AR(conv(P)). We also sketch an NP-hardness proof for the problem of finding a minimum-link searating polygon for two finite point sets in the plane. Finally, we turn to higher dimensions, where we prove that for 0¡k¡d+1, 1¡d, it is NP-hard to minimize the volume of the k-dimensional faces of a d-dimensional simple nondegenerate polyhedron with a given vertex set, answering a generalization of a question stated by O'Rourke in 1980.

5183 Sándor P. Fekete. Simplicity and hardness of the maximum traveling salesman problem under geometric distances. Manuscript (submitted), Mathematisches Institut, Universität zu Köln, 1998. [f-shmts-98] *Keywords:* geometric optimization, complexity, Traveling Salesman Problem.

5184 Sándor P. Fekete, M. E. Houle, and S. Whitesides. New results on a visibility representation of graphs in 3-d. In F. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 234–241. Springer-Verlag, 1996. [fhw-nrvrg-96] *Keywords:* visibility graphs. *Precedes:* behflmrrswz-vrg3d-98.

5185 Sándor P. Fekete, Michael E. Houle, and Sue Whitesides. The wobbly logic engine: Proving hardness of non-rigid geometric graph representation problems. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 272–283. Springer-Verlag, 1997. [fhw-wleph-97] *Keywords:* graph drawing.

5186 Sándor P. Fekete and Henk Meijer. Rectangle and box visibility graphs in 3d. In *Abstracts 12th European Workshop Comput. Geom.*, pages 31–34. Universität Münster, 1996. [fm-rbvg3-96]

5187 Sándor P. Fekete and Joseph S. B. Mitchell. Geometric aspects of injection molding. Workshop on Geometric and Computational Aspects of Injection Molding, Bellairs Research Institute, February 5–12, 1993. [fm-gaim-93]

5188 Sándor P. Fekete and Joseph S. B. Mitchell. Histogram decomposition and stereolithography. Technical Report 97-280, Mathematisches Institut, Universität zu Köln, 1997. [fm-hds-97]

5189 Sandor P. Fekete, Joseph S. B. Mitchell, and Karin Weinbrecht. On the continuous Weber and k-median problems. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 70–79, 2000. [fmw-cwkmp-00]

5190 Sándor P. Fekete and W. R. Pulleyblank. Area optimization of simple polygons. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 173–182, 1993. [fp-aosp-93] *Precedes:* f-aosp-97. *Cites:* aiks-fkpmd-91, bddg-fep-85, c-tsplt-91a, c-ig-61, ddg-fsp-83, dj-nlbma-89, eorw-fmakg-92, egh-lp-89, f-gtsp-92, ggj-sncgp-76, gj-cigtn-79, o-pom3d-80, p-gzz-99, p-nchcp-79, rt-rplbo-86, ZZZ.

5191 Sándor P. Fekete and Gerhard J. Woeginger. Angle-restricted tours in the plane. *Comput. Geom. Theory Appl.*, 8(4):195–218, 1997. [fw-artp-97] *Abstract:* For a given set $A \subseteq (-\pi;+\pi]$ of angles, the problem "Angle-Restricted Tour" (ART) is to decide whether a set P of n points in the Euclidean plane allows a closed directed tour consisting of straight line segments, such that all angles between consecutive line segments are from the set A.

We present a variety of combinatorial and algorithmic results on this problem. In particular, we show that any finite set of at least 5 points allows a "pseudoconvex" tour, where all angles are nonnegative.

Sándor P. Fekete. See also [759, 767–771, 2309, 2310].

J. A. Feldman. See also [1352, 4740].

5192 A. Feldstein and P. R. Turner. Overflow, underflow, and severe loss of significance in floating-point addition and subtraction. *IMA J. Numer. Analysis*, 6:241–251, 1986. [ft-ousls-86]

5193 P. Di Felice and R. Tamassia. Automatic layout of flow diagrams: Preliminary analysis. In *Proc. ISMM*, pages 263–267, 1985. [ft-alfdp-85] *Keywords:* graph drawing.

5194 W. Feller. *An introduction to probability theory and its applications*. John Wiley & Sons, New York, NY, 3rd edition, 1968. [f-iptia-68]

5195 M. Fellows. Problem corner: 6. the complexity of knot triviality and the Arf invariant. In *Proc. AMS-IMS-SIAM Joint Summer Research Conf.*, Contemporary Mathematics, pages 189–190. American Mathematical Society, 1989. [f-pc6ck-89]

5196 Michael R. Fellows, Michael T. Hallett, and H. Todd Wareham. Dna physical mapping: Three ways difficult. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 157–168. Springer-Verlag, 1993. [fhw-dpmtw-93]

5197 S. Felsner. 3-interval irreducible partially ordered sets. *Order*, 11:97–125, 1994. [f-3iipo-94]

5198 Stefan Felsner. On the number of arrangements of pseudolines. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 30–37, 1996. [f-nap-96] *Cites:* bepy-htlp-91, blwsz-om-93, eg-bt-87, eg-tsa-89, g-pcbgs-80, gp-sccca-84, gp-asotd-93, g-as-72, k-ah-92, s-nrdec-84, w-mksfs-86, ZZZ.

5199 Stefan Felsner. On the number of arrangements of pseudolines. *Discrete Comput. Geom.*, 18:257–267, 1997. [f-nap-97]

5200 S. Felsner. Orthogonal structures in directed graphs. *J. Combin. Theory (B)*, 57:309–321, 1993. [f-osdg-93]

5201 S. Felsner. Tolerance graphs and orders. In *Proc. 18th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 657 of *Lecture Notes Comput. Sci.*, pages 17–26, 1993. [f-tgo-93]

5202 S. Felsner, J. Gustedt, M. Morvan, and J. X. Rampon. Constructing colorings for diagrams. *Discrete Appl. Math.*, 51:85–93, 1994. [fgmr-ccd-94]

5203 S. Felsner, M. Habib, and R. H. Möring. On the interplay of interval dimension and dimension. *SIAM J. Discrete Math.*, 7:32–40, 1994. [fhm-iidd-94]

5204 Stefan Felsner and Klaus Kriegel. Triangles in Euclidean arrangements. In *Abstracts 14th European Workshop Comput. Geom.* Universitat Polytènica de Catalunya, Barcelona, 1998. [fk-tea-98]

5205 Stefan Felsner and Nicole Morawe. Infeasibility of systems of halfspaces. In *Abstracts 17th European Workshop Comput. Geom.*, pages 63–65. Freie Universität Berlin, 2001. [fm-ish-01]

5206 S. Felsner, R. Müller, and L. Wernisch. Trapezoid graphs and generalizations: Geometry and algorithms. In *Proc. 4th Scand. Workshop Algorithm Theory*, volume 824 of *Lecture Notes Comput. Sci.*, pages 143–154. Springer-Verlag, 1994. [fmw-tggga-94]

5207 S. Felsner and W. T. Trotter. Colorings of diagrams of interval orders and α-sequences of sets. *Discrete Math.*, 144:23–32, 1995. [ft-cdioa-95]

5208 S. Felsner and W. T. Trotter. On the fractional dimension of partially ordered sets. *Discrete Math.*, 136:101–117, 1994. [ft-fdpos-94]

5209 S. Felsner and D. Wagner. On the complexity of partial order properties. In *Proc. 18th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 657 of *Lecture Notes Comput. Sci.*, pages 225–235, 1993. [fw-cpop-93]

5210 Stefan Felsner and Helmut Weil. Sweeps, arrangements and higher Bruhat orders. In *Abstracts 14th European Workshop Comput. Geom.*, page 77. Universitat Polytènica de Catalunya, Barcelona, 1998. [fw-sahbo-98] *Cites:* ZZZ.

5211 S. Felsner and L. Wernisch. Maximum k-chains in planar point sets: Combinatorial structure and algorithms. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, page ??, 1993. [fw-mkcpp-93]

S. Felsner. See also [575, 2445].

5212 W. Fenchel and J. Sutherland. Lösung der Aufgabe 167. *Jahresbericht Deutsch. Math. Verein*, 45:33–35, 1935. [fs-lda1-35]

W. Fenchel. See also [2254].

H. Feng. See also [812].

5213 H. Y. F. Feng and T. Pavlidis. Decomposition of polygons into simpler components: feature generation for syntactic pattern recognition. *IEEE Trans. Comput.*, C-24:636–650, 1975. [fp-dpscf-75]

Q. Feng. See also [4458].

Qing-Wen Feng. See also [4572].

5214 S. C. Feng and T. H. Hopp. A review of current geometric tolerancing theories and inspection data analysis algorithms. Technical Report NISTIR-4509, Factory Automation Systems Division, U.S. Department of Commerce, National Institute of Standards and Technology, Gaithersburg, MD, February 1991. [fh-rcgtt-91]

D. Ferguson. See also [10740].

5215 P. Ferianc. Linear systolic array for Voronoi diagram construction in linear time. In *Proc. Geobild '91*, volume 4 of *Research in Informatics*, pages 120–125. Akademie-Verlag, 1991. [f-lsavd-91] *Keywords:* parallel computations, Voronoi diagram.

5216 D. Fernández-Baca. Space-sweep algorithms for parametric optimization. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 264–275. Springer-Verlag, 1990. [f-ssapo-90]

5217 D. Fernández-Baca and A. Medepalli. Parametric module allocation on partial k-trees. *IEEE Trans. Comput.*, 42:738–742, 1993. [fm-pmapt]

D. Fernández-Baca. See also [268].

P. Ferragina. See also [3602, 3603].

5218 D. Ferrari and L. Mezzalira. On drawing a graph with the minimum number of crossings. Technical Report 69-11, Istituto di Elettrotecnica ed Elettronica, Politecnico di Milano, 1969. [fm-dgmnc-69] *Keywords:* graph drawing.

5219 L. Ferrari, P. V. Sankar, and J. Sklansky. Minimal rectangular partitions of digitized blobs. In *Proc. IEEE Internat. Conf. Pattern Recogn.*, pages 1040–1043, 1980. [fss-mrpdb-80] *Precedes:* fss-mrpdb-84.

5220 L. Ferrari, P. V. Sankar, and J. Sklansky. Minimal rectangular partitions of digitized blobs. *Comput. Vision Graph. Image Process.*, 28(1):58–71, 1984. [fss-mrpdb-84] *Keywords:* isothetic polygons, partition, rectangles. *Precedes:* fss-mrpdb-80.

5221 A. Ferreira and J. G. Peters. Finding smallest paths in rectilinear polygons on a hypercube multiprocessor. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 162–165, August 1991. [fp-fsprp-91] *Cites:* acgoy-pcg-88, acg-cdctd-89, cp-dsnlt-90, d-rld-89, dfr-pfchm-89, dr-idshm-90, kr-pasmm-90, mp-spsrp-89, s-rcg-84, ZZZ.

A. Ferreira. See also [3896–3899].

A. G. Ferreira. See also [3559, 3560].

5222 V. Ferrucci, M. H. Overmars, A. Rao, and J. Vleugels. Hunting Voronoi vertices in non-polygonal domains. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 45–50, 1994. [forv-hvvnp-94] *Precedes:* vfor-hvv-96. *Cites:* ay-aampt2-90, a-vdsfg-91, bpv-ocdat-84, g-cp-67, hss-pgcrm-87, ks-tpscv-93, k-eccs-79, km-st-76, l-rmp-91, ly-ptic-75, osy-rnamp-83, obs-stcav-92, o-ramp-92, y-oavds-87, g-plpg-93, ZZZ.

5223 V. Ferrucci and A. Paoluzzi. An extrusion and boundary evaluation for multidimensional polyhedra. *Comput. Aided Design*, 23(1):40–50, 1991. [fp-ebemp-91]

V. Ferrucci. See also [1842, 10578, 10637, 13274].

5224 R. A. Ferstenberg. *Geometric considerations for automatic generation of optimized cutter paths for 3-axis numerically controlled milling.* Ph.D. thesis, Sibley School Mech. Engrg., Cornell Univ., Ithaca, NY, 1988. [f-gcago-88] *Keywords:* doctoral thesis.

5225 E. Feuerstein and A. Marchetti-Spaccamela. Graph paging. Technical report, Università di Roma, La Sapienza, 1994. [fm-gp-94]

Esteban Feuerstein. See also [1118].

5226 Thomas Fevens, Antonio Hernandez, Antonio Mesa, Michael Soss, and Godfried Toussaint. Simple polygons that cannot be deflated. *Beiträge zur Algebra und Geometrie (Contributions to Algebra and Geometry)*, ??, 2001. To appear. [fhmst-spcd-01] *Comments:* Manuscript. School of Computer Science, McGill University June 2000 http://cgm.cs.mcgill.ca/~godfried/publications/deflation.ps.gz.

5227 Thomas Fevens, Henk Meijer, and David Rappaport. Minimum convex partition of a constrained point set. In *Abstracts 14th European Workshop Comput. Geom.*, pages 79–81. Universitat Polytènica de Catalunya, Barcelona, 1998. [fmr-mcpcp-98]

5228 L. Few. The shortest path and the shortest road through n points in a region. *Mathematika*, 2:141–144, 1955. [f-splrt-55]

5229 ?? Feynmann, ?? Leighton, and ?? Sands. *The Feynmann Lectures on Physics*, volume 1. Addison-Wesley, 1963. [fls-flp-63]

5230 F. Fiala, E. Kranakis, and J.-R. Sack, editors. *Proc. 8th Canadian Conference on Computational Geometry*, 5. International Informatics, 1996. [fks-p8ccc-96]

5231 A. Fiat and A. Shamir. How to find a battleship. *Networks*, 19:361–371, 1989. [fs-hfb-89] *Keywords:* probing.

5232 Amos Fiat and Gerhard Woeginger, editors. *Online Algorithms: The State of the Art*, volume 1442 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1998. [fw-ola-98] *ISBN:* 3-540-64917-4.

Amos Fiat. See also [1341, 1342, 1773].

G. Fibich. See also [3422].

W. Fichtner. See also [6955, 9942].

L. Ficocelli. See also [3900, 3901].

5233 M. Fidrich, J. Frenk, and J. Gromicho. An efficient algorithm to check whether 0 belongs to the convex hull of a finite number of L_p-circles. Technical Report 9204/a, Econometric Institute, Netherlands, 1992. [ffg-eacw0-92]

5234 D. Field. A flexible Delaunay triangulation algorithm. Research Publication GMR-5675, General Motors, 1987. [f-fdta-87] *Annote:* Extends Watson's algorithm to (2 and 3 D) to allow point deletion. Uses this for Laplacian smoothing.

D. Field. See also [5596].

5235 D. A. Field. A note on a new data structure for in-the-past queries. *Inform. Process. Lett.*, 24:95–96, 1987. [f-nndsp-87]

5236 D. A. Field. Generic Delaunay triangulation algorithm for finite element meshes. *Advances in Engineering Software and Workstations*, 13(5–6):263–272, September 1991. [f-gdtaf-91] *Keywords:* generic Delaunay triangulation algorithms, finite element meshes, Voronoi diagrams. *Annote:* About k/d Dts. These are k-simplices with empty hypersphere property, embedded in d-dimensional space. (A subset of regular Dt). Watson's to construct. *Abstract:* A mathematical framework for the construction of k dimensional meshes embedded in n dimensions is provided. By extending Delaunay triangulations a generic triangulation algorithm is stated along with methods for assessing the shapes of simplices. Planar surface and solid meshes illustrate the algorithm. (Author abstract) 31 Refs.

5237 D. A. Field. Implementing Watson's algorithm in three dimensions. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 246–259, 1986. [f-iwatd-86] *Keywords:* Delaunay triangulations, implementing algorithms, three-dimensional. *Cites:* bg-gimha-84, cff-aatdf-85, ff-atmg-86, k-isasm-82, w-cnddt-81, z-fem-77, ZZZ.

5238 David A. Field. Laplacian smoothing and Delaunay triangulations. *Communications in Applied Numerical Methods*, 4(6):709–712, November 1988. [f-lsdt-88] *Keywords:* laplacian smoothing, Delaunay triangulations. *Annote:* After each step of Laplacian smoothing, do a local retriangulation. *Abstract:* In contrast to most triangulation algorithms which implicitly assume that triangulation point locations are fixed, 'Laplacian' smoothing focuses on moving point locations to improve triangulation. Laplacian smoothing is attractive for its simplicity but it does require an existing triangulation. In this paper the effect of Laplacian smoothing on Delaunay triangulations is explored. It will become clear that constraining Laplacian smoothing to maintain a Delaunay triangulation measurably improves Laplacian smoothing. (Author abstract) 11 Refs.

5239 D. A. Field and W. H. Frey. Automation of tetrahedral mesh generation. Technical Report GMR-4967, General Motors Research Laboratories, Warren, 1986. [ff-atmg-86]

5240 David A. Field and Thomas W. Nehl. Stitching together tetrahedral meshes. In *Proceedings of the SIAM Regional Conference on Geometric Aspects of Industrial Design*, pages 25–38, Philadelphia, PA, 1992. Soc. for Industrial & Applied Mathematics. [fn-sttm-92] *Keywords:* Delaunay based stitching algorithm, tetrahedral meshes, Delaunay criterion of two dimensional triangular meshes, magnetostatics fields. *Annote:* 3D Dt is constrained to fit 2D Dt of surface. Watson's alg. *Abstract:* A Delaunay based algorithm has been developed for stitching together two tetrahedral meshes separated by a planar gap of finite thickness. It is assumed that the tetrahedral faces on either side of the planar gap satisfy the Delaunay criterion of two dimensional triangular meshes. The stitching algorithm is applied to a first order tetrahedral finite element mesh model of a prototype magnetostatics problems. Intended for the finite element analysis of three dimensional magnetostatics fields, this mesh is generated in two parts and, due to geometric differences, is stitched together in a narrow air gap region which separates them. In addition to preserving the structure of an existing tetrahedral mesh, material boundaries are preserved and severe length scale problems are overcome. (Author abstract) 10 Refs.

5241 David A. Field and Warren D. Smith. Graded tetrahedral finite element meshes. *Internat. J. Numer. Methods Eng.*, 31(3):413–425, 1991. [fs-gtfem-91] *Annote:* Uses octree based on body centred cubic lattice of tetras. (Typical bcc tetra has vertices $(-1, 0, 0), (0, 1, -1), (0, 1, 1), (1, 0, 0)$). *Abstract:* Vertices in the body centred cubic (bcc) lattice are used to create a tetrahedral spatial decomposition. With this spatial decomposition an octree approach is combined with Delaunay triangulations to decompose solids into tetrahedral finite element meshes. Solids must have their surfaces triangulated and the vertices in the triangulation are finite element nodes. Local densities of interior tetrahedra are controlled by the densities of surface triangles. Accuracy of the decomposition into finite elements depends on the accuracy of the surface triangulation which can be constructed with state of the art computer aided design systems. (Author abstract) 22 Refs.

David A. Field. See also [2757, 5598, 5599].

5242 D. E. Field. Algorithms for drawing lines, curves, and triangles. Report TR310, Dept. Elect. Engrg. Comput. Sci., Princeton Univ., Princeton, NJ, 1982. [f-adlct-82] *Keywords:* aliasing, anti-aliasing, filtering techniques.

5243 D. E. Field. *Algorithms for drawing simple geometric objects on raster devices*. Ph.D. thesis, Dept. Elect. Engrg. Comput. Sci., Princeton Univ., Princeton, NJ, 1983. Technical Report TR314. [f-adsgo-83] *Keywords:* doctoral thesis. *Comments:* UMI PRH83-18698, 146 pp.

5244 M. C. Fields and G. N. Frederickson. A faster algorithm for the maximum weighted tardiness problem. *Inform. Process. Lett.*, 36(1):39–44, 1990. [ff-famwt-90] *Keywords:* convex hull, dynamizing, lines, geometric transformations.

5245 G.-J. Fiezeman and M. H. Overmars. Fast display of molecular models. In preparation. [fo-fdmm-]

5246 L. H. de Figueiredo and J. de Miranda Gomes. Computational morphology of curves. *Visual Comput.*, 11:105–112, 1995. [fg-cmc-95]

L. H. de Figueiredo. See also [13216].

R. J. P. de Figueiredo. See also [7961, 7962].

5247 D. Filip, R. Magedson, and R. Markot. Surface algorithms using bounds on derivatives. *Comput. Aided Geom. Design*, 3:295–311, 1986. [fmm-saubd-86]

5248 P. C. Filkins, S. T. Tuohy, and N. M. Patrikalakis. Computational methods for blending surface approximation. *Engineering with Computers*, 9(1):49–62, 1993. [fyp-cmbs-93]

5249 P. Filliman. Exterior algebra and projections of polytopes. *Discrete Comput. Geom.*, 5:305–322, 1990. [f-eapp-90]

5250 P. Filliman. Extremum problems for zonotopes. *Geom. Dedicata*, 27(3):251–262, 1988. [f-epz-88]

5251 P. Filliman. Projections of polytopes. Submitted for publication, March 1987. [f-pp-87]

P. Filliman. See also [2028, 2779].

5252 I. S. Filotti. An algorithm for imbedding cubic graphs in the torus. *J. Comput. Syst. Sci.*, 20:255–276, 1980. [f-aicgt-80] *Succeeds:* f-eadwc-78.

5253 I. S. Filotti. An efficient algorithm for determining whether a cubic graph is toroidal. In *Proc. 10th Annu. ACM Sympos. Theory Comput.*, pages 133–141, 1978. [f-eadwc-78] *Precedes:* f-aicgt-80.

5254 I. S. Filotti, G. L. Miller, and J. Reif. On determining the genus of a graph in $O(v^{O(g)})$. Manuscript, ??, 1979. [fmr-dggo-79]

5255 N. J. Fine and H. S. Wilf. Uniqueness theorems for periodic functions. *Proc. Amer. Math. Soc.*, 16:109–114, 1981. [fw-utpf-81]

5256 E. Fink and D. Wood. Generalizing halfspaces. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 211–216. Carleton University Press, Ottawa, Canada, 1996. [fw-gh-96]

5257 E. Fink and D. Wood. Three-dimensional restricted-orientation convexity. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 258–263. Carleton University Press, Ottawa, Canada, 1996. [fw-tdroc-96]

5258 Eugene Fink and Derick Wood. Three-dimensional restricted-orientation convexity. In *Abstracts 12th European Workshop Comput. Geom.*, pages 7–10. Universität Münster, 1996. [fw-tdroc-96c]

5259 U. Finke. *Algorithmen für Verschneidungsoperationen*. PhD thesis, University of Siegen, Siegen, Germany, 1994. [f-afv-94] *Keywords:* doctoral thesis.

5260 Ulrich Finke and Klaus Hinrichs. Overlaying simply connected planar subdivisions in linear time. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 119–126, 1995. [fh-oscps-95] *Keywords:* red-blue segment intersection. *Cites:* c-stsar-94, c-tsplt-91a, f-afv-94, gs-ccrs-86, gs-pmgsc-85, s-sfira-91, w-vfgi-94, ZZZ.

5261 U. Finke and K. H. Hinrichs. The quad view data structure: a representation for planar subdivisions. In *Proc. 6th? Sympos. Advances in Spatial Databases*, number 951 in Lecture Notes Comput. Sci., pages 29–46, 1995. [fh-qvdsr-95]

5262 R. A. Finkel and J. L. Bentley. Quad trees: a data structure for retrieval on composite keys. *Acta Inform.*, 4:1–9, 1974. [fb-qtdsr-74]

R. A. Finkel. See also [5613].

M. Ya. Finkel'shteyn. See also [3873].

5263 U. Finkler and K. Mehlhorn. Runtime prediction of real programs on real machines. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 380–389, January 1997. [fm-rprpr-97]

5264 G. D. Finlayson and B. K. Bhattacharya. A practical algorithm for the greedy triangulation of a convex polygon. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 347–352, 1992. [fb-pagtc-92] *Cites:* fbf-afbml-77, k-mtpd-80, lp-annpc-78, ll-abgtc-87, ll-fagt-90, h-mg-73, ZZZ.

5265 P. Finn, D. Halperin, L. Kavraki, J.-C. Latombe, R. Motwani, C. Shelton, and S. Venkatsubramanian. Geometric manipulation of flexible ligands. In M. C. Lin and D. Manocha, editors, *Applied Computational Geometry: Towards Geometric Engineering*, volume 1148 of *Lecture Notes Comput. Sci.*, pages 67–78. Springer-Verlag, 1996. [fhklmsv-gmfl-96]

5266 P. Finn, L. E. Kavraki, J.-C. Latombe, R. Motwani, C. Shelton, S. Venkatasubramanian, and A. Yao. Rapid: randomized pharmacophore identification for drug design. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 324–333, 1997. [fklmsvy-rrpid-97] *Cites:* a-dcpsh-94, ah-alcsl-94, att-ddtps-97, ag-dgsmi-96, amww-cssgo-88, ahb-lsft3-87, a-oagc-87, bmb-pmmca-94, bgss-icfcm-96, bd-glihf-93, b-amm-90, b-afzef-71, bk-facus-73, cgs-icmcm-89, ccfm-icdir-97, cegsw-ccbac-90, ch-dgmc-88, d-fpfnh-93, dl-msp-76, fhklmsv-gmfl-96, gj-cigtn-79, gkpt-csmsm-93, gmhhwsbr-cads5-95, gs-rclcd-70, g-cmmid-85, gbe-pcsai-92, hs-pssaa-97, ityik-msrdd-95, k-rncsf-95, kmy-aalcs-95, km-femgb-94, l-smscs-91, l-arpmb-93, ls-mmpmm-88, l-csbsu-90, mzw-camcu-95, mbddl-fnapm-93, mbw-sdtds-90, mr-ra-95, p-ota-86, ir-cerrp-96, rl-pspmd-95, skt-acc1v-95, w-sppdt-95, ZZZ.

5267 P. W. Finn, L. E. Kavraki, J.-C. Latombe, R. Motwani, C. Shelton, S. Venkatasubramanian, and A. Yao. Rapid: Randomized pharmacophore identification for drug design. *Comput. Geom. Theory Appl.*, 10:263–272, 1998. [fklmsvy-rrpid-98] *Succeeds:* fklmsvy-rrpid-97.

5268 J. L. Finney. A procedure for the construction of Voronoi polyhedra. *J. Comput. Phys.*, 32:137–143, 1979. [f-pcvp-79] *Annote:* 3D Voronoi diagram. To build one polyhedron: consider all triples within N_c of centre and check for empty circumspheres. (only points within N_s ($> N_c$) are checked). Time $O(N^2 + N_c^3 N_s N)$. Once vertices are found, they are sorted into the polygon.

J. L. Finney. See also [1835].

R. L. Finney. See also [3522].

5269 J.-C. Fiorot and P. Jeannin. *Courbes et Surfaces Rationelles*, volume 12 of *RMA*. Masson, 1989. [fj-cesr-89]

5270 J.-C. Fiorot and P. Jeannin. *Courbes Splines Rationelles*, volume 24 of *RMA*. Masson, 1992. [fj-csr-92]

Daniel Fischer. See also [11051].

5271 F. P. Fischer and E. A. Patrick. A preprocessing algorithm for nearest neighbor decision rules. In *Proc. XXVI Nat. Electron. Conf.*, pages 481–485. Illinois Inst. Tech., 1970. [fp-pannd-70]

5272 H. C. Fischer, G. Schumacher, and R. Haggenmuller. Evaluation of arithmetic expressions with high accuracy. *Computing*, suppl:149–157, 1988. [fsh-eaeha-88] *Keywords:* robustness.

5273 M. Fischer, T. Lukovszki, and M. Ziegler. Geometric searching in walk-through animations with weak spanners in real time. In *Proc. 6th Annu. European Sympos. Algorithms*, volume 1461 of *Lecture Notes Comput. Sci.*, pages 163–174, Berlin, 1998. Springer-Verlag. [flz-gswaw-98]

5274 M. Fischer, T. Lukovszki, and M. Ziegler. Partitioned neighborhood spanners of minimal outdegree. In *Proc. 11th Canad. Conf. Comput. Geom.*, pages 47–50, 1999. [flz-pnsmo-98]

5275 Matthias Fischer, Tamás Lukovszki, and Martin Ziegler. Space complexity of sectoral neighborhood spanners. In *Abstracts 15th European Workshop Comput. Geom.*, pages 105–108. INRIA Sophia-Antipolis, 1999. [flz-scsns-99]

5276 M. J. Fischer and M. S. Paterson. Dynamic monotone priorities on planar sets. In *Proc. Annu. IEEE Sympos. Found. Comput. Sci.*, pages 289–292. 1985. [fp-dmpps-85] *Keywords:* searching, dynamizing.

M. J. Fischer. See also [5719, 8446].

5277 P. Fischer. Finding maximum convex polygons. In *Proc. 9th Internat. Conf. Fund. Comput. Theory*, volume 710 of *Lecture Notes Comput. Sci.*, pages 234–243. Springer-Verlag, 1993. [f-fmcp-93] *Precedes:* f-spafm-97.

5278 P. Fischer. Sequential and parallel algorithms for finding a maximum convex polygons. *Comput. Geom. Theory Appl.*, 7:187–200, 1997. [f-spafm-97] *Succeeds:* f-fmcp-93.

5279 P. Fischer and K.-U. Höffgen. Computing a maximum axis-aligned rectangle in a convex polygon. *Inform. Process. Lett.*, 51:189–193, 1994. [fh-cmaar-94]

5280 P. Fischer, K.-U. Höffgen, H. Lefmann, and T. Luczak. Approximations with axis-aligned rectangles. In *Proc. 9th Internat. Conf. Fund. Comput. Theory*, volume 710 of *Lecture Notes Comput. Sci.*, pages 244–255. Springer-Verlag, 1993. [fhll-aaar-93]

5281 T. Fischer. Lower bound proofs via Voronoi diagrams. *J. Inform. Process. Cybern.*, 25(5–6):233–238, 1989. [f-lbpvd-89] *Keywords:* lower bounds, Voronoi diagrams, d-dimensional.

5282 T. Fischer. On the complexity of rectangle intersection problems under structural constraints. Preprint 37, Akad. Wissensch. DDR Inst. Math., 1986. [f-crips-86] *Keywords:* rectangles, intersection.

5283 T. Fischer. Refined bounds on the complexity of sorting and selection in d-dimensional space. In *??*, volume 233 of *Lecture Notes Comput. Sci.*, pages 308–314. Springer-Verlag, 1986. [f-rbcss-86]

5284 T. Fischer. Towards a refined classification of geometric search and computation problems. Preprint, Akad. Wissensch. DDR. Inst. Math., 1986. [f-trcgs-86] *Succeeds:* f-trcgs-89.

5285 T. Fischer. Towards refined classification of geometric search and computation problems. In J. H. Davenport, editor, *European Conference on Computer Algebra*, volume 378 of *Lecture Notes Comput. Sci.*, pages 426–437. Springer-Verlag, 1989. [f-trcgs-89] *Keywords:* lower bounds, searching, d-dimensional. *Precedes:* f-trcgs-86.

5286 T. Fischer and K. Wolfrum. The inherent complexity of geometric problems in d-space. In *??*, volume 233 of *Lecture Notes Comput. Sci.*, pages 315–324. Springer-Verlag, 1986. [fw-icgpd-86] *Keywords:* lower bounds, d-dimensional.

M. Fischetti. See also [1320].

5287 M. A. Fischler. Fast algorithms for two maximal distance problems with applications to image analysis. *Pattern Recogn.*, 12:35–40, 1980. [f-fatmd-80]

5288 M. A. Fischler and R. C. Bolles. Random sample consensus: A paradigm for model fitting with applications to image analysis and automated cartography. *Commun. ACM*, 24(6):381–395, 1981. [fb-rscpm-81]

5289 W. T. Fishback. *Projective and Euclidean Geometry*. John Wiley & Sons, New York, NY, 1969. [f-peg-69]

5290 P. Fishburn. Convex polygons with few intervertex distances. *Comput. Geom. Theory Appl.*, 5:65–93, 1995. [f-cpfid-95]

P. Fishburn. See also [1314, 4989].

5291 P. C. Fishburn. Interval orders and circle orders. *Order*, 5:225–234, 1988. [f-ioco-88]

5292 P. C. Fishburn. *Interval Orders and Interval Graphs*. John Wiley & Sons, New York, NY, 1985. [f-ioig-85]

5293 P. C. Fishburn and J. A. Reeds. Unit distances between vertices of a convex polygon. *Comput. Geom. Theory Appl.*, 2(2):81–91, 1992. [fr-udbvc-92]

P. C. Fishburn. See also [2130, 11091].

5294 A. D. Fisher and J. N. Lee. The current status of two-dimensional spatial light modulator technology. In *Proc. of SPIE*, volume 634, pages 352–371, 1986. [fl-cstds-86]

5295 Frederick Fisher and Andrew Woo. R.E versus N.H specular highlights. In Paul Heckbert, editor, *Graphics Gems IV*, pages 388–400. Academic Press, Boston, MA, 1994. [fw-rvnsh-94] *Keywords:* Phong illumination, specular reflection. *Annote:* Compares two common variants of Phong's specular reflection formula and derives a surprising relationship between them.

Frederick Fisher. See also [11789].

F. P. Fisher. See also [10647].

5296 J. C. Fisher, D. Ruoff, and J. Shilleto. Perpendicular polygons. *Amer. Math. Monthly*, 92:23–37, 1985. [frs-pp-85]

5297 P. F. Fisher. Algorithm and implementation uncertainty in viewshed analysis. *Internat. J. Geogr. Inform. Syst.*, 7:331–347, 1993. [f-aiuva-93] *Keywords:* viewshed, uncertainty, terrains.

5298 P. F. Fisher. Reconsideration of the viewshed function in terrain modelling. *Geogr. Syst.*, 3:33–58, 1996. [f-rvftm-96] *Keywords:* viewshed, uncertainty, terrains.

5299 P. F. Fisher. Stretching the viewshed. In *Proc. 6th Internat. Sympos. Spatial Data Handling*, pages 725–738, 1994. [f-sv-94]

5300 R. A. Fisher. An examination of the different possible solutions of a problem in incomplete blocks. *Annals of Eugenics*, 10:52–75, 1940. [f-edpsp-40]

5301 S. Fisk. A short proof of Chvátal's watchman theorem. *J. Combin. Theory Ser. B*, 24:374, 1978. [f-spcwt-78]

5302 S. Fisk. Separating points by circles and the recognition of digital discs. *IEEE Trans. Pattern Anal. Mach. Intell.*, 8(4):554–556, 1986. [f-spcrd-86] *Keywords:* points, partition.

W. J. Fitzgerald. See also [13650].

5303 Eugene Fiume. Applied geometry for computer graphics. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 181–186, 1997. [f-agcg-97]

5304 E. Fiume. *The Mathematical Structure of Raster Graphics*. Academic Press, San Diego, 1989. [f-msrg-89]

5305 E. Fiume and A. Fournier. Ray-tracing is *PSPACE*-hard. Report ??, Dept. Comput. Sci., Univ. Toronto, Toronto, ON, 1985. [ff-rtiph-85]

5306 E. Fiume and A. Fournier. The visible surface problem: semantics and complexity. Report ??, Dept. Comput. Sci., Univ. Toronto, Toronto, ON, 1985. [ff-vspsc-85]

5307 E. Fiume and A. Fournier. The visible surface problem under abstract graphics models. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 575–586. Springer-Verlag, 1988. [ff-vspag-88]

5308 E. Fiume, A. Fournier, and L. Rudolph. A parallel scan conversion algorithm with anti-aliasing for a general-purpose ultracomputer. *ACM Comput. Graph.*, 17(3):141–150, July 1983. [ffr-pscaa-83]

E. Fiume. See also [4409].

G. Fix. See also [12562].

5309 Per-Olof Fjällström. *Integration of free-form surfaces and solid modelling*. PhD thesis, ?, 1985. [f-iffss-85] *Keywords:* doctoral thesis.

5310 P.-O. Fjällström. Polyhedral approximation of bivariate functions. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 187–190, August 1991. [f-pabf-91] *Keywords:* Computational geometry, Delaunay triangulation, polyhedral approximation. *Cites:* d-pdstb-89, f-sditm-82, gs-cdtp-78, l-scsi-77, l-gdtan-86, m-tdird-76, ps-cgi-85, w-cnddt-81, w-rit-86, ZZZ.

5311 P. O. Fjallstrom. Smoothing of polyhedral models. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 226–235, 1986. [f-spm-86] *Cites:* br-cagd-74, bbl-ntc-78, cc-rgbss-78, cg-pspca-84, fp-cgdm-79, ck-dsffs-83, f-iffss-85, gc-tipca-80, s-nrsps-83, ZZZ.

5312 P.-O. Fjällström, J. Katajainen, C. Levcopoulos, and C. Petersson. A sublogarithmic convex hull algorithm. *BIT*, 30(3):378–384, 1990. [fklp-scha-90] *Keywords:* convex hull, parallel computations.

5313 P. O. Fjällström and J. Petersson. Evaluation of algorithms for geometrical contact-searching problems. Manuscript, ??, 1993. [fp-eagcs-93]

5314 Per-Olof Fjällström and Jan Petersson. Evaluation of orthogonal range-searching methods for geometric contact searching. Manuscript (submitted), 1994. [fp-eorsm-94]

5315 P. O. Fjällström, J. Petersson, L. Nilsson, and Z.-H. Zhong. Evaluation of range searching methods for contact searching in mechanical engineering. *Internat. J. Comput. Geom. Appl.*, 8:67–84, 1998. [fpnz-ersmc-98]

B. Flach. See also [3902, 3903].

Fladt. See also [1568].

5316 P. Flajolet. Analyse d'algorithmes de manilulations d'arbres et de fichiers. Technical Report Cahier 34-35, B.U.R.O., 1979. Cahiers du B.U.R.O. serie Recherche. [f-addmd-79]

5317 P. Flajolet. Singular differential systems + Cauchy = multidimensional search. *Bull. EATCS*, 26:157–158, 1985. [f-sdscm-85]

5318 P. Flajolet, G. Gonnet, C. Puech, and J. M. Robson. The analysis of multidimensional searching in quad-trees. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 100–109, 1991. [fgpr-amsqt-91] *Keywords:* quad trees.

5319 P. Flajolet, B. Salvy, and P. Zimmerman. Automatic average-case analysis of algorithms. *Theoret. Comput. Sci.*, 79:37–109, 1991. [fsz-aacaa-91] *Keywords:* recurrence, generating function, asymptotic analysis, combinatorial enumeration. *Comments:* general reference for a powerful automatic asymptotic analyzer.

5320 P. Flajolet and J.-M. Steyaert. Pattern and pattern-matching in trees: An analysis. *Inform. Control*, 58(1-3):18–58, 1983. [fs-ppmta-83]

P. Flajolet. See also [5763].

Ph. Flajolet. See also [13266].

H. Flanders. See also [8203].

B. Flannery. See also [10903].

Brian P. Flannery. See also [10904, 10905].

5321 J. Flaquer, A. Carbajal, and M. A. Mendez. Edge-edge relationships in geometric modelling. *Comput. Aided Design*, 19(5):237–244, 1987. [fcm-eergm-87] *Keywords:* polyhedra, geometric modelling.

J. Flaquer. See also [5751].

5322 Robin Y. Flatland and Charles V. Stewart. Extending range queries and nearest neighbours. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 267–272, 1995. [fs-erqnn-95]

5323 R. Y. Flatland and C. V. Stewart. Extending range queries and nearest neighbours. *Comput. Geom. Theory Appl.*, 17:3–24, 2000. [fs-erqnn-00]

5324 R. Y. Flatland and C. V. Stewart. Extending rectangular range reporting with query sensitive analysis. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 319–324. Carleton University Press, Ottawa, Canada, 1996. [fs-errrq-96]

5325 Eyal Flato and Dan Halperin. Robust and efficient construction of planar Minkowski sums. In *Abstracts 16th European Workshop Comput. Geom.*, pages 85–88. Ben-Gurion University of the Negev, 2000. [fh-recpm-00]

5326 Eyal Flato, Dan Halperin, Iddo Hanniel, and Oren Nechushtan. The design and implementation of planar maps in CGAL. In *Abstracts 15th European Workshop Comput. Geom.*, pages 169–172. INRIA Sophia-Antipolis, 1999. [fhhn-dipmc-99]

K. Fleischer. See also [12344].

5327 Rudolf Fleischer. A simple balanced search tree with $O(1)$ worst-case update time. In *Abstracts 8th European Workshop Comput. Geom.*, pages 77–80. Utrecht University, 1992. [f-sbstw-92]

5328 R. Fleischer. Decision trees: Old and new results. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 468–477, 1993. [f-dtonr-93]

5329 R. Fleischer. Decision trees: Old and new results. *Inform. Comput.*, 152:44–61, 1999. [f-dtonr-99]

5330 R. Fleischer, K. Mehlhorn, Günter Rote, Emo Welzl, and C. K. Yap. On simultaneous inner and outer approximation of shapes. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 216–224, 1990. [fmrwy-sioas-90] *Precedes:* fmrwy-sioas-92. *Cites:* acy-macp-85, afkmnsu-ampcb-90, c-pcp-83, ds-gmmmc-79, g-acb-83, j-episc-48, l-udaek-59, m-tgis-82, sfrw-acfpr-90, f-lidea-53, y-amp-87, ZZZ.

5331 R. Fleischer, K. Mehlhorn, Günter Rote, Emo Welzl, and C. K. Yap. Simultaneous inner and outer approximation of shapes. *Algorithmica*, 8:365–389, 1992. [fmrwy-sioas-92] *Keywords:* convex, Banach-Mazur distance, homothetic. *Succeeds:* fmrwy-sioas-90.

5332 Rudolf Fleischer and Gerhard Trippen. Optimal robot localization in trees. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 373–374, 2000. [ft-orlt-00] *Keywords:* video review.

R. Fleischer. See also [576, 577, 2380, 2381, 2609–2611].

5333 U. Flemming. On the representation and generation of loosely packed rectangles. *Environ. & Plan., Ser. B*, 13:189–205, 1986. [f-rglpr-86] *Keywords:* rectangles, packing, data structuring.

5334 U. Flemming. Wall representations of rectangular dissections: additional results. *Environ. & Plan., Ser. B*, 7:247–251, 1980. [f-wrrda-80] *Keywords:* rectangles, isothetic polygons, partition.

5335 L. A. Fletcher and R. Kasturi. A robust algorithm for text string separation from mixed text/graph images. *IEEE Trans. Pattern Anal. Mach. Intell.*, 10(6):910–918, 1988. [fk-ratss-88] *Keywords:* image analysis, rectangles, clustering.

5336 M. Flickner, H. Sawhney, W. Niblack, J. Ashley, Q. Huang, B. Dom, M. Gorkani, J. Hafner, D. Lee, D. Petkovic, D. Steele, and P. Yanker. Query by image and video content: The QBIC system. *Computer*, 28:23–32, 1995. [fs-qbic-95]

5337 B. E. Flinchbaugh and L. K. Jones. Strong connectivity in directional nearest-neighbor graphs. *SIAM J. Algebraic Discrete Methods*, 2(4):461–463, 1981. [fj-scdnn-81] *Keywords:* closeness, nearest neighbor graph.

F. Flohr. See also [1426].

5338 A. Flores. Über n-dimensionale Komplexe die im R_{2n+1} absolut selbstverschlungen sind. *Ergeb. Math. Kolloq.*, 6:4–7, 1932/1934. [f-undkd-]

5339 A. Florian. Approximation of convex discs by polygons. *Discrete Comput. Geom.*, 1:241–263, 1986. [f-acdp-86]

5340 A. Florian. On the permeability of layers of discs. *Studia Scientiarum Mathematicarum Hungarica*, 13:125–132, 1978. [f-pld-78]

5341 A. Florian and W. M. Schmidt. Zerlegung von Dreiecken in Dreiecke mit Nebenbedigungen. *Geom. Dedicata*, 24:363–369, 1987. [fs-zvddm-87] *Keywords:* triangle, covering, convex.

5342 L. De Floriani, B. Falcidieno, C. Pienovi, D. Allen, and G. Nagy. A visibility-based model for terrain features. In *Proc. 2nd Internat. Sympos. Spatial Data Handling*, pages 235–250, 1986. [ffpan-vbmtf-86]

5343 Leila De Floriani, Paola Magillo, and Enrico Puppo. A simple and efficient sequential encoding for triangle meshes. In *Abstracts 15th European Workshop Comput. Geom.*, pages 129–133. INRIA Sophia-Antipolis, 1999. [fmp-seset-99]

5344 L. De Floriani, G. Nagy, and E. Puppo. Computing a line-of-sight network on a terrain model. In *Proc. 5th Internat. Sympos. Spatial Data Handling*, pages 672–681, 1992. [fnp-clsnt-92]

5345 Julia Flötotto and Mariette Yvinec. Order-k Voronoi diagrams. In *Abstracts 17th European Workshop Comput. Geom.*, pages 109–112. Freie Universität Berlin, 2001. [fy-okvd-01]

Julia Flötotto. See also [2158, 2203].

C. A. Floudas. See also [9184].

5346 R. Floyd and R. Rivest. Algorithm 489: The algorithm SELECT for finding the ith smallest of n elements. *Commun. ACM*, 8:173, 1973. [fr-aasfs-75]

5347 R. Floyd and R. Rivest. Expected time bounds for selection. *Commun. ACM*, 18:165–172, 1975. [fr-etbs-75]

5348 R. W. Floyd. Expected number of points on hull of points drawn from triangle. Manuscript, ??, ?? [f-enphp-??]

R. W. Floyd. See also [2105].

S. Fogel. See also [1353–1358].

I. Fogg. See also [4573].

A. Foisy. See also [6733].

J. Foisy. See also [500].

5349 S. Foldes. Separability by convection and permeability in two-dimensional velocity fields. Technical Report G-89-32, GERAD and École des Hautes Études Commerciales, Montréal, September 1989. [f-scptd-89]

5350 S. Foldes. Sequential separability of directionally convex objects with restricted motion. Technical Report G-89-21, GERAD and École des Hautes Études Commerciales, Montréal, June 1989. [f-ssdco-89]

5351 S. Foldes. Spherical orders, planar lattices and obstruction graphs in abstract convection systems. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 134–137, 1990. [f-soplo-90] *Cites:* fru-lsoso-88, f-ssdco-89, f-scptd-89, gy-tsr-80, ru-roptc-88, ZZZ.

5352 S. Foldes, I. Rival, and J. Urrutia. Light sources, obstructions and spherical orders. Technical Report G-88-30, GERAD and École des Hautes Études Commerciales, Montréal, 1988. [fru-lsoso-88]

5353 S. Foldes, I. Rival, and J. Urrutia. Light sources, obstructions and spherical orders. *Discrete Math.*, 102:13–23, 1992. [fru-lsoso-92]

5354 J. D. Foley and A. van Dam. *Fundamentals of Interactive Computer Graphics.* Addison-Wesley, Reading, Mass., 1982. [fd-ficg-82] *Keywords:* graph drawing.

5355 J. D. Foley, A. van Dam, S. K. Feiner, and J. F. Hughes. *Computer Graphics: Principles and Practice.* Addison-Wesley, Reading, MA, 1990. second edition. [fdfh-cgpp-90]

5356 J. D. Foley, A. van Dam, S. K. Feiner, J. F. Hughes, and Phillips. *Introduction to Computer Graphics.* Addison-Wesley, Reading, MA, 1993. [fdfhp-icg-93]

J. D. Foley. See also [9924].

5357 T. A. Foley. Three-stage interpolation to scattered data. *Rocky Mountain J. Math.*, 14(1):141–150, 1984. [f-tsisd-84]

5358 T. A. Foley. Weighted bicubic spline interpolation to rapidly varying data. *ACM Trans. Graph.*, 6:1–18, 1987. [f-wbsir-87]

5359 Frank Follert. Maxmin location of an anchored ray in 3-space and related problems. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 7–12, 1995. [f-mlar3-95]

5360 F. Follert. Viewing a set of spheres while moving on a linear flightpath. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 137–142. Carleton University Press, Ottawa, Canada, 1996. [f-vsswm-96]

5361 Frank Follert, Elmar Schömer, and Jürgen Sellen. Subquadratic algorithms for the weighted maximin facility location problem. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 1–6, 1995. [fss-sawmf-95]

5362 F. Follert, E. Schömer, J. Sellen, M. Smid, and C. Thiel. Computing a largest empty anchored cylinder, and related problems. Report MPI-I-95-1-001, Max-Planck-Institut Inform., Saarbrücken, Germany, 1995. [fssst-cleac-95t]

5363 F. Follert, E. Schömer, J. Sellen, M. Smid, and C. Thiel. Computing a largest empty anchored cylinder, and related problems. In *Proc. 15th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1026 of *Lecture Notes Comput. Sci.*, pages 428–442. Springer-Verlag, 1995. [fssst-cleac-95i]

5364 F. Follert, E. Schömer, J. Sellen, M. Smid, and C. Thiel. Computing a largest empty anchored cylinder, and related problems. *Internat. J. Comput. Geom. Appl.*, 7:563–580, 1997. [fssst-cleac-97]

A. Fomenko. See also [4467].

A. T. Fomenko. See also [4468].

5365 D. Y.-S. Fong and J.-L. Chu. A string pattern recognition approach to polygon clipping. *Pattern Recogn.*, 23(8):879–892, 1990. [fc-sprap-90] *Keywords:* polygons, clipping.

J. Fontdecaba. See also [8917].

C. P. Foo. See also [5947].

5366 A. B. Forbes. Geometric tolerance assessment. Technical Report DITC 210/92, Division of Information Technology and Computing, National Physical Laboratory, Teddington, UK, October 1992. [f-gta-92]

5367 L. Ford and D. Fulkerson. *Flows in Networks.* Princeton University Press, 1962. [ff-fn-62]

M.-C. Forgue. See also [12164].

5368 M. Formann. *Algorithms for geometric packing and scaling problems.* PhD thesis, Fachbereich Mathematik, Freie Universität Berlin, Berling, Germany, 1992. [f-agpsp-92] *Keywords:* doctoral thesis.

5369 M. Formann. Weighted closest pairs. Report B-92-04, Fachber. Math., Free Univ. Berlin, February 1992. [f-wcp-92] *Precedes:* f-wcp-93.

5370 Michael Formann. Weighted closest pairs. In *Abstracts 8th European Workshop Comput. Geom.*, pages 59–60. Utrecht University, 1992. [f-wcp-92c]

5371 M. Formann. Weighted closest pairs. In *Proc. 10th Sympos. Theoret. Aspects Comput. Sci.*, volume 665 of *Lecture Notes Comput. Sci.*, pages 270–281. Springer-Verlag, 1993. [f-wcp-93] *Succeeds:* f-wcp-92.

5372 M. Formann, T. Hagerup, J. Haralambides, M. Kaufmann, F. T. Leighton, A. Simvonis, Emo Welzl, and G. Woeginger. Drawing graphs in the plane with high resolution. Technical Report B-90-10, Fachbereich Mathematik, Freie Universität Berlin, Berlin, Germany, December 1990. [fhhklsww-dgphr-90t] *Precedes:* fhhklsww-dgphr-90i.

5373 M. Formann, T. Hagerup, J. Haralambides, M. Kaufmann, F. T. Leighton, A. Simvonis, Emo Welzl, and G. Woeginger. Drawing graphs in the plane with high resolution. In *Proc. 31th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 86–95, 1990. [fhhklsww-dgphr-90i] *Keywords:* graph drawing. *Succeeds:* fhhklsww-dgphr-90t. *Precedes:* fhhklsww-dgphr-93.

5374 M. Formann, T. Hagerup, J. Haralambides, M. Kaufmann, F. T. Leighton, A. Simvonis, Emo Welzl, and G. Woeginger. Drawing graphs in the plane with high resolution. *SIAM J. Comput.*, 22:1035–1052, 1993. [fhhklsww-dgphr-93] *Keywords:* graph drawing. *Succeeds:* fhhklsww-dgphr-90i.

5375 M. Formann, D. Wagner, and F. Wagner. Routing through a dense channel with minimum total wire length. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 475–482, 1991. [fww-rtdcm-91]

5376 M. Formann, D. Wagner, and F. Wagner. Routing through a dense channel with minimum total wire length. *J. Algorithms*, 15:267–283, 1993. [fww-rtdcm-93]

5377 M. Formann and F. Wagner. Unpublished note, 1990. [fw--90]

5378 M. Formann and F. Wagner. A packing problem with applications to lettering of maps. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 281–288, 1991. [fw-ppalm-91] *Keywords:* packing, optimization. *Cites:* b-lbact-83, e-ddsoi-80, eis-ctmfp-76, gj-cigtn-79, ia-eaggs-86, i-pnm-75, y-laml-72, ZZZ.

5379 M. Formann and F. Wagner. The VLSI layout problem in various embedding models. In *Proc. 16th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 484 of *Lecture Notes Comput. Sci.*, pages 130–139, 1991. [fw-vlpve-91]

M. Formann. See also [1102].

5380 A. R. Forrest. Bibliography on computational geometry. Internal Report CSA-8-1984/Memo CGP84-1, Comput. Geom. Project, School Comput. Studies Accountancy, Univ. East Anglia, 1984. [f-bcg-84]

5381 A. R. Forrest. Computational geometry. *Proc. Roy. Soc. Lond. Ser. A*, 321:187–195, 1971. [f-cg-71]

5382 A. R. Forrest. Computational geometry: achievements and problems. In R. E. Barnhill and R. F. Riesenfeld, editors, *Comput. Aided Geom. Design*, pages 17–44. Academic Press, New York, NY, 1974. [f-cgap-74]

5383 A. R. Forrest. Computational geometry and software engineering: Towards a geometric computing environment. In D. F. Rogers and R. A. Earnshaw, editors, *Techniques for Computer Graphics*, pages 23–37. Springer-Verlag, 1987. [f-cgset-87] *ISBN:* 3-540-96492-4.

5384 A. R. Forrest. Computational geometry in practice. In R. A. Earnshaw, editor, *Fundamental Algorithms for Computer Graphics*, volume F17 of *NATO ASI*, pages 707–724. Springer-Verlag, 1985. [f-cgpractice-85]

5385 A. R. Forrest. Geometric computing environments: some tentative thoughts. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 185–198. Springer-Verlag, 1988. [f-gcest-88] *Keywords:* implementing algorithms.

5386 A. R. Forrest. Recent work on geometric algorithms. In K. W. Brodlie, editor, *Mathematical Methods in Computer Graphics and Design*, pages 105–121. Academic Press, London, England, 1980. [f-rwga-80]

A. R. Forrest. See also [5104–5107].

5387 J. W. Forrester. *World Dynamics.* Wright-Allen, Cambridge, Mass., 1971. [f-wd-71] *Keywords:* graph drawing, example.

5388 R. M. Forster. Geometrical circuits of electrical networks. *Trans. Amer. Inst. Elec. Engrs.*, 51:309–317, 1932. [f-gcen-32]

D. Forsyth. See also [3231].

5389 G. Forsythe and C. Moler. *Computer solutions of linear algebraic systems.* Prentice Hall, 1967. [fm-cslas-67]

E. Fortunato. See also [1510].

5390 S. Fortune. A beam-tracing algorithm for prediction of indoor radio propagation. In *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, pages 76–81, May 1996. [f-btapi-96]

5391 S. Fortune. A sweepline algorithm for Voronoi diagrams. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 313–322, 1986. [f-savd-86] *Precedes:* f-savd-87. *Cites:* ae-oacwv-84, bwy-oetac-80, cd-vdbcd-85, f-fapct-85, gs-cdtp-78, k-eccs-79, ld-gvdp-81, ls-tacdt-80, ls-ippvd-87, ls-pptmc-85, l-matps-82, oim-iimvd-84, p-masp-77, sh-cpp-75, s-a-83, st-pplup-86, y-oavds-84, ZZZ.

5392 S. Fortune. Numerical stability of algorithms for 2-d Delaunay triangulations. *Internat. J. Comput. Geom. Appl.*, 5(1–2):193–213, 1995. [f-nsa2d-95] *Keywords:* robustness, numerical precision. *Succeeds:* f-nsa2d-92.

5393 S. Fortune. Numerical stability of algorithms for 2-d Delaunay triangulations and Voronoi diagrams. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 83–92, 1992. [f-nsa2d-92] *Cites:* dba-nm-74, f-savd-87, f-smpst-89, f-pcg-93, gs-cdtp-78, gs-pmgsc-85, h-pargc-89, l-scsi-77, m-vigau-88a, m-vigau-88p, si-gafpa-88, si-cvd10-89, ZZZ.

5394 S. Fortune. Polyhedral modeling with multiprecision integer arithmetic. *Comput. Aided Design*, 29(2):123–133, 1997. [f-pmmia-97]

5395 S. Fortune. Progress in computational geometry. In R. Martin, editor, *Directions in Computational Geometry*, pages 81–128. Information Geometers, 1993. [f-pcg-93] *Keywords:* survey paper.

5396 S. Fortune. Robustness issues in geometric algorithms. In *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, pages 20–23, May 1996. [f-riga-96]

5397 S. Fortune. Robustness issues in geometric algorithms. In M. C. Lin and D. Manocha, editors, *Applied Computational Geometry: Towards Geometric Engineering*, volume 1148 of *Lecture Notes Comput. Sci.*, pages 9–14. Springer-Verlag, 1996. [f-riga-96i]

5398 S. Fortune. Stable maintenance of point-set triangulation in two dimensions. Manuscript, AT&T Bell Laboratories, 1990. [f-smpst-90]

5399 S. Fortune. Stable maintenance of point set triangulations in two dimensions. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 494–505, October 1989. [f-smpst-89]

5400 S. Fortune. Vertex-rounding a three-dimensional polyhedral subdivision. *Discrete Comput. Geom.*, 22(4):593–618, 1999. [f-vrtdp-99]

5401 S. Fortune. Voronoi diagrams and Delaunay triangulations. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*, pages 193–233. World Scientific, Singapore, 1st edition, 1992. [f-vddt-92] *Keywords:* survey paper, Voronoi diagrams, Delaunay triangulations. *Precedes:* f-vddt-95.

5402 S. Fortune. Voronoi diagrams and Delaunay triangulations. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 225–265. World Scientific, Singapore, 2nd edition, 1995. [f-vddt-95] *Keywords:* survey paper, Voronoi diagrams, Delaunay triangulations. *Succeeds:* f-vddt-92.

5403 S. Fortune. Voronoi diagrams and Delaunay triangulations. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 20, pages 377–388. CRC Press LLC, Boca Raton, FL, 1997. [f-vddt-97]

5404 S. Fortune and V. Milenkovic. Numerical stability of algorithms for line arrangements. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 334–341, June 1991. [fm-nsala-91] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* arrangements, implementing algorithms, robust geometric computation. *Cites:* cgl-pgd-83, eg-tsa-86, eos-calha-86, f-smpst-90, gt-tgt-87, g-as-72, gss-egbra-89, gs-pmgsc-85, h-pargc-89, hhk-tirgc-88, hk-prga-89, k-rmrs-89, lm-cschu-90, m-dpggt-89, m-vigau-88p, m-vigau-88a, m-utcpc-89, si-gafpa-88, si-cvd10-89, ZZZ.

5405 S. Fortune and C. J. Van Wyk. Efficient exact arithmetic for computational geometry. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 163–172, May 1993. [fv-eeacg-93] *Succeeds:* fw-eeacg-92. *Cites:* b-csmpi-72, bkv-eccm-91, c-sede-92, cms-frric-92i, f-nsa2d-92, f-vddt-92, gs-pmgsc-85, h-gsm-89, kln-edtur-91, k-sa-81, l-scsi-77, m-vigau-88a, m-maia-79, svh-bpepa-89, sh-cpp-75, si-gafpa-88, si-cvd10-89, ZZZ.

5406 S. Fortune and C. J. Van Wyk. Static analysis yields efficient exact integer arithmetic for computational geometry. *ACM Trans. Graph.*, 15(3):223–248, July 1996. [fv-sayee-96]

5407 S. Fortune and G. Wilfong. Planning constrained motion. In *Proc. 20th Annu. ACM Sympos. Theory Comput.*, pages 445–459, 1988. [fw-pcm-88] *Precedes:* fw-pcm-91.

5408 S. Fortune and G. Wilfong. Planning constrained motion. *Annals of Math. and AI*, 3:21–82, 1991. [fw-pcm-91] *Succeeds:* fw-pcm-88.

5409 S. Fortune, G. Wilfong, and C. Yap. Coordinated motion of two robot arms. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1216–1223, 1986. [fwy-cmtra-86] *Keywords:* motion planning.

5410 S. Fortune and C. Van Wyk. Efficient exact arithmetic for comutational geometry. manuscript, 1992. [fw-eeacg-92] *Precedes:* fv-eeacg-93.

5411 S. Fortune and C. Van Wyk. *LN User Manual.* AT&T Bell Laboratories, 1993. [fw-lnum-93]

S. Fortune. See also [846, 847, 1297, 3155, 3156, 3168, 12742].

5412 S. J. Fortune. A fast algorithm for polygon containment by translation. In *Proc. 12th Internat. Colloq. Automata Lang. Program.*, volume 194 of *Lecture Notes Comput. Sci.*, pages 189–198. Springer-Verlag, 1985. [f-fapct-85] *Keywords:* motion planning, Voronoi diagrams, polygons.

5413 S. J. Fortune. A note on Delaunay diagonal flips. Manuscript, AT&T Bell Lab., Murray Hill, NJ, 1987. [f-nddf-87]

5414 S. J. Fortune. A sweepline algorithm for Voronoi diagrams. *Algorithmica*, 2:153–174, 1987. [f-savd-87] *Keywords:* plane-sweep, geometric transformations, Voronoi diagrams, Delaunay triangulations. *Succeeds:* f-savd-86.

5415 S. J. Fortune and J. E. Hopcroft. A note on Rabin's nearest-neighbor algorithm. *Inform. Process. Lett.*, 8(1):20–23, 1979. [fh-nrnna-79] *Keywords:* bucketing.

S. J. Fortune. See also [848, 849, 1233, 1302–1304].

5416 Ulrich Fößmeier. Interactive orthogonal graph drawing: Algorithms and bounds. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 111–123. Springer-Verlag, 1997. [f-iogda-97] *Keywords:* graph drawing.

5417 U. Fößmeier, C. Hess, and M. Kaufmann. On improving orthogonal drawings: The 4M-algorithm. In S. H. Whitesides, editor, *Graph Drawing (Proc. GD '98)*, volume 1547 of *Lecture Notes Comput. Sci.*, pages 125–137. Springer-Verlag, 1998. [fhk-iod4a-98]

5418 Ulrich Fößmeier and Michael Kaufmann. Algorithms and area bounds for nonplanar orthogonal drawings. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 134–145. Springer-Verlag, 1997. [fk-aabno-97] *Keywords:* graph drawing.

5419 Ulrich Fößmeier and Michael Kaufmann. Drawing high degree graphs with low bend numbers. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 254–266. Springer-Verlag, 1996. [fk-dhdgl-96] *Keywords:* graph drawing, planar, orthogonal.

5420 U. Fössmeier and M. Kaufmann. Nice drawings for planar bipartite graphs. In *Algorithms and Complexity (Proc. CIAC' 97)*, volume 1203 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1997. [fk-ndpbg-97]

5421 U. Fößmeier and M. Kaufmann. On bend-minimum orthogonal upward drawing of directed planar graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 52–63. Springer-Verlag, 1995. [fk-bmoud-95] *Keywords:* graph drawing, planar, orthogonal, upward.

5422 U. Fössmeier and M. Kaufmann. On exact solutions for the rectilinear Steiner problem. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 436–438, 1997. [fk-esrsp-97] *Cites:* a-ptase-96, br-iastp-92, fk-esrsp-96, gc-orsmt-94, gj-rstpi-77, h-sprd-66, h-smtrd-76, hrw-stp-92, kps-stvl-90, l-caicl-90, r-fhars-89, sw-tfprs-95, s-hfsmt-92, z-1aasp-92, ZZZ.

5423 U. Fössmeier and M. Kaufmann. On exact solutions for the rectilinear Steiner problem. Part I: Theoretical results. Technical Report WSI-96-09, Universität Tübingen, Tübingen, Germany, 1996. [fk-esrsp-96]

5424 Ulrich Fößmeier, Michael Kaufmann, and Alexander Zelikovsky. Faster approximation algorithms for the rectilinear Steiner tree problem. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 533–542. Springer-Verlag, 1993. [fkz-faars-93] *Precedes:* fkz-faars-97.

5425 Ulrich Fößmeier, Michael Kaufmann, and Alexander Zelikovsky. Faster approximation algorithms for the rectilinear Steiner tree problem. *Discrete Comput. Geom.*, 18(1):93–109, 1997. [fkz-faars-97] *Succeeds:* fkz-faars-93.

5426 L. W. Foster. *GEO-METRICS II: The application of geometric tolerancing techniques.* Addison-Wesley, 1982. [f-gm2ag-82]

5427 S. Fotheringham and P. Rogerson. *Spatial analysis and GIS.* Taylor & Francis, Bristol, PA, 1994. [fr-sag-94]

L. Foulds. See also [4574].

5428 L. R. Foulds, P. B. Gibbons, and J. W. Giffin. Graph theoretic heuristics for the facilities layout problem: An experimental comparison. *Oper. Res.*, ??, 1985. [fgg-gthfl-85] *Keywords:* graph drawing.

5429 L. R. Foulds, M. D. Hendy, and D. Penny. A graph theoretic approach to the development of minimal phylogenetic trees. *J. Mol. Evol.*, 13:127–149, 1979. [fhp-gtadm-79]

5430 J. M. Fourneau, I. Fournier, A. Germa, and D. Sotteau. Unicorn: A computer-aided scratch book for graph theory. Technical Report 381, Univ. Paris Sud, 1987. [ffgs-ucasb-87] *Keywords:* graph drawing.

5431 A. Fournier. Comments on convex hull of a finite set of points in two dimensions. *Inform. Process. Lett.*, 8:173, 1979. [f-cchfs-79]

5432 A. Fournier, D. Fussell, and L. Carpenter. Computer rendering of stochastic models. *Commun. ACM*, 25(6):371–384, 1982. [ffc-crsm-82]

5433 A. Fournier and Z. M. Kedem. Comments on the all nearest-neighbor problem for convex polygons. *Inform. Process. Lett.*, 9:105–107, 1979. [fk-cannp-79]

5434 A. Fournier and D. Y. Montuno. Triangulating simple polygons and equivalent problems. *ACM Trans. Graph.*, 3(2):153–174, 1984. [fm-tspep-84]

5435 A. Fournier and M. A. Wesley. Bending polyhedral objects. *Comput. Aided Design*, 15(2):79–87, 1983. Proc. 6th IFIP Internat. Sympos. Comput. Hardware. [fw-bpo-83]

A. Fournier. See also [5305–5308, 9832, 9833, 11006–11008].

I. Fournier. See also [5430].

J.-Y. Fourquet. See also [12382].

5436 D. R. Fowler and J. M. Keil. The rectilinear Voronoi diagram with barriers. In *Proc. 25th Allerton Conf. Commun. Control Comput.*, pages 889–897, 1987. [fk-rvdb-87] *Keywords:* Voronoi diagrams.

5437 G. Fowler. Efficient graph automorphism by vertex partitioning. *Artif. Intell.*, 21:245–269, 1983. [f-egavp-83]

5438 P. W. Fowler, T. Pisanski, and J. Shawe-Taylor. Molecular graph eigenvectors for molecular coordinates. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 282–285. Springer-Verlag, 1995. [fps-mgemc-95] *Keywords:* graph drawing, system, 3D, force-directed.

5439 R. J. Fowler. Deltri: a program for inductively computing Delaunay triangulations. Technical Report 18, Data Struct. Project, Dept. Geog., Simon Fraser Univ., Burnaby, BC, ?? [f-dpicd-??]

5440 R. J. Fowler and J. J. Little. Automatic extraction of irregular network digital terrain models. *Comput. Graph.*, 13(2):199–207, August 1979. [fl-aeind-79] *Annote:* Builds a triangulation to represent the surface from dense raster model. Uses incremental Delaunay triangulation.

5441 R. J. Fowler, M. S. Paterson, and S. L. Tanimoto. Optimal packing and covering in the plane are NP-complete. *Inform. Process. Lett.*, 12(3):133–137, 1981. [fpt-opcpa-81]

R. J. Fowler. See also [10748].

B. L. Fox. See also [2499].

R. H. Fox. See also [3625].

A. R. Francés. See also [1201].

5442 P. Di Francesco. Folding and coloring problems in mathematics and physics. *Bull. Amer. Math. Soc.*, 37(3):251–307, July 2000. [d-fcpmp-00]

5443 P. G. Franciosa. *Adaptive spatial data handling.* Ph.D. thesis, Dipartimento di Informatica e Sistemistica, Univ. of Rome "La Sapienza", Rome, Italy, 1994. [f-asdh-94] *Keywords:* doctoral thesis.

5444 P. G. Franciosa, C. Gaibisso, G. Gambosi, and M. Talamo. A convex hull algorithm for points with approximately known positions. *Internat. J. Comput. Geom. Appl.*, 4(2):153–163, 1994. [fggt-chapa-94]

5445 P. G. Franciosa, C. Gaibisso, and M. Talamo. Adaptive strategies for spatial data handling: an application to the maxima problem. Technical Report RAP.10.93, Università di Roma "La Sapienza", Dipartimento di Informatica e Sistemistica, October 1993. [fgt-assdh-93]

5446 P. G. Franciosa, C. Gaibisso, and M. Talamo. An on-line convex hull algorithm on reals. Report R. 301, Istituto di Analisi dei Sistemi ed Informatica, Rome, Italy, 1992. [fgt-olcha-92]

5447 Paolo Giulio Franciosa, Carlo Gaibisso, and Maurizio Talamo. An optimal algorithm for the maxima set problem for data in motion. In *Abstracts 8th European Workshop Comput. Geom.*, pages 17–21. Utrecht University, 1992. [fgt-oamsp-92]

5448 P. G. Franciosa and M. Talamo. Orders, k-sets and fast halfplane search on paged memory. In *Proc. Workshop on Orders, Algorithms and Applications*, volume 831 of *Lecture Notes Comput. Sci.*, pages 117–127. Springer-Verlag, 1994. [ft-oksfh-94] *Abstract:* We investigate the properties of the poset defined by the set inclusion relation on the set of possible answers to an halfplane

search problem. We use these properties to design a static data structure for n points stored in pages of size b requiring $O(\frac{n\sqrt{n}}{b})$ worst case pages that reports a solution of size k by accessing $O(\log_b n \log\log n + \frac{k}{b})$ pages.

This is the first sub-quadratic data structure for secondary storage with output sensitive (in the total number of accessed pages) query time, and exploits an original point clustering technique.

Paolo G. Franciosa. See also [132, 1555–1559, 3713–3719].

5449 R. Francis. A note on the optimum location of new machines. *J. Indust. Eng.*, 12:41–47, 1961. [f-nolnm-61]

5450 R. Francis. Some aspects of minimax location problem. *Oper. Res.*, 15:1163–1168, 1967. [f-samlp-67]

5451 R. L. Francis and J. A. White. *Facility Layout and Location*. Prentice Hall, Englewood Cliffs, NJ, 1974. [fw-fll-74] *Keywords:* book.

R. L. Francis. See also [2784, 9664].

5452 R. S. Francis and L. J. H. Pannan. A parallel partition for enhanced parallel quicksort. *Parallel Comput.*, 18:543–550, 1992. [fp-ppepq-92]

5453 A. Frank. An $o(n^4)$ algorithm to construct all Voronoi diagrams for k nearest neighbor searching. In *??*, volume 154 of *Lecture Notes Comput. Sci.*, pages 160–172. Springer-Verlag, 1983. [f-on4ac-83] *Keywords:* Voronoi diagram.

5454 A. Frank. Disjoint paths in a rectilinear grid. *Combinatorica*, 2(4):361–371, 1982. [f-dprg-82] *Keywords:* graphs, paths.

5455 A. Frank. Edge-disjoint paths in planar graphs. *J. Combin. Theory Ser. B*, 39:164–178, 1985. [f-edppg-85] *Keywords:* graphs, paths.

5456 A. Frank. How to make a digraph strongly connected. *Combinatorica*, 1(2), 1981. [f-hmdsc-81] *Keywords:* graph drawing.

5457 A. Frank. Properties of geographic data: requirement for spatial access methods. In *??*, volume 525 of *Lecture Notes Comput. Sci.*, pages 225–234. Springer-Verlag, 1991. [f-pgdrs-91]

5458 Andrew Frank, Peter Haunold, Werner Kuhn, and Gabriel Kuper. Representation of geometric objects as set of inequalities. In *Abstracts 12th European Workshop Comput. Geom.*, pages 51–56. Universität Münster, 1996. [fhkk-rgosi-96]

5459 A. U. Frank and W. Kuhn. Cell Graphs: a provable correct method for the storage of geometry. In *Proc. 2nd Internat. Sympos. Spatial Data Handling*, page ??, 1986. [fk-cgpcm-86]

Andrew U. Frank. See also [7002].

5460 R. Franke. Scattered data interpolation: tests of some methods. *Math. Comput.*, 38:181–200, 1982. [f-sditm-82]

5461 R. Franke and G. Nielson. Smooth interpolation of large sets of scattered data. Report NPS-53-79-005, Naval Postgraduate School, Monterey, CA, 1979. [fn-silss-79]

R. Franke. See also [10138].

5462 P. Frankl and H. Maehara. On the contact dimensions of graphs. *Discrete Comput. Geom.*, 3:89–96, 1988. [fm-cdg-88]

5463 P. Frankl and H. Maehara. Some geometric applications of the beta distribution. *Ann. Inst. Stat. Math*, 42:463–474, 1990. [fm-sgabd-90]

5464 P. Frankl and H. Maehara. The Johnson-Lindenstrauss lemmas and the sphericity of some graphs. *J. Combin. Theory Ser. B*, 44:355–362, 1988. [fm-jllss-88]

5465 P. Frankl and V. Rödl. Hypergraphs do not jump. *Combinatorica*, 4:149–159, 1984. [fr-hdnj-84]

P. Frankl. See also [1207, 4114].

R. Franklin. See also [12018].

R. F. Franklin. See also [10938].

5466 W. R. Franklin. A linear time exact hidden surface algorithm. *Comput. Graph.*, 14(3):117–123, 1980. Proc. SIGGRAPH '80. [f-ltehs-80] *Keywords:* computer graphics, hidden line/surface elimination. *Precedes:* f-ltehs-88.

5467 W. R. Franklin. A linear time exact hidden surface algorithm. In Kenneth I. Joy et al., editors, *Tutorial: Computer Graphics: Image Synthesis*, pages 218–224. 1988. [f-ltehs-88] *Keywords:* computer graphics, hidden line/surface elimination. *Succeeds:* f-ltehs-80. *Precedes:* f-ehsat-81.

5468 W. R. Franklin. An exact hidden sphere algorithm that operates in linear time. *Comput. Graph. Image Process.*, 15:364–379, 1981. [f-ehsat-81] *Keywords:* computer graphics, hidden line/surface elimination. *Succeeds:* f-ltehs-80.

5469 W. R. Franklin. Combinatorics of hidden surface algorithms. Technical Report TR-12-78, Center Res. Comput., Harvard Univ., Cambridge, MA, 1978. [f-chsa-78] *Keywords:* computer graphics, hidden line/surface elimination. *Comments:* Thesis w/o appendices available as a TR from CRCT. Complete thesis available only on microfilm from Harvard, since Harvard did not then subscribe to UMI.

5470 W. R. Franklin. Locating a point in overlapping regions of hyperspace. Report CRL-64, ECSE Dept. Rensselaer Polytech. Inst., Troy, NY, 1978. [f-lporh-78] *Keywords:* point location.

5471 W. R. Franklin. Polygon properties calculated from the vertex neighborhoods. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 110–118, 1987. [f-ppcvn-87] *Keywords:* rays, measure, polygons. *Cites:* b-mrsdh-, cb-accwf-86, ey-eafui-72, f-epiu-82, f-rnrpp-83, gs-pmgsc-83, ms-gsmeo-82, m-nmseo-84, w-tsgm-86, w-nmpo-77, ZZZ.

5472 W. R. Franklin and V. Akman. A workbench to compute unobstructed shortest paths in three-space. In *Proc. 1st Internat. Conf. Indust. Applied Math.*, pages 1–38, 1987. [fa-wcusp-87] *Keywords:* motion planning.

5473 W. Randolph Franklin, Varol Akman, and Colin Verrilli. Voronoi diagrams with barriers and on polyhedra for minimal path planning. *Visual Comput.*, 1(2):133–150, October 1985. [fav-vdbpm-85] *Keywords:* robotics, planar partitions, motion planning, Voronoi diagrams.

W. R. Franklin. See also [10054].

5474 Wm. Randolph Franklin. 3-D geometric databases using hierarchies of inscribing boxes. In *Proceedings of the 7th Canadian Man-Computer Conference*, pages 173–180, June 1981. [f-3dgdu-81] *Keywords:* computer graphics, CAD.

5475 Wm. Randolph Franklin. A simplified map overlay algorithm. In *Harvard Computer Graphics Conference*, July 1983. [f-smoa-83] *Keywords:* intersection.

5476 Wm. Randolph Franklin. Adaptive grids for geometric operations. In *Proc. 6th International Symposium on Automated Cartography*, pages 230–239, 1983. [f-aggo-83] *Keywords:* intersection, grids. *Precedes:* f-aggo-84.

5477 Wm. Randolph Franklin. Adaptive grids for geometric operations. *Cartographica*, 21(2–3):161–167, 1984. monograph 32–33. [f-aggo-84] *Keywords:* intersection, grids. *Succeeds:* f-aggo-83.

5478 Wm. Randolph Franklin. Calculating map overlay polygon areas without explicitly calculating the polygons — implementation. In *Proc. 4th Internat. Sympos. Spatial Data Handling*, pages 151–160, July 1990. [f-cmopa-90] *Keywords:* intersection, area, grids, measure, polygons. *Precedes:* fsskn-ofmop-93.

5479 Wm. Randolph Franklin. Cartographic errors symptomatic of underlying algebra problems. In *Proc. Internat. Sympos. Spatial Data Handling*, volume 1, pages 190–208, August 1984. [f-cesua-84] *Keywords:* robustness.

5480 Wm. Randolph Franklin. Computational geometry in Prolog. In *Proceedings of the NATO Advanced Study Institute on Fundamental Algorithms for Computer Graphics*, volume 17 of *NATO ASI Series F*, pages 737–749. Springer-Verlag, Ilkley, Yorkshire, England, March 1985. [f-cgprolog-85] *Keywords:* artificial intelligence.

5481 Wm. Randolph Franklin. Computer systems and low level data structures for GIS. In David Maguire, David Rhind, and Mike Goodchild, editors, *GIS: Principles and Practice*, volume 1, pages 215–225. Longman Higher Education and Reference, London UK, 1991. [f-cslld-91] *Keywords:* tutorial.

5482 Wm. Randolph Franklin. Efficient intersection calculations in large databases. In *International Cartographic Association 14th World Conference*, pages A62 – A63, August 1989. [f-eicld-89] *Keywords:* intersection, grids.

5483 Wm. Randolph Franklin. Efficient polyhedron intersection and union. In *Proc. Graphics Interface*, pages 73–80, 1982. [f-epiu-82] *Keywords:* intersection, CAD.

5484 Wm. Randolph Franklin. Efficient rotation of an object. *IEEE Trans. Comput.*, C-32(11):1064–1067, November 1983. [f-ero-83] *Keywords:* computer graphics, CAD.

5485 Wm. Randolph Franklin. Evaluation of algorithms to display vector plots on raster devices. *Comput. Graph. Image Process.*, 11(4):377–397, December 1979. [f-eadvp-79] *Keywords:* computer graphics, CAD, discrete geometry.

5486 Wm. Randolph Franklin. Map overlay area animation and parallel simulation. In David H. Douglas, editor, *Proceedings, SORSA'92 Symposium and Workshop*, pages 200–203, July 1992. [f-moaap-92] *Keywords:* parallel computation, intersection, area.

5487 Wm. Randolph Franklin. Problems with raster graphics algorithms. In L. R. A. Kessener, F. J. Peters, and M. L. P. van Lierop, editors, *Data Structures for Raster Graphics (Proceedings of a Workshop held at Steensel, The Netherlands, June 24–28, 1985)*. Springer-Verlag Eurographic Seminars, 1986. [f-prga-86] *Keywords:* computer graphics, discrete geometry. *Comments:* (invited presentation).

5488 Wm. Randolph Franklin. Rays – new representation for polygons and polyhedra. *Comput. Graph. Image Process.*, 22:327–338, 1983. [f-rnrpp-83] *Keywords:* measure, polygons, rays.

5489 Wm. Randolph Franklin. Tutorial on curve fitting for GIS. In David H. Douglas, editor, *Proceedings, SORSA'92 Symposium and Workshop*, pages 235–250, July 1992. [f-tcfg-92] *Keywords:* splines, tutorial.

5490 Wm. Randolph Franklin and Varol Akman. A simple and efficient haloed line algorithm for hidden line elimination. *Comput. Graph. Forum*, 6(2):103–109, May 1987. [fa-sehla-87] *Keywords:* computer graphics, hidden line/surface elimination.

5491 Wm. Randolph Franklin and Varol Akman. Adaptive grid for polyhedral visibility in object space, an implementation. *Comput. J.*, 31(1):56–60, February 1988. [fa-agpvo-88] *Keywords:* computer graphics, hidden line/surface elimination.

5492 Wm. Randolph Franklin and Varol Akman. Building an octree from a set of parallelepipeds. In *Graphics Interface*, 1985. [fa-bosp-85i] *Keywords:* computer graphics, oct trees, CAD. *Precedes:* fa-bosp-85j.

5493 Wm. Randolph Franklin and Varol Akman. Building an octree from a set of parallelepipeds. *IEEE Comput. Graph. Appl.*, 5(10):58–64, October 1985. [fa-bosp-85j] *Keywords:* computer graphics, oct trees. *Succeeds:* fa-bosp-85i.

5494 Wm. Randolph Franklin and Varol Akman. Octree data structures and creation by stacking. In Nadia Magenat-Thalmann, editor, *Computer Generated Images, State of the Art*. Springer-Verlag, 1985. [fa-odscs-85] *Keywords:* computer graphics, oct trees.

5495 Wm. Randolph Franklin and Varol Akman. Reconstructing visible regions from visible segments. *BIT*, 26:430–441, 1986. [fa-rvrvs-86] *Keywords:* computer graphics, hidden line/surface elimination.

5496 Wm. Randolph Franklin and Varol Akman. Shortest paths between source and goal points located on/around a convex polyhedron. In *Proc. 22nd Allerton Conf. Commun. Control Comput.*, October 1984. [fa-spbsg-84] *Keywords:* motion planning.

5497 Wm. Randolph Franklin and Varol Akman. Shortest paths in 3-space, Voronoi diagrams with barriers, and related complexity and algebraic issues. In *Proceedings of the NATO Advanced Study Institute on Fundamental Algorithms for Computer Graphics*, volume 17 of *NATO ASI Series F*, pages 895–917. Springer-Verlag, Ilkley, Yorkshire, England, March 1985. [fa-sp3sv-85] *Keywords:* motion planning.

5498 Wm. Randolph Franklin, Narayanaswami Chandrasekhar, Mohan Kankanhalli, Varol Akman, and Peter Y. F. Wu. Efficient geometric operations for CAD. In Michael J. Wozny, Joshua U. Turner, and K. Preiss, editors, *Geometric Modeling for Product Engineering*, pages 485–498. Elsevier Science Publishers B.V. (North-Holland), 1990. Selected and expanded papers from the IFIP WG 5.2/NSF Working Conference on Geometric Modeling, Rensselaerville, USA, 18-22 September 1988. [fckaw-egoc-90] *Keywords:* intersection, CAD, grids.

5499 Wm. Randolph Franklin, Narayanaswami Chandrasekhar, Mohan Kankanhalli, Manoj Seshan, and Varol Akman. Efficiency of uniform grids for intersection detection on serial and parallel machines. In Nadia Magnenat-Thalmann and D. Thalmann, editors, *New Trends in Computer Graphics (Proc. Computer Graphics International'88)*, pages 288–297. Springer-Verlag, 1988. [fcksa-eugid-88] *Keywords:* parallel computation, intersection, grids.

5500 Wm. Randolph Franklin and Mohan Kankanhalli. Parallel object-space hidden surface removal. *Comput. Graph.*, 24(4):87–94, August 1990. Proc. SIGGRAPH '90. [fk-poshs-90] *Keywords:* computer graphics, parallel computation, hidden line/surface elimination, grids. *Comments:* Dallas, Texas.

5501 Wm. Randolph Franklin, Mohan Kankanhalli, and Chandrasekhar Narayanaswami. Efficient primitive geometric operations on large databases. In *Proceedings National Conference Challenge for the 1990s GIS Geographic Information Systems*, pages 1247–1256. Canadian Institute of Surveying and Mapping, February 1989. [fkn-epgol-89] *Keywords:* intersection, CAD, grids.

5502 Wm. Randolph Franklin and Mohan S. Kankanhalli. Volumes from overlaying 3-D triangulations in parallel. In D. Abel and B. C. Ooi, editors, *Proc. 3rd Sympos. Advances in Spatial Databases*, volume 692 of *Lecture Notes Comput. Sci.*, pages 477–489. Springer-Verlag, June 1993. [fk-vo3dt-93] *Keywords:* parallel computation, intersection, volume, CAD. *Comments:* SSD = Symp on Large Spatial DBs, Singapore.

5503 Wm. Randolph Franklin and Harry R. Lewis. 3-D graphic display of discrete spatial data by prism maps. *Comput. Graph.*, 12(3):70–75, August 1978. Proc. SIGGRAPH '78. [fl-3dgdd-78] *Keywords:* computer graphics, hidden line/surface elimination.

5504 Wm. Randolph Franklin, Chandrasekhar Narayanaswami, Mohan Kankanhalli, David Sun, Meng-Chu Zhou, and Peter Y. F. Wu. Uniform grids: A technique for intersection detection on serial and parallel machines. In *Proceedings 9th International Symposium on Computer-Assisted Cartography*, pages 100–109, April 1989. [fnkszw-ugtid-89] *Keywords:* parallel computation, intersection, CAD, grids.

5505 Wm. Randolph Franklin, Margaret Nichols, Sumitro Samaddar, and Peter Y. F. Wu. Experiences with using Prolog for geometry. In *Proceedings of Graphics Interface'86, Vision Interface'86*, pages 26–31, May 1986. [fnsw-eupg-86] *Keywords:* computer graphics, artificial intelligence.

5506 Wm. Randolph Franklin and C. K. Ray. Higher isn't necessarily better: Visibility algorithms and experiments. In *Proc. 6th Internat. Sympos. Spatial Data Handling*, pages 751–763, 1994. [fr-hinbv-94] *Keywords:* visibility, terrains.

5507 Wm. Randolph Franklin and Venkatesh Sivaswami. OVERPROP — calculating areas of map overlay polygons without calculating the overlay. In *Second National Conference on Geographic Information Systems*, pages 1646–1654, March 1990. [fs-ocamo-90] *Keywords:* intersection, area, grids.

5508 Wm. Randolph Franklin, Venkateshkumar Sivaswami, David Sun, Mohan Kankanhalli, and Chandrasekhar Narayanaswami. OVERPROP — finding map overlay polygons' areas without finding the polygons. *Cartography and Geographic Information Systems*, ??, 1993. [fsskn-ofmop-93] *Keywords:* intersection, grids, area. *Succeeds:* f-cmopa-90.

5509 Wm. Randolph Franklin and Peter Y. F. Wu. A polygon overlay system in Prolog. In *Proceedings of the 8th International Symposium on Computer-Assisted Cartography*, pages 97–106, March 1987. [fw-posp-87] *Keywords:* intersection, artificial intelligence.

5510 Wm. Randolph Franklin, Peter Y. F. Wu, Sumitro Samaddar, and Margaret Nichols. Geometry in Prolog. In Tosiyasu Kunii, editor, *Advanced Computer Graphics, Proceedings of Computer Graphics Tokyo 86*, pages 71–78, April 1986. [fwsn-gp-86] *Keywords:* computer graphics, artificial intelligence.

5511 Wm. Randolph Franklin, Peter Y. F. Wu, Sumitro Samaddar, and Margaret Nichols. Prolog and geometry projects. *IEEE Comput. Graph. Appl.*, ??:46–55, November 1986. [fwsn-pgp-86] *Keywords:* computer graphics, artificial intelligence.

Wm. Randolph Franklin. See also [442–445, 7725, 10055–10057, 13706].

5512 Marc Frantz. A focusing property of the ellipse. *Amer. Math. Monthly*, 101:250–258, 1994. [f-fpe-94]

5513 D. Franzblau. Performance guarantees on a sweep-line heuristic for covering rectilinear polygons with rectangles. *SIAM J. Discrete Math.*, 2(3):307–321, 1989. [f-pgslh-89] *Keywords:* isothetic polygons, covering, rectangles.

5514 D. Franzblau and D. Kleitman. An algorithm for constructing regions with rectangles: independence and minimum generating sets for collections of intervals. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 167–174, 1984. [fk-acrri-84] *Precedes:* fk-acpr-84.

5515 D. Franzblau and D. Kleitman. An algorithm for covering polygons with rectangles. *Inform. Control*, 63:164–189, 1984. [fk-acpr-84] *Succeeds:* fk-acrri-84.

5516 D. S. Franzblau. *Geometric covering and partitioning*. Ph.D. thesis, Massachusetts Inst. Tech., Cambridge, MA, 1985. [f-gcp-85] *Keywords:* doctoral thesis.

5517 A. R. Fraser. Triangle based probability polygons for forest sampling. *Forest Science*, 23:111–121, 1977. [f-tbppf-77] *Annote:* Uses Least Diagonal Neighbour Triangulation and Linear approximation over triangles to weighted VD to estimate area of weighted VD polygon of a given tree.

5518 H. Fraysseix and P. Kuntz. Pagination of large-scale networks. *Algorithms Rev.*, 2(3):105–112, 1992. [fk-plsn-92]

5519 H. de Fraysseix and P. O. de Mendez. A short proof of a gauss problem. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 230–235. Springer-Verlag, 1997. [fm-spgp-97] *Keywords:* graph drawing.

5520 H. de Fraysseix and P. O. de Mendez. Regular orientations, arboricity, and augmentation. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 111–118. Springer-Verlag, 1995. [fm-roaa-95] *Keywords:* graph drawing, planar, orientation.

5521 H. de Fraysseix, P. O. de Mendez, and P. Rosenstiehl. Bipolar orientations revisited. Technical Report C.A.M.S. P089, EHESS, Paris, 1993. [fmr-bor-93]

5522 H. de Fraysseix, P. O. de Mendez, and P. Rosenstiehl. Bipolar orientations revisited. *Discrete Appl. Math.*, 56:157–179, 1995. [fmr-bor-95]

5523 H. de Fraysseix, P. O. de Mendez, and P. Rosenstiehl. Partial orders and orientation, 1992. [fmr-poo-92] *Keywords:* graph drawing.

5524 H. de Fraysseix, J. Pach, and R. Pollack. How to draw a planar graph on a grid. *Combinatorica*, 10(1):41–51, 1990. [fpp-hdpgg-90] *Keywords:* graph drawing.

5525 H. de Fraysseix, J. Pach, and R. Pollack. Small sets supporting Fary embeddings of planar graphs. In *Proc. 20th Annu. ACM Sympos. Theory Comput.*, pages 426–433, 1988. [fpp-sssfe-88] *Keywords:* graph drawing.

5526 H. de Fraysseix and P. Rosenstiehl. A depth-first-search characterization of planarity. *Ann. Discrete Math.*, 13:75–80, 1982. [fr-dfscp-82] *Keywords:* graph drawing.

5527 H. de Fraysseix and P. Rosenstiehl. Structures combinatoires pour des traces automatiques de reseaux. In *Proc. 3rd European Conf. on CAD/CAM and Computer Graphics (Paris)*, pages 332–337. Hermes, 1984. [fr-scpdt-84] *Keywords:* graph drawing.

H. de Fraysseix. See also [4118].

5528 W. D. Frazer and A. C. McKellar. Samplesort: A sampling approach to minimal storage tree sorting. *J. ACM*, 17(3):496–507, 1970. [fm-ssams-70]

5529 M. Fréchet. Sur quelques points du calcul fonctionnel. *Rendiconti del Circolo Mathematico di Palermo*, 22:1–74, 1906. [f-sqpdc-06]

5530 M. Fréchet and K. Fan. *Initiation to Combinatorial Topology*. Prindle, Weber and Schmidt, Inc., Boston, MA, 1934. Translated from French, with notes by Howard E. Eves. [ff-ict-34]

5531 C. O. Frederick, Y. C. Wong, and F. W. Edge. Two-dimensional automatic mesh generation for structural analysis. *Internat. J. Numer. Methods Eng.*, 2:133–144, 1970. [fwe-tdamg-70] *Annote:* Triangulation of set of specified points. Builds triangles on edges to surround each point in turn. When building on edge AB point C which maximizes $\angle ACB$ is picked. DT!

5532 H. Fredericksen and J. Maiorana. Necklaces of beads in k colours and k-ary DeBruin sequences. *Discrete Math.*, 23:207–210, 1978. [fm-nbkck-78]

5533 Greg Frederickson. *Dissections: Plane and Fancy*. Cambridge University Press, 1997. [f-dpf-97]

5534 G. N. Frederickson. A data structure for dynamically maintaining rooted trees. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 175–184, 1993. [f-dsdmr-93]

5535 Greg N. Frederickson. A data structure for dynamically maintaining rooted trees. *J. Algorithms*, 24:37–65, 1997. [f-dsdmr-97] *Keywords:* topology tree. *Succeeds:* f-dsdmr-93.

5536 G. N. Frederickson. A new approach to all pairs shortest paths in planar graphs. In *Proc. 19th Annu. ACM Sympos. Theory Comput.*, pages 19–28. 1987. [f-naaps-87] *Keywords:* shortest paths, graphs.

5537 G. N. Frederickson. Ambivalent data structures for dynamic 2-edge connectivity and k-smallest spanning trees. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 632–641, 1991. [f-adsd2-91]

5538 Greg N. Frederickson. Ambivalent data structures for dynamic 2-edge-connectivity and k smallest spanning trees. *SIAM J. Comput.*, 26:484–538, 1997. [f-adsd2-97] *Keywords:* topology tree. *Succeeds:* f-adsd2-91.

5539 G. N. Frederickson. Data structures for on-line updating of minimum spanning trees, with applications. *SIAM J. Comput.*, 14(4):781–798, 1985. [f-dsolu-85]

5540 G. N. Frederickson. Fast algorithms for shortest paths in planar graphs, with applications. *SIAM J. Comput.*, 16(6):1004–1022, 1987. [f-faspp-87] *Keywords:* shortest paths, graphs.

5541 G. N. Frederickson. Optimal algorithms for tree partitioning. In *Proc. 2nd ACM-SIAM Symp. Discr. Algo.*, pages 168–177, 1991. [f-oatp-91]

5542 G. N. Frederickson and D. J. Guan. Nonpreemptive ensemble motion planning on a tree. Technical Report, Purdue Univ., W. Lafayette, IN, August 1989. [fg-nempt-89]

5543 G. N. Frederickson and D. J. Guan. Preemptive ensemble motion planning on a tree. Technical Report, Purdue Univ., W. Lafayette, IN, August 1989. [fg-pempt-89]

5544 G. N. Frederickson and S. E. Hambrusch. Planar linear arrangements of outerplanar graphs. Technical Report, Purdue Univ., W. Lafayette, IN, March 1987. [fh-plaog-87]

5545 G. N. Frederickson and D. B. Johnson. Finding kth paths and p-centers by generating and searching good data structures. *J. Algorithms*, 4:61–80, 1983. [fj-fkppc-83]

5546 G. N. Frederickson and D. B. Johnson. Generalized selection and ranking: sorted matrices. *SIAM J. Comput.*, 13:14–30, 1984. [fj-gsrsm-84]

5547 G. N. Frederickson and D. B. Johnson. The complexity of selection and ranking in $X + Y$ and matrices with sorted rows and columns. *J. Comput. Syst. Sci.*, 24:197–208, 1982. [fj-csrxm-82]

5548 G. N. Frederickson and S. Rodger. A new approach to the dynamic maintenance of maximal points in a plane. Report CSD-TR-658, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1987. [fr-nadmm-87] *Precedes:* fr-nadmm-90.

5549 G. N. Frederickson and S. Rodger. A new approach to the dynamic maintenance of maximal points in a plane. *Discrete Comput. Geom.*, 5:365–374, 1990. [fr-nadmm-90] *Succeeds:* fr-nadmm-87.

5550 G. N. Frederickson and M. A. Srinivas. Data structures for on-line updating of matroid intersection solutions. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 383–390, 1984. [fs-dsolu-84] *Precedes:* fs-olusc-87.

5551 G. N. Frederickson and M. A. Srinivas. On-line updating of solutions to a class of matroid intersection problems. *Inform. Comput.*, 74:113–139, 1987. [fs-olusc-87] *Succeeds:* fs-dsolu-84.

G. N. Frederickson. See also [1030, 1031, 5244].

5552 H. N. Frederickson and D. J. Guan. Ensemble motion planning in trees. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 66–71, 1989. [fg-empt-89]

5553 H. N. Frederickson, M. S. Hecht, and C. E. Kim. Approximation algorithms for some routing problems. In *Proc. 17th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 216–227, 1976. [fhk-aasrp-76] *Precedes:* fhk-aasrp-78.

5554 H. N. Frederickson, M. S. Hecht, and C. E. Kim. Approximation algorithms for some routing problems. *SIAM J. Comput.*, 7:178–193, 1978. [fhk-aasrp-78] *Succeeds:* fhk-aasrp-76.

5555 F. N. Fredickson and R. Janardan. Separator-based strategies for efficient message routing. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 428–437, 1986. [fj-sbsem-86]

5556 G. N. Fredickson. Implicit data structures for the weighted dictionary problem. In *Proc. 22nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 133–139, 1981. [f-idswd-81]

5557 F. W. Fredman and D. E. Willard. Surpassing the information theoretic bound with fusion trees. *J. Comput. Syst. Sci.*, 48(3):424–436, 1993. [fw-sitbf-93]

5558 F. W. Fredman and D. E. Willard. Trans-dichotomous algorithms for minimum spanning trees and shortest paths. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 719–725, 1990. [fw-tdams-90]

5559 M. L. Fredman. A lower bound on the complexity of orthogonal range queries. *J. ACM*, 28:696–705, 1981. [f-lbcor-81]

5560 M. L. Fredman. A near-optimal data structure for a type of range query problem. In *Proc. 11th Annu. ACM Sympos. Theory Comput.*, pages 62–66, 1979. [f-nodst-79] *Precedes:* f-cmaci-79.

5561 M. L. Fredman. How good is the information theory bound in sorting? *Theoret. Comput. Sci.*, 1:355–361, 1976. [f-hgiit-76]

5562 M. L. Fredman. Inherent complexity of range query problems. In *Proc. 17th Allerton Conf. Commun. Control Comput.*, pages 231–240, 1979. [f-icrqp-79]

5563 M. L. Fredman. Lower bounds on the complexity of some optimal data structures. *SIAM J. Comput.*, 10:1–10, 1981. [f-lbcso-81]

5564 M. L. Fredman. The complexity of maintaining an array and computing its partial sums. *J. ACM*, 29:250–260, 1979. [f-cmaci-79] *Succeeds:* f-nodst-79.

5565 M. L. Fredman. The inherent complexity of dynamic data structures which accommodate range queries. In *Proc. 21st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 191–199, 1980. [f-icdds-80] *Comments:* Split into three journal papers: [5563], [5559], and [5566].

5566 M. L. Fredman. The spanning bound as a measure of range query complexity. *J. Algorithms*, 2:77–87, 1981. [f-sbmrq-81]

5567 M. L. Fredman, J. Komlos, and E. Szemeredi. Storing a sparse table with $O(1)$ worst -case access time. In *Proc. 23rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 165–170, 1982. [fks-sstwc-82]

5568 M. L. Fredman, J. Komlos, and E. Szemeredi. Storing a sparse table with $O(1)$ worst case access time. *J. ACM*, 31(3):538–544, July 1984. [fks-sstwc-84]

5569 M. L. Fredman and R. E. Tarjan. Fibonacchi heaps and their uses. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 338–346, 1984. [ft-fhtu-84]

5570 M. L. Fredman and R. E. Tarjan. Fibonacci heaps and their uses in improved network optimization algorithms. *J. ACM*, 34:596–615, 1987. [ft-fhtui-87]

5571 M. L. Fredman and D. J. Volper. Query time versus redundancy trade-offs for range queries. *J. Comput. Syst. Sci.*, 23:355–365, 1981. [fv-qtvrt-81]

5572 M. L. Fredman and D. J. Volper. The complexity of partial match retrieval in a dynamic setting. *J. Algorithms*, 3:68–78, 1982. [fv-cpmrd-82]

5573 M. L. Fredman and B. Weide. On the complexity of computing the measure of $\bigcup[a_i, b_i]$. *Commun. ACM*, 21:540–544, 1978. [fw-ccmb-78]

5574 M. L. Fredman and D. E. Willard. Blasting through the information theoretic barrier with fusion trees. In *STOC '90*, pages 1–7, 1990. [fw-bitbf-90]

M. L. Fredman. See also [2606].

5575 M. H. Freedman. A power law for the distortion of planar sets. *Discrete Comput. Geom.*, 2:345–351, 1987. [f-pldps-87]

5576 H. Freeman. Computer name placement. In D. J. Maguire, M. F. Goodchild, and D. W. Rhind, editors, *Geographical Information Systems: Principles and Applications*, pages 445–456. Longman, London, 1991. [f-cnp-91]

5577 H. Freeman. Computer processing of line-drawing images. *ACM Comput. Surv.*, 6:57–97, 1974. [f-cpldi-74]

5578 H. Freeman. Lines, curves, and the characterization of shapes. *Inform. Process. Lett.*, 80:629–639, 1980. [f-lccs-80]

5579 H. Freeman. On the packing of arbitrary shaped templates. In *Proc. 2nd USA-Japan Comput. Conf.*, pages 102–107, 1975. [f-past-75]

5580 H. Freeman and P. P. Loutrel. An algorithm for the two dimensional "hidden line" problem. *IEEE Trans. Electron. Comput.*, EC-16:784–790, 1967. [fl-atdhl-67]

5581 H. Freeman and S. P. Morse. On searching a contour map for a given terrain profile. *J. of the Franklin Institute*, 248:1–25, 1967. [fm-scmgt-67]

5582 H. Freeman and R. Shapira. Determining the minimum-area encasing rectangle for an arbitrary closed curve. *Commun. ACM*, 18:409–413, 1975. [fs-dmaer-75]

H. Freeman. See also [339, 2782, 4330, 10852, 12018, 12032].

5583 H. Freeston. The BANG file: a new kind of grid file. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 260–269, 1987. [f-bfnkg-87] *Keywords:* data structuring.

5584 M. Freestone. A general solution of the n-dimensional B-tree problem. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 80–91, 1995. [f-gsndb-95]

5585 R. Freimer. Bisectors of weakly linearly separable sets. Report RC 16817, IBM T. J. Watson Res. Center, Yorktown Heights, NY, April 1991. [f-bwlss-91] *Keywords:* Voronoi diagrams.

5586 R. Freimer. Shattering configurations of points with hyperplanes. Technical Report TR 91-1199, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1991. [f-scph-91t] *Keywords:* arrangements, separation. *Precedes:* f-scph-91i.

5587 R. Freimer. Shattering configurations of points with hyperplanes. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 220–223, August 1991. [f-scph-91i] *Keywords:* arrangements, separation. *Succeeds:* f-scph-91t. *Cites:* e-acg-87, fmp-csua-90, ZZZ.

5588 R. Freimer, S. Khuller, Joseph S. B. Mitchell, C. Piatko, K. Romanik, and D. Souvaine. Localizing an object with finger probes. In Robert A. Melter and Angela Y. Wu, editors, *Proceedings of Vision Geometry III*, pages 272–283. SPIE - The International Society for Optical Engineering, November 1994. part of SPIE's Intl. Symp. Photonics for Industrial Appl. [fkmprs-lofp-94] *Keywords:* probing, finger probes, localization.

5589 R. Freimer, J. S. B. Mitchell, and C. D. Piatko. On the complexity of shattering using arrangements. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 218–222, August 1990. [fmp-csua-90] *Keywords:* arrangements, separation, NP-hardness. *Precedes:* fmp-csua-91. *Cites:* e-acg-87, eow-gfcs-83, ers-ccsno-90, ew-hrsls-86, gm-osacv-87, hm-aahos-88, m-cps-88, mt-cllfp-82, mw-dmvgi-90, sv-ecrps-89, w-ubgpc-90, ZZZ.

5590 R. Freimer, Joseph S. B. Mitchell, and C. D. Piatko. On the complexity of shattering using arrangements. Technical Report TR 91-1197, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, April 1991. [fmp-csua-91] *Keywords:* arrangements, separation, NP-hardness, approximation. *Succeeds:* fmp-csua-90.

R. Freimer. See also [3500].

5591 Lori Freitag, Mark Jones, and Paul Plassmann. An efficient parallel algorithm for mesh smoothing. In *Proc. 4th International Meshing Roundtable*, pages 47–58, Albuquerque, NM, 1995. Sandia National Laboratories. [fjp-epams-95]

5592 Lori Freitag and Carl Ollivier-Gooch. A comparison of tetrahedral mesh improvement techniques. In *Proc. 5th International Meshing Roundtable*, pages 87–100, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [fo-ctmit-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

J. Frenk. See also [5233].

J. B. Frenk. See also [3634].

J. B. G. Frenk. See also [3635].

A. H. Frey. See also [9875].

5593 P. Frey, B. Sarter, and M. Gautherie. Fully automatic mesh generation for 3d domains based upon voxel sets. *Internat. J. Numer. Methods Eng.*, 37:2735–2754, 1994. [fsg-famg3-94]

5594 Pascal J. Frey, H. Borouchaki, and Paul-Louis George. Delaunay tetrahedrization using an advancing-front approach. In *Proc. 5th International Meshing Roundtable*, pages 31–43, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [fbg-dtuaf-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

5595 Pascal J. Frey and Paul-Louis George. *Maillages. Applications aux éléments finis.* Hermes, Paris, France, 1999. [fg-taef-99]

Pascal J. Frey. See also [2283].

5596 W. Frey and D. Field. Mesh relaxation: A new technique for improving triangulations. Research Publication, General Motors, ?? [ff-mrnti-]

5597 William H. Frey. Selective refinement: A new strategy for automatic node placement in graded triangular meshes. *Internat. J. Numer. Methods Eng.*, 24(11):2183–2200, November 1987. [f-srnsa-87] *Keywords:* automatic node placement, graded triangular meshes, mesh generation. *Annote:* Refines mesh by adding new point at $\rho O + (1-\rho)I$ where I is the incentre and O circumcentre and $\rho = 2r/R$. Mentions r/R as triangle quality measure. *Abstract:* Automating triangular finite element mesh generation involves two interrelated tasks: generating a distribution of well-placed nodes on the boundary and in the interior of a domain, and constructing a triangulation of these nodes. For a given distribution of nodes the Delaunay triangulation generally provides a suitable mesh, and Watson's algorithm provides a flexible means of constructing it. In this paper, a new method is described for automating node placement in a Delaunay triangulation by selective refinement of an initial triangulation. Grading of the mesh is controlled by an explicit or implicit node spacing function. Although this paper describes the technique only in the planar context the method generalizes to three dimensions as well. (Author abstract) 26 refs.

5598 William H. Frey and David A. Field. Mesh relaxation. A new technique for improving triangulations. *Internat. J. Numer. Methods Eng.*, 31(6):1121–1133, May 1991. [ff-mrnti-91] *Keywords:* mathematical color shaded surface generation, mesh relaxation, laplacian smoothing techniques, planar domain triangulation. *Annote:* Flips to get degrees of interior nodes as close to 6 as possible, then Laplacian smoothing. Mesh irregularity is $\sum_k (d_k - 6)^2$. *Abstract:* Given a list of points defining a domain boundary, a three-stage process is often used to triangulate a domain. First, an appropriate distribution of interior points is generated. Next the points are connected to form triangles. And, finally, the connectivity data are used to reposition the interior points using the Laplacian smoothing technique, thereby usually improving the shapes of the triangles. This paper describes a new technique for mesh improvement–adjusting the connection structure during the second stage of this process. The new scheme, which we call mesh relaxation, consists of a procedure for iteratively making the mesh topology more regular by edge swapping. For each interior edge, a relaxation index is computed that depends on the degrees of its end points and adjacent points. Any edge for which this index exceeds a prescribed threshold will be swapped, i.e. replaced by a new edge connecting the adjacent points of the original edge. After all edge swaps are completed, Laplacian smoothing is applied to the mesh. Examples show that, when the mesh point density varies smoothly and due care is taken in the vicinity of the boundary, mesh relaxation can dramatically increase the regularity of the mesh and produce improved triangle shapes. (Author abstract).

5599 William H. Frey and David A. Field. Mesh relaxation for improving triangulations. In *Proceedings of the SIAM Regional Conference on Geometric Aspects of Industrial Design*, pages 11–24, Philadelphia, PA, 1992. Soc. for Industrial & Applied Mathematics. [ff-mrit-92] *Keywords:* mesh relaxation, connection structure, edge swaps, laplacian smoothing, mesh point density, relaxation index. *Annote:* Uses min angle, max angle, and min (r/R) to measure mesh quality. *Abstract:* This paper describes a new technique for improving a triangulation by modifying its connection structure. The new scheme, which we call mesh relaxation, consists of a systematic procedure for iteratively making the mesh topology more regular by edge swapping. Interior edges that are good candidates for swapping are identified by computing a relaxation index for each edge that depends on the degrees of its end points and adjacent points. Any edge whose index exceeds a prescribed threshold will be swapped, i.e. replaced by a new edge connecting the points adjacent to the original edge. After all edge swaps are completed, Laplacian smoothing is applied to the mesh. Examples show that when the mesh point density varies smoothly and due care is taken in the vicinity of the boundary, mesh relaxation can dramatically increase the regularity of the connection structure and produce improved triangle shapes. (Author abstract) 12 Refs.

W. H. Frey. See also [2757, 2758, 5239].

5600 Arne Frick. Upper bounds on the number of hidden nodes in sugiyama's algorithm. In Stephen North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 169–183. Springer-Verlag, 1997. [f-ubnhn-97]

5601 A. Frick, C. Keskin, and V. Vogelmann. Integration of declarative approaches. In S. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 184–192. Springer-Verlag, 1997. [fkv-ida-97] *Keywords:* graph drawing, 3D.

5602 A. Frick, A. Ludwig, and H. Mehldau. A fast adaptive layout algorithm for undirected graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 388–403. Springer-Verlag, 1995. [flm-falau-95] *Keywords:* graph drawing, force-directed, system.

A. Frick. See also [2546].

5603 F. Fricker. *Einführung in die Gitterpunktlehre.* Birkhäuser, 1982. [f-eidg-82]

5604 I. Fried. Condition of finite element matrices generated from nonuniform meshes. *AIAA J.*, 10:219–221, 1972. [f-cfemg-72]

5605 A. Friedberg. Finding axes of skewed symmetry. *Comput. Vision Graph. Image Process.*, 34(2):138–154, 1986. [f-fass-86] *Keywords:* symmetry.

5606 J. Friedel and P. Widmayer. A simple proof of the Steiner ratio conjecture for five points. *SIAM J. Appl. Math.*, 49(3):960–967, 1989. [fw-spsrc-89] *Keywords:* Steiner tree, graphs.

M. Friedell. See also [3979, 11139, 11141].

G. Frieder. See also [893].

5607 O. Frieder and M. R. Stytz. Dynamic detection of hidden-surfaces using a MIMD multiprocessor. In *Proc. Annu. IEEE Symp. Computer-Based Med. Syst.*, pages 44–51, 1990. [fs-ddhsu-90] *Keywords:* parallel computations, hidden line/serface elimination.

5608 J. Friedman, J. Hershberger, and J. Snoeyink. Compliant motion in a simple polygon. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 175–186, 1989. [fhs-cmsp-89] *Cites:* b-ptcms-87, c-namrm-87, cr-nlbtr-87, ctv-flvat-88i, dghs-eafcr-88, d-cpcmp-88, d-edrrm-87, egs-oplms-86, e-ubfmp-86, em-esm-88, fw-pcm-88, fm-tspep-84, gy-fchsp-83, gss-gmppt-88, hm-ndsrs-82, k-osps-83, l-mpupb-88, lmt-asfms-84, lw-apcfp-79, m-olcch-87, n-moo-86, hss-pgcrm-87, tv-otats-88, ta-chapi-82, ZZZ.

5609 J. Friedman, J. Hershberger, and J. Snoeyink. Efficiently planning compliant motion in the plane. *SIAM J. Comput.*, 25:562–599, 1996. [fhs-epcmp-96]

5610 J. Friedman, J. Hershberger, and J. Snoeyink. Input-sensitive compliant motion in the plane. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 225–237. Springer-Verlag, 1990. [fhs-iscmp-90]

5611 J. Friedman, J. Hershberger, and J. Snoeyink. On coordinated motion through a maze. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 120–124, 1990. [fhs-cmtm-90] *Cites:* cr-nlbtr-87, d-cpcmp-90, em-esm-88, fhs-iscmp-90, gb-ompcc-75, hu-iatlc-79, lmt-asfms-84, n-moo-86, s-rbndt-70, hss-pgcrm-87, ZZZ.

J. Friedman. See also [2418, 2984–2988].

5612 J. H. Friedman, F. Baskett, and L. J. Shustek. An algorithm for finding nearest neighbors. *IEEE Trans. Comput.*, C-24:1000–1006, 1975. [fbs-afnn-75]

5613 J. H. Friedman, J. L. Bentley, and R. A. Finkel. An algorithm for finding best matches in logarithmic expected time. *ACM Trans. Math. Softw.*, 3:209–226, 1977. [fbf-afbml-77] *Keywords:* range search.

J. H. Friedman. See also [1641, 1642].

S. Friedman. See also [3267].

S. J. Friedman. See also [4287, 4288].

5614 O. Fries. Zerlegung einer planaren Unterteilung der Ebene und ihre Anwendungen. M.S. thesis, Inst. Angew. Math. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1985. [f-zepud-85] *Keywords:* master thesis.

5615 O. Fries, K. Mehlhorn, and S. Näher. Dynamization of geometric data structures. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 168–176, 1985. [fmn-dgds-85] *Cites:* cg-fc-85, egs-oplms-84, hm-ndsrs-82, ia-dsisa-84, k-osps-83, lt-apst-77, lp-lppsi-77, l-dsorq-78, ms-hbt-79, m-dsa-84, vw-rlsil-82, w-ndsor-85, w-ndsor-78, ekz-diepq-77, l-fmprp-83, ZZZ.

5616 O. Fries, K. Mehlhorn, S. Näher, and A. Tsakalidis. A $\log\log n$ data structure for three-sided range queries. *Inform. Process. Lett.*, 25:269–273, 1986. [fmnt-ldsts-86]

D. K. Friesen. See also [2786, 2787].

5617 A. Frieze, C. McDiarmid, and B. Reed. Greedy matching on the line. *SIAM J. Comput.*, 19(4):666–672, 1991. [fmr-gml-91] *Keywords:* graph, matching, optimization.

5618 A. Frieze, G. Miller, and S.-H. Teng. Separator based parallel divide and conquer in computational geometry. In *Proc. 4th ACM Sympos. Parallel Algorithms Architect.*, page ??, 1992. [fmt-sbpdc-92]

A. Frieze. See also [4540, 4553–4556].

A. M. Frieze. See also [2460, 4557–4561].

5619 J. C. Frinkle and R. P. Paul. The initial grasp liftability chart. *Internat. J. Robot. Autom.*, 5(1):47–52, 1989. [fp-iglc-89] *Keywords:* grasp.

5620 R. Fritsch and R. A. Piccinini. *Cellular Structures in Topology*. Cambridge University Press, 1990. [fp-cst-90]

S. L. Fritz. See also [3516].

5621 M. Fröhlich and M. Werner. Demonstration of the interactive graph-visualization system *davinci*. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 266–269. Springer-Verlag, 1995. [fw-digvs-95] *Keywords:* graph drawing, system.

5622 C. Froidevaux, M. C. Gaudel, and M. Soria. *Type de données et algorithmes*. McGraw-Hill, Paris, 1990. [fgs-tddea-90] *Keywords:* algorithms, complexity, data type.

Alexandra Fronville. See also [4022, 4023].

5623 H. J. Frost and C. V. Thompson. Computer simulation of microstructural evolution in thin films. *J. Electronic Materials*, ??, 1988. [ft-csmet-88]

5624 H. J. Frost and C. V. Thompson. Development of microstructure in thin films. In *Proc. SPIE*, 1987. [ft-dmtf-87]

5625 R. Frucht. Graphs of degree three with a given abstract group. *Canad. J. Math.*, 1:365–378, 1949. [f-gdtga-49]

5626 R. Frucht. How to describe a graph. *Ann. New York Acad. Sci.*, 175:159–167, 1970. [f-hdg-70]

5627 R. Frucht. On the groups of repeated graphs. *Bull. Amer. Math. Soc.*, 55:418–420, 1949. [f-grg-49]

R. Frucht. See also [3586].

5628 T. Fruchterman and E. Reingold. Graph drawing by force-directed placement. *Softw. – Pract. Exp.*, 21(11):1129–1164, 1991. [fr-gdfdp-91] *Keywords:* graph drawing.

5629 B. Fruhwirth, R. E. Burkard, and Günter Rote. Approximation of convex curves with application to the bicriteral minimum cost flow problem. *European J. Oper. Res.*, 42:326–338, 1989. [fbr-accab-89]

5630 J.-J. Fu and R. C. T. Lee. Minimal spanning trees of moving points in the plane. *IEEE Trans. Comput.*, C-40(1):113–118, 1991. [fl-mstmp-91] *Keywords:* graphs, closeness, minimal spanning tree, points.

5631 Jyh-Jong Fu and R. C. T. Lee. Voronoi diagrams of moving points in the plane. In *Proc. 10th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, pages 238–254, Berlin, Germany, 1990. Springer-Verlag. [fl-vdmpp-90] *Precedes:* fl-vdmpp-91.

5632 J.-J. Fu and R. C. T. Lee. Voronoi diagrams of moving points in the plane. *Internat. J. Comput. Geom. Appl.*, 1(1):23–32, 1991. [fl-vdmpp-91] *Succeeds:* fl-vdmpp-90.

J. Y. H. Fu. See also [3124].

K. S. Fu. See also [2844].

5633 L.-C. Fu and D.-Y. Liu. An efficient algorithm for finding a collision-free path among polyhedral obstacles. *J. Robot. Syst.*, ??, 1990. [fl-eafcf-90] *Keywords:* motion planning.

P. Fu. See also [3104, 3109, 4686, 4689, 4690].

5634 H. Fuchs, G. D. Abrams, and E. D. Grant. Near real-time shaded display of rigid objects. *Comput. Graph.*, 17(3):65–72, 1983. Proc. SIGGRAPH '83. [fag-nrtsd-83]

5635 H. Fuchs, Z. M. Kedem, and B. Naylor. On visible surface generation by a priori tree structures. *Comput. Graph.*, 14(3):124–133, 1980. Proc. SIGGRAPH '80. [fkn-vsgpt-80]

5636 H. Fuchs, Z. M. Kedem, and S. P. Uselton. Optimal surface reconstruction from planar contours. *Commun. ACM*, 20:693–702, 1977. [fku-osrpc-77]

5637 H. Fuchs, J. Poulton, J. Eyles, T. Greer, J. Goldfeather, D. Ellsworth, S. Molnar, G. Turk, B. Tebbs, and L. Israel. Pixel-planes 5: A heterogeneous multiprocessor graphics system using processor-enhanced memories. *Comput. Graph.*, 23(3):79–88, 1989. Proc. SIGGRAPH '89. [fpeggemtti-pp5hm-89]

H. Fuchs. See also [6030].

5638 M. Fuchs. A note on mapping cylinders. *Mich. Math. J.*, 18:289–290, 1971. [f-nmc-71]

U. Fuchs. See also [578–580, 11892, 11893].

5639 S. Füdadi. Fixing system and homothetic covering. *Acta Math. Acad. Sci. Hungar.*, 50:203–225, 1987. [f-fshc-87]

5640 I. Fudos and C. Hoffmann. Correctness proof of a geometric constraint solver. *Internat. J. Comput. Geom. Appl.*, 6:405–420, 1996. [fh-cpgcs-96]

5641 I. Fudos and C. M. Hoffmann. A graph-constructive approach to solving systems of geometric constraints. *ACM Trans. Graph.*, 16(2):179–216, April 1997. [fh-gcass-97]

I. Fudos. See also [2344].

T. E. Fuhrman. See also [9120].

5642 Artur Fuhrmann. Testing roundness of a polytope and related problems. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 169–174, 1997. [f-trprp-97]

H. Fujimoto. See also [10034].

5643 K. Fujimura. On planning motion in a time-varying environment. Technical report, Oak Ridge National Laboratory, 1991. [f-pmtve-91] *Keywords:* motion planing, time-dependent obstacles, time-minimal motion.

5644 K. Fujimura and T. L. Kunii. A polytree; representation and algorithms to integrate solid and boundary models. Report ??, Dept. Inform. Sci., Univ. Tokyo, Tokyo, Japan, 1984. [fk-prais-84]

5645 K. Fujimura and H. Samet. A hierarchical strategy for path planning among moving obstacles. *IEEE Trans. Robot. Autom.*, 5(1):61–19, February 1989. [fs-hsppm-89]

5646 K. Fujimura and H. Samet. Accessibility: A new approach to path planning among moving obstacles. In *Proceedings of the CVPR88 Conference*, pages 803–807, June 1988. [fs-anapp-88]

5647 K. Fujimura and H. Samet. Motion planning in a dynamic domain. In *Proc. IEEE Internat. Conf. Robot. Autom.*, volume 1, pages 324–330, May 1990. [fs-mpdd-90]

5648 K. Fujimura and H. Samet. Path planning among moving obstacles using spatial indexing. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1662–1667, April 1988. [fs-ppmou-88]

5649 K. Fujimura and H. Samet. Planning a time-minimal motion among moving obstacles. *Algorithmica*, 10:41–63, 1993. [fs-ptmmm-93]

5650 K. Fujimura and H. Samet. Time-minimal paths among moving obstacles. Technical Report CS-TR-2124, Computer Science, Univ. of Maryland, 1988. [fs-tmpmo-88]

5651 K. Fujimura and H. Samet. Time-minimal paths among moving obstacles. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1110–1115, May 1989. [fs-tmpmo-89]

5652 K. Fujimura, H. Toriya, K. Tamaguchi, and T. L. Kunii. Octree algorithms for solid modeling. In *Proc. Intergraphics '83*, volume B2-1, pages 1–15, 1983. [ftyk-oasm-83]

5653 K. Fujimura, H. Toriya, K. Yamaguchi, and T. L. Kunii. An enhanced oct-tree data structure and operation for solid modeling. In *Proc. Comput. Aided Geom. Modeling Sympos.*, April 1983. [ftyk-eotds-83]

K. Fujimura. See also [11591, 11596, 11597, 13743].

K. Fujisbiro. See also [3190].

S. Fujishige. See also [7395].

5654 M. Fujiwara. Ein satz über konvexe geschlosene kurven. *Sci. Repts. Tĥoku Univ.*, 9:289–294, 1920. [f-skgk-20]

5655 H. Fujiware and K. Nakagawa. Real-time image subtraction and addition using two cross-polarized phase-conjugate waves. *Optics Commun.*, 79(1,2):6–10, 1990. [fn-rtisa-90]

5656 Hidetosi Fukagawa and Dan Pedoe. Japanese temple geometry problems. Technical report, The Charles Babbage Research Centre, Winnipeg, 1989. [fp-jtgp-89]

5657 J. Fukuda and J. Suhara. Automatic mesh generation for finite element analysis. In J. T. Oden, R. W. Clough, and Y. Yamamoto, editors, *Advances in Computational Methods in Structural Mechanics and Design*. UAU Press, Hunstville, Alabama, 1972. [fs-amgfe-72] *Annote:* Two phases. First randomly generates points in polygon to required density, then triangulates points by horribly complicated algorithm. Picks five points minimizing triangle edge length. Discards triangle intersecting or containing. Then picks point making this triangle and the next one as equilateral as possible.

J. Fukuda. See also [12642].

5658 K. Fukuda. *CDD Reference Manual, Version 0.52b*. EPFL, Lausanne, Switzerland. [f-crmv0-]

5659 K. Fukuda. *Oriented Matroid Programming*. PhD thesis, University of Waterloo, 1982. [f-omp-82] *Keywords:* doctoral thesis.

5660 K. Fukuda, T. Liebling, and F. Margot. Analysis of backtrack algorithms for listig all vertices and all faces of a convex polyhedron. *Comput. Geom. Theory Appl.*, 8:1–12, 1997. [flm-abalv-97]

5661 K. Fukuda, T. M. Liebling, and C. Lütolf. Extended convex hull. *Comput. Geom. Theory Appl.*, 20:13–23, 2001. [fll-ech-01]

5662 K. Fukuda and T. Matsui. On the finiteness of the criss-cross method. *European J. Oper. Res.*, 52:119–124, 1991. [fm-fccm-91]

5663 K. Fukuda and V. Rosta. Combinatorial face enumeration in convex polytopes. *Comput. Geom. Theory Appl.*, 4:191–198, 1994. [fr-cfecp-94]

5664 K. Fukuda, S. Saito, and A. Tamura. Combinatorial face enumeration in arrangements and oriented matroids. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 4, 1989. [fst-cfeao-89] *Precedes:* fst-cfeao-91.

5665 K. Fukuda, S. Saito, and A. Tamura. Combinatorial face enumeration in arrangements and oriented matroids. *Discrete Appl. Math.*, 31(2):141–149, 1991. [fst-cfeao-91] *Keywords:* comb, arrangement, sphereset, hyperplaneset, flat, matroid, n-dimensional. *Succeeds:* fst-cfeao-89.

5666 K. Fukuda, S. Saito, A. Tamura, and T. Tokuyama. Bounding the number of k-faces in arrangements of hyperplanes. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 3, 1989. [fstt-bnkfa-89] *Precedes:* fstt-bnkfa-91.

5667 K. Fukuda, S. Saito, A. Tamura, and T. Tokuyama. Bounding the number of k-faces in arrangements of hyperplanes. *Discrete Appl. Math.*, 31(2):151–165, 1991. [fstt-bnkfa-91] *Keywords:* comb, arrangement, hyperplaneset, flat, sphereset, matroid, face, n-dimensional. *Succeeds:* fstt-bnkfa-89.

K. Fukuda. See also [1156–1161, 1595, 2422, 2544, 2577, 2768, 10037].

S. Fukuda. See also [10165].

5668 K. Fukunaga and P. M. Narendra. A branch and bound algorithm for computing k-nearest neighbors. *IEEE Trans. Comput.*, C-24:750–753, 1975. [fn-bback-75]

K. Fukunaga. See also [8254, 8255].

N. Fukuyama. See also [4615].

D. Fulkerson. See also [5367].

5669 B. E. Fullbright. Intersectional properties of certain families of compact convex sets. *Pacific J. Math.*, 50:57–62, 1974. [f-ipcfc-74]

5670 W. Fulton. *Intersection Theory*. Springer-Verlag, 1984. [f-it-84]

5671 K. Y. Fung, T. M. Nicholl, R. E. Tarjan, and C. J. Van Wyk. Simplified linear-time Jordan sorting and polygon clipping. Technical Report CS-TR-189-88, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, 1988. [fntv-sltjs-88] *Precedes:* fntv-sltjs-90.

5672 K. Y. Fung, T. M. Nicholl, R. E. Tarjan, and C. J. Van Wyk. Simplified linear-time Jordan sorting and polygon clipping. *Inform. Process. Lett.*, 35:85–92, 1990. [fntv-sltjs-90] *Succeeds:* fntv-sltjs-88.

5673 Stefan Funke and Kurt Mehlhorn. Look: A lazy object-oriented kernel for geometric computation. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 156–165, 2000. [fm-llook-00]

Stefan Funke. See also [2612, 2613, 4101].

5674 T. Funkhouser, C. Séquin, and S. Teller. Management of large amounts of data in interactive building walkthroughs. In *Proc. 1992 Workshop on Interactive 3D Graphics*, pages 11–20, 1992. [fst-mladi-92]

Thomas A. Funkhouser. See also [9979].

5675 Z. Füredi. Random polytopes in the d-dimensional cube. *Discrete Comput. Geom.*, 1:315–319, 1986. [f-rpddc-86]

5676 Z. Füredi. The densest packing of equal circles into a parallel strip. *Discrete Comput. Geom.*, 6:95–106, 1991. [f-dpecp-91]

5677 Z. Füredi. The maximum number of unit distances in a convex n-gon. *J. Combin. Theory Ser. A*, 55:316–320, 1990. [f-mnudc-90] *Keywords:* combinatorial geometry, convex.

5678 Z. Füredi and P. Hajnal. Davenport-schinzel theory of matrices. Technical Report, DIMACS, Rutgers Univ., 1989. [fh-dstm-89]

5679 Z. Füredi and P. Hajnal. Davenport-Schinzel theory of matrices. *Discrete Math.*, 103:233–251, 1992. [fh-dstm-92]

5680 Z. Füredi and D. Kleitman. The prison yard problem. *Combinatorica*, 14:287–300, 1994. [fk-pyp-94]

Z. Füredi. See also [532, 533, 535, 1373–1378, 2279, 2280].

5681 M. Fürer, X. He, M.-Y. Kao, and B. Raghavachari. $O(n \log\log n)$-work parallel algorithms for straight-line grid embeddings of planar graphs. In *Proc. ACM Sympos. Parallel Algorithms Architect.*, pages 410–419, 1992. [fhkr-owpas-92] *Keywords:* graph drawing, planar, straight-line, grid, parallel.

5682 M. Furer and B. Raghavachari. Approximating the minimum degree spanning tree to within one from the optimal degree. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 317–324, 1992. [fr-amdst-92]

M. Fürer. See also [7760].

L. Furlani. See also [1511].

G. W. Furnas. See also [5110].

5683 M. Furst, J. Hopcroft, and E. Luks. Polynomial time algorithm for permutation groups. In *Proc. 21st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 36–41, 1980. [fhl-ptapg-80]

5684 M. Furukata and K. Asano. Reporting the crossing-free segments of a complete graph. *Internat. J. Comput. Math.*, 62:163–170, 1996. [fa-rcfsc-96]

P. Fussel. See also [10740].

5685 D. Fussell, V. Ramachandran, and R. Thurimella. Finding triconnected components by local replacement. *SIAM J. Comput.*, 26(3):587–616, 1993. [frt-ftclr-93] *Keywords:* parallel algorithm, triconnectivity, PRAM, graph, vertex connectivity. *Succeeds:* frt-ftclr-89.

5686 D. Fussell, V. Ramachandran, and R. Thurimella. Finding triconnected components by local replacements. In *Automata, Languages and Programming (Proc. 16th ICALP)*, volume 372 of *Lecture Notes Comput. Sci.*, pages 379–393. Springer-Verlag, 1989. [frt-ftclr-89] *Precedes:* frt-ftclr-93.

D. Fussell. See also [5432].

D. S. Fussell. See also [2672, 2673].

Carl W. Gable. See also [9984].

5687 C. P. Gabor, W.-L. Hsu, and K. J. Supowit. Recognizing circle graphs in polynomial time. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 106–116, 1985. [ghs-rcgpt-85] *Keywords:* circles, graph theory. *Precedes:* ghs-rcgpt-89.

5688 C. P. Gabor, W.-L. Hsu, and K. J. Supowit. Recognizing circle graphs in polynomial time. *J. ACM*, 36:435–473, 1989. [ghs-rcgpt-89] *Succeeds:* ghs-rcgpt-85.

5689 H. Gabow and R. Tarjan. A linear time algorithm for a special case of disjoint set union. In *Proc. 15th Annu. ACM Sympos. Theory Comput.*, pages 246–251, 1983. [gt-ltasc-83]

5690 H. Gabow and R. Tarjan. A linear time algorithm for a special case of disjoint set union. *J. Comput. Syst. Sci.*, 30:209–221, 1985. [gt-ltasc-85]

5691 H. Gabow and R. Tarjan. Faster scaling algorithms for network problems. *SIAM J. Comput.*, 18:1013–1036, 1989. [gt-fsanp-89]

5692 H. N. Gabow, J. L. Bentley, and R. E. Tarjan. Scaling and related techniques for geometry problems. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 135–143, 1984. [gbt-srtgp-84]

5693 H. N. Gabow, Z. Galil, T. H. Spencer, and R. E. Tarjan. Efficient algorithms for minimum spanning trees on directed and undirected graphs. *Combinatorica*, 6:109–122, 1986. [ggst-eamst-86]

5694 H. N. Gabow and R. E. Tarjan. A linear-time algorithm for finding a minimum spanning pseudoforest. *Inform. Process. Lett.*, 27:259–263, 1988. [gt-ltafm-88]

H. N. Gabow. See also [4425].

5695 K. R. Gabriel and R. R. Sokal. A new statistical approach to geographic variation analysis. *Systematic Zoology*, 18:259–278, 1969. [gs-nsagv-69]

5696 A. Gabrielov and N. Vorobjov. Complexity of stratification of semi-pfaffian sets. *Discrete Comput. Geom.*, 14:71–91, 1995. [gv-cssps-95]

5697 M. E. Gaddis and M. J. Zyda. The fractal geometry of nature: its mathematical basis and application to computer graphics. Report NPS52-86-008, Naval Postgraduate School, Monterey, CA, 1986. [gz-fgnim-86]

5698 Noud Gademann. Linear programming in random polynomial time. In *Proc. 3rd Twente Workshop on Graphs and Combinatorial Optimization*, page ??, June 1993. [g-prpt-93]

Rajit Gadh. See also [8922].

5699 V. Gaede and O. Günther. Multidimensional access methods. *ACM Comput. Surv.*, 30:170–231, 1998. [gg-mam-98] *Keywords:* survey paper.

V. Gaede. See also [5119].

N. Gaffke. See also [2274].

P. Gahinet. See also [12321].

Carlo Gaibisso. See also [5444–5447].

5700 A. Gajentaan and M. Overmars. n^2-hard problems in computational geometry. manuscript, 1993. [go-nhpcg-93t] *Precedes:* go-nhpcg-93, go-copcg-95.

5701 A. Gajentaan and M. H. Overmars. n^2-hard problems in computational geometry. Report RUU-CS-93-15, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, April 1993. [go-nhpcg-93] *Succeeds:* go-nhpcg-93t.

5702 A. Gajentaan and M. H. Overmars. On a class of $O(n^2)$ problems in computational geometry. *Comput. Geom. Theory Appl.*, 5:165–185, 1995. [go-copcg-95] *Succeeds:* go-nhpcg-93t.

5703 Shmuel Gal. Continous search games. In *Search theory: some recent developments.*, volume 112 of *Lecture Notes in pure and applied mathematics*, pages 33–53. Dekker, New York, NY, 1989. [g-csg-89]

5704 Shmuel Gal. *Search Games*, volume 149 of *Mathematics in Science and Engeneering*. Academic Press, New York, 1980. [g-sg-80]

5705 D. Gala. How to solve linear inequalities. *Amer. Math. Monthly*, 76:589–599, 1969. [g-hsli-69]

5706 D. Gale. Convex polyhedral cones and linear inequalities. *Cowles Commission Monograph*, 13:287–297, 1951. [g-cpcli-51]

5707 D. Gale. Neighborly and cyclic polytopes. In V. Klee, editor, *Convexity*, volume 7 of *Proc. Symp. Pure Math.*, pages 225–232. American Mathematical Society, 1963. [g-ncp-63]

5708 Z. Galil. A new algorithm for the maximal flow problem. In *Proc. 19th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 231–245, October 1987. [g-namfp-87]

5709 Z. Galil and R. Giancarlo. Speeding up dynamic programming with applications to molecular biology. *Theoret. Comput. Sci.*, 64:107–118, 1989. [gg-sudpa-89]

5710 Z. Galil and G. F. Italiano. Data structures and algorithms for disjoint set union problems. *ACM Comput. Surv.*, 23(3):319–344, 1991. [gi-dsads-91]

5711 Z. Galil and G. F. Italiano. Fully dynamic algorithms for edge connectivity problems. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 317–327, 1991. [gi-fdaec-91]

5712 Z. Galil and G. F. Italiano. Maintaining biconnected components of dynamic planar graphs. In *Proc. 18th Internat. Colloq. Automata Lang. Program.*, volume 510 of *Lecture Notes Comput. Sci.*, pages 339–350. Springer-Verlag, 1991. [gi-mbcdp-91]

5713 Z. Galil, G. F. Italiano, and N. Sarnak. Fully dynamic planarity testing. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 495–506, 1992. [gis-fdpt-92]

5714 Z. Galil and N. Megiddo. A fast selection algorithm and the problem of optimum distribution of effort. *J. ACM*, 26:58–64, 1979. [gm-fsapo-79]

Z. Galil. See also [4955–4960, 5693, 10625].

5715 R. Galimberti and U. Montanari. An algorithm for hidden-line elimination. *Commun. ACM*, 12:206, 1969. [gm-ahle-69]

5716 V. V. Galitsky and A. A. Kzylov. Modelling of plant community dynamics: 2-d model of one-species even-aged community. Report ??, Sci. Center Sislogical Res., Inst. Soil Sci. Photosynthesis, USSR Acad. Sci., 1984. [gk-mpcd2-84]

5717 V. V. Galitsky and E. V. Mironenko. Voronoi Mosaic on the plane, construction algorithm: materials on software. Report ??, Sci. Center Sislogical Res., Inst. Soil Sci. Photosynthesis, USSR Acad. Sci., 1981. [gm-vmpca-81]

5718 T. Gallai. Solution to problem no 4065. *Amer. Math. Monthly*, 51:169–171, 1944. [g-spn4-44] *Succeeds:* e-pn4-44.

5719 B. A. Galler and M. J. Fischer. An improved equivalence algorithm. *Commun. ACM*, 7:301–303, 1964. [gf-iea-64]

T. M. Gallie. See also [1442].

5720 J. Gallier. Drawing closed rational surfaces. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 370–372, 1997. [g-dcrs-97] *Cites:* a-tdmrt-41, br-tdarp-94, br-frrpc-95, b-g-87, f-cscag-93, f-ncspg-95, fj-cesr-89, fj-csr-92, g-adcrs-96, g-csgai-97, hl-cagd-93, r-bcdas-87, ZZZ.

5721 J. H. Gallier. Algorithms for drawing closed rational surfaces. Technical Report, Univ. Pennsylvania, Philadelphia, PA, 1996. [g-adcrs-96]

5722 J. H. Gallier. Curves and surfaces: Geometry, algorithms, and implementation in Mathematica. Technical Report, Univ. Pennsylvania, Philadelphia, PA, 1997. [g-csgai-97]

A. Galligo. See also [2675, 2677].

5723 G. Gallo, M. D. Grigoriadis, and R. E. Tarjan. A fast parametric maximum flow algorithm. *SIAM J. Comput.*, 18:30–55, 1989. [ggt-fpmfa-89]

5724 G. Gallo and B. Mishra. Efficient algorithms and bounds for Wu-Ritt characteristic sets. In T. Mora and C. Traverso, editors, *Effective Methods on Algebraic Geometry*, volume 94 of *Progress in Mathematics*, pages 119–142. Birkhäuser, 1991. [gm-eabwr-91]

5725 G. Galperin, T. Krüger, and S. Troubetzkoy. Local instability of orbits in polygonal and polyhedral billiards. *Commun. Math. Phys.*, 169:463–473, 1995. [gkt-lioppb-95]

Gregory Galperin. See also [3947].

J. A. Galt. See also [13396].

5726 Jerome Galtier and Paul Louis George. Prepartitioning as a way to mesh subdomains in parallel. In *Proc. 5th International Meshing Roundtable*, pages 107–121, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [gg-pwmsp-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

5727 Jérôme Galtier and Stéphane Perennes. Parallel flips on planar triangulations. In *Abstracts 15th European Workshop Comput. Geom.*, pages 81–86. INRIA Sophia-Antipolis, 1999. [gp-pfpt-99]

5728 R. Gambini, D. L. Huff, and G. F. Jenks. Geometric properties of market areas. Regional Science Association: Papers, 1967. [ghj-gpma-67]

5729 G. Gambosi and M. Talamo. An application of m-ary trees to the design of data structures for geometric searching problems. Report ??, Centro Nazionale Ricerche, Instituto Analisi Sistemi Inform., 1985. [gt-amatd-85]

G. Gambosi. See also [5444].

R. V. Gamkrelidze. See also [10838].

5730 Erich Gamma, Richard Helm, Ralph Johnson, and John Vlissides. *Design Patterns.* Addison-Wesley, Reading, MA, 1995. [ghjv-dp-95] *Keywords:* object-oriented programming, patterns, reuse.

Mark Gammon. See also [2634].

5731 S. Ganapathy and T. G. Dennehy. A new general triangulation method for planar contours. *ACS Trans. Comput. Graph.*, 16:69–75, 1982. [gd-ngtmp-82]

5732 M. V. Gandhi and B. S. Thompson. Automated design of modular fixtures for flexible manufacturing systems. *J. of Manufacturing Systems*, 5(4), 1986. [gt-admff-86]

5733 Pierre-Marie Gandoin. *Compression progressive sans perte de structures géométriques.* Thèse de doctorat en sciences, université de Nice-Sophia Antipolis, France, 2001. [g-cpsps-01] *Keywords:* doctoral thesis.

Pierre-Marie Gandoin. See also [4024, 4025].

5734 G. Gane and T. Sarson. *Structured Systems Analysis*. Prentice Hall, Englewood Cliffs, NJ, 1979. [gs-ssa-79]

5735 J. L. Ganley and J. P. Cohoon. A faster dynamic programming algorithm for exact rectilinear Steiner minimal trees. In *Proc. 4th Great Lakes Sympos. VLSI*, pages 238–241, 1994. [gc-fdpae-94]

5736 J. L. Ganley and J. P. Cohoon. Improved computation of optimal rectilinear Steiner minimal trees. *Internat. J. Comput. Geom. Appl.*, 7:457–472, 1997. [gc-icors-97] *Succeeds:* gc-orsmt-94.

5737 J. L. Ganley and J. P. Cohoon. Optimal rectilinear Steiner minimal trees in $O(n^2 2.62^n)$ time. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 308–313, 1994. [gc-orsmt-94] *Precedes:* gc-icors-97. *Cites:* ch-ecsmt-86, ch-icpsm-92, dw-spg-72, gc-fdpae-94, gj-rstpi-77, h-sprd-66, hu-iatlc-79, h-smtrd-76, sw-ersta-93, s-hfsmt-92, tac-rsmw-92, w-aspep-85, hrw-stp-92, ZZZ.

F. Ganovelli. See also [3312].

5738 E. R. Gansner, E. Koutsofios, S. C. North, and K. P. Vo. A technique for drawing directed graphs. *IEEE Trans. Softw. Eng.*, 19:214–230, 1993. [gknv-tddg-93] *Keywords:* graph drawing.

5739 E. R. Gansner, E. Koutsofios, S. C. North, and K. P. Vo. Graph visualization in software analysis. In *Proc. IEEE Symposium on Assessment of Quality Software Development Tools*, May 1992. [gknv-gvsa-92] *Keywords:* graph drawing.

5740 E. R. Gansner, S. C. North, and K. P. Vo. DAG – A program that draws directed graphs. *Softw. – Pract. Exp.*, 18(11):1047–1062, 1988. [gnv-dptdd-88] *Keywords:* graph drawing.

Emden R. Gansner. See also [4289].

M. Ganter. See also [13076].

M. A. Ganter. See also [4915].

5741 M. A. Gantner and J. J. Uicker, Jr. Generating swept solids for convex objects. Report ??, Dept. Mech. Engrg., Univ. Wisconsin, Madison, WI, 1985. [gu-gssco-85]

5742 B. Gao, D.-Z. Du, and R. L. Graham. A tight lower bound for the Steiner ratio in Minkowski planes. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 183–191, 1994. [gdg-tlbsr-94] *Cites:* achlkkmh-sspmn-91, cg-fpms-85, c-srbmp-90, c-sp-67, d-src-91, dgglw-mstnp-, dh-pgpcs-92, dh-rspns-92, ggj-ccsmt-77, gj-rstpi-77, gp-smt-68, gh-rsmt-76, h-smtrd-76, lm-pcasi-91, ld-smtld-92, m-ccm-76, sr-lvsta-75, sw-hstcu-, sg-smtus-82, ZZZ.

B. Gao. See also [4442].

P. Gao. See also [11915, 12322].

5743 S. Gao, M. Jerrum, M. Kaufmann, K. Mehlhorn, W. Rülling, and C. Storb. On continuous homotopic one layer routing. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 392–402, 1988. [gjkmrs-cholr-4scg-88] *Succeeds:* gjkmrs-cholr-cga-88. *Cites:* cs-rreww-83, lm-artrp-85, m-slwr-87, st-ldt-47, t-oswrp-81, ZZZ.

5744 S. Gao, M. Jerrum, M. Kaufmann, K. Mehlhorn, W. Rülling, and C. Storb. On continuous homotopic one layer routing. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 55–70. Springer-Verlag, 1988. [gjkmrs-cholr-cga-88] *Precedes:* gjkmrs-cholr-4scg-88. *Annote:* 4th Intern. Workshop Comput. Geom.

5745 S. Gao and M. Kaufmann. Channel routing of multiterminal nets. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 316–325, 1987. [gk-crmn-87]

5746 S. Gao, M. Kaufmann, and F. M. Maley. Advances in homotopic layout compaction. In *Proc. 1st ACM Sympos. Parallel Algorithms Architect.*, pages 273–282, 1989. [gkm-ahlc-89]

S. Gao. See also [7912].

5747 X. S. Gao and S. C. Chou. On the normal parametrization of curves and surfaces. *Internat. J. Comput. Geom. Appl.*, 1(2):125–136, 1991. [gc-npcs-91] *Keywords:* normal parametric equation, inversion map, conic, conicoid, computer modeling.

C. Garbay. See also [2867].

G. Garbulsky. See also [2768].

5748 A. García, C. Hernando, F. Hurtado, M. Noy, and J. Tejel. Packing trees into planar graphs. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 383–390. Springer-Verlag, 1997. [ghhnt-ptpg-97] *Keywords:* graph drawing.

5749 Alfredo García, Marc Noy, and Javier Tejel. Lower bounds for the number of crossing-free subgraphs of K_n. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 97–102, 1995. [gnt-lbncf-95]

5750 A. García, M. Noy, and J. Tejel. Lower bounds on the number of crossing-free subgraphs of K_N. *Comput. Geom. Theory Appl.*, 16:211–221, 2000. [gnt-lbncf-00]

5751 A. Garcia-Alonso, N. Serrano, and J. Flaquer. Solving the collision detection problem. *IEEE Comput. Graph. Appl.*, 14:36–43, May 1994. [gsf-scdp-94]

5752 Jesus Garcia and Pedro A. Ramos. Measuring circularity of a set of points. In *Abstracts 12th European Workshop Comput. Geom.*, page 75. Universität Münster, 1996. [gr-mcsp-96]

J. García. See also [29, 30, 2653].

5753 Luis F. Garcia and Osama A. Mohammed. Automatic finite element grid generation in electromagnetics. In *1988 IEEE Southeastcon, Conference Proceedings.*, pages 571–575, New York, NY, 1988. IEEE. [gm-afegg-88] *Keywords:* grid generation, field region, finite-element meshes, triangulation, finite-element grids. *Annote:* Basic incremental switching algorithm. *Abstract:* An automatic two-dimensional finite-element grid generator, which would greatly assist in improving preprocessing operations, and geometry handling, for electromagnetic field computations is presented. The algorithm developed iteratively triangulates a set of points, defining a field region, into optimal finite-element meshes. The mathematical procedure used in developing the algorithm is based on the concept of Delaunay triangulation and variational principles. The main objective of this algorithm is to efficiently reconstruct complicated field regions in terms of a set of points, known to the user, and generate optimal finite- element grids. The algorithm would also assist in preparing the geometrical and material characteristic-field regions to obtain numerical solutions. The algorithm is executed interactively. 20 refs.

5754 J. Garc'ia-L'opez and P. Ramos-Alonso. Circular visibility and seability. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 18–23, 1993. [gr-cvs-93] *Cites:* as-cssp-93, as-cvspf-93, c-tsplt-91a, ghlst-ltavs-87, gy-fchsp-83, ps-cgi-85, t-cg-85, ZZZ.

5755 J. García-Lopez and P. Ramos. Fitting a set of points by a circle. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 139–146, 1997. [gr-fspc-97] *Precedes:* grs-fspc-98. *Cites:* ast-apsgo-94, agss-ltacv-89, efnn-rauvd-89, egs-oplms-86, f-gm2ag-82, ll-orpr-91, ps-cgi-85, r-ac-79, rz-epccm-92, sy-pncrr-95, sj-wrspp-95, slw-oardc-95, y-ecgtm-95, ZZZ.

5756 Jesús García-López, Pedro Ramos, and Jack Snoeyink. Fitting a set of points by a circle. *Discrete Comput. Geom.*, 20:389–402, 1998. [grs-fspc-98] *Succeeds:* gr-fspc-97.

J. Garcia-Lopez. See also [31, 983, 984].

M. L. Marquez Garcia. See also [6093].

5757 M. Gardner. Tangent circles. In *Fractal Music and Hypercards*, pages 149–166. W. H. Freeman, 1992. [g-tc-92]

M. Gardner. See also [3294].

5758 R. J. Gardner. *Geometric Tomography*. Cambridge University Press, 1995. [g-gt-95]

5759 R. J. Gardner. Symmetrals and x-rays of planar convex bodies. *Arch. Math.*, 41:183–189, 1983. [g-sxpcb-83]

5760 R. J. Gardner. X-rays of polygons. *Discrete Comput. Geom.*, 7:281–293, 1992. [g-xrp-92]

5761 R. J. Gardner and Peter Gritzmann. Determination of finite sets by X-rays. In *Abstracts 12th European Workshop Comput. Geom.*, pages 71–72. Universität Münster, 1996. [gg-dfsxr-96]

5762 R. J. Gardner and P. McMullen. On Hammer's x-ray problem. *J. London Math. Soc.*, 21:171–175, 1980. [gm-hxp-80]

5763 D. Gardy, P. Flajolet, and C. Puech. On the performance of orthogonal range queries in multiattribute and doubly chained trees. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 218–229. Springer-Verlag, 1989. [gfp-porqm-89]

5764 D. Gardy and D. Gouyou-Beauchamps. Enumeration of some Davenport-Schinzel sequences. Report 564, Université de Paris-Sud, Paris, 1990. [gg-esdss-90]

Jr. M. R. Garey. See also [3398].

5765 M. Garey. Optimal binary identification procedures. *SIAM J. Appl. Math.*, 23:173–186, 1972. [g-obip-72]

5766 M. Garey, D. Johnson, and H. So. An apllication of graph coloring to printed circuit testing. *IEEE Trans. Circuits Syst.*, CAS-23(10):591–598, October 1976. [gjs-agcpc-76]

5767 M. R. Garey, R. L. Graham, and D. S. Johnson. Some NP-complete geometric problems. In *Proc. 8th Annu. ACM Sympos. Theory Comput.*, pages 10–22, 1976. [ggj-sncgp-76]

5768 M. R. Garey, R. L. Graham, and D. S. Johnson. The complexity of computing Steiner minimal trees. *SIAM J. Appl. Math.*, 32:835–859, 1977. [ggj-ccsmt-77]

5769 M. R. Garey and D. S. Johnson. *Computers and Intractability: A Guide to the Theory of NP-Completeness*. W. H. Freeman, New York, NY, 1979. [gj-cigtn-79] *Keywords:* NP-completeness.

5770 M. R. Garey and D. S. Johnson. Crossing number is NP-complete. *SIAM J. Algebraic Discrete Methods*, 4(3):312–316, 1983. [gj-cninc-83] *Keywords:* graph drawing.

5771 M. R. Garey and D. S. Johnson. The rectilinear Steiner tree problem is NP-complete. *SIAM J. Appl. Math.*, 32:826–834, 1977. [gj-rstpi-77]

5772 M. R. Garey, D. S. Johnson, F. P. Preparata, and R. E. Tarjan. Triangulating a simple polygon. *Inform. Process. Lett.*, 7(4):175–179, 1978. [gjpt-tsp-78]

5773 M. R. Garey, D. S. Johnson, and R. E. Tarjan. The planar Hamiltonian circuit problem is NP-complete. *SIAM J. Comput.*, 5(4):704–714, 1976. [gjt-phcpn-76]

5774 M. R. Garey and R. Y. Pinter. Optimum scan-width selection under containment constraints. *AT&T Bell Lab. Tech. J.*, 63:1191–1212, 1984. [gp-oswsc-84]

M. R. Garey. See also [341, 7574, 9430, 9431].

5775 A. Garg. New results on drawing angle graphs. *Comput. Geom. Theory Appl.*, 9(1–2):43–82, 1998. Special Issue on Geometric Representations of Graphs, G. Di Battista and R. Tamassia, editors. [g-nrdag-98] *Succeeds:* g-dag-95.

5776 A. Garg. On drawing angle graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 84–95. Springer-Verlag, 1995. [g-dag-95] *Keywords:* graph drawing, planar, straight-line, NP-hardness.

5777 A. Garg, M. T. Goodrich, and R. Tamassia. Area-efficient upward tree drawings. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 359–368, 1993. [ggt-aeutd-93] *Keywords:* graph drawing. *Precedes:* ggt-putdo-96. *Cites:* bc-cmwlv-87, bl-fsvgl-84, bm-gta-76, b-ndgta-88, bk-abtl-80, c-tpca-82, cdttb-fdgd-92, cdp-noaau-92, dtt-arsdp-92, dett-adgab-93, dv-aptg-93, fpp-sssfe-88, ell-ttdc-90, ghlst-ltavs-87, fhkr-owpas-92, k-dpgul-92, l-aeglv-80, mp-arpg-92, o-cgc18-93, rt-tdt-81, sr-cdtn-83, rt-rplbo-86, s-epgg-90, tt-uavrp-86, t-hdg-63, v-ucvc-81, ZZZ.

5778 A. Garg, M. T. Goodrich, and R. Tamassia. Planar upward tree drawings with optimal area. *Internat. J. Comput. Geom. Appl.*, 6:333–356, 1996. [ggt-putdo-96] *URL:* http://www.cs.brown.edu/cgc/papers/ggt-aoutd-96.ps.gz. *Keywords:* graph drawing, tree, planar, upward. *Succeeds:* ggt-aeutd-93.

5779 A. Garg and R. Tamassia. A new minimum cost flow algorithm with applications to graph drawing. Manuscript, Dept. of Computer Sci., Brown University, 1996. [gt-nmcfa-96] *Keywords:* graph drawing, orthogonal, planar.

5780 A. Garg and R. Tamassia. A new minimum cost flow algorithm with applications to graph drawing. In S. C. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 201–216. Springer-Verlag, 1997. [gt-nmcfa-97] *URL:* http://www.cs.brown.edu/cgc/papers/gt-nmcfa-97.ps.gz. *Keywords:* graph drawing, planar, orthogonal, grid.

5781 A. Garg and R. Tamassia. Advances in graph drawing. In *Algorithms and Complexity*, volume 778 of *Lecture Notes Comput. Sci.*, pages 12–21. Springer-Verlag, 1994. [gt-agd-94] *URL:* http://www.cs.brown.edu/cgc/papers/gt-agd-94.ps.gz. *Keywords:* graph drawing.

5782 A. Garg and R. Tamassia. Angular resolution of planar drawings. Technical report, Brown Univ., Dept. of Computer Science, 1993. [gt-arpd-93] *Keywords:* graph drawing.

5783 A. Garg and R. Tamassia. Effective visualization of hierarchical structures in 3D. Manuscript, Dept. of Computer Sci., Brown University, 1996. Available at http://www.cs.brown.edu/people/rt/fadiva/giotto3d.html. [gt-evhst-96] *URL:* http://www.cs.brown.edu/people/rt/fadiva/giotto3d.html. *Keywords:* graph drawing, 3D.

5784 A. Garg and R. Tamassia. Efficient computation of planar straight-line upward drawings. In *Graph Drawing '93 (Proc. ALCOM Workshop on Graph Drawing)*, 1993. [gt-ecpsl-93] *Keywords:* graph drawing, planar, upward, straight-line.

5785 A. Garg and R. Tamassia. GIOTTO3D: A system for visualizing hierarchical structures in 3D. In S. North, editor, *Graph Drawing (Proc. GD '96)*, Lecture Notes Comput. Sci. Springer-Verlag, 1997. [gt-gsvhs-97] *URL:* http://www.cs.brown.edu/cgc/papers/gt-gsvhs-97.ps.gz. *Keywords:* graph drawing, upward, 3D, CGC, Brown.

5786 A. Garg and R. Tamassia. On the complexity of upward planarity testing. Technical report, Brown Univ., Dept. of Computer Science, 1993. [gt-cupt-93] *Keywords:* graph drawing.

5787 A. Garg and R. Tamassia. On the computational complexity of upward and rectilinear planarity testing. Report CS-94-10, Comput. Sci. Dept., Brown Univ., Providence, RI, 1994. [gt-ccurp-94]

5788 A. Garg and R. Tamassia. On the computational complexity of upward and rectilinear planarity testing. Submitted to *SIAM Journal on Computing*, 1995. [gt-ccurp-s-95] *Keywords:* graph drawing, planar upward, orthogonal.

5789 A. Garg and R. Tamassia. On the computational complexity of upward and rectilinear planarity testing. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 286–297. Springer-Verlag, 1995. [gt-ccurp-95] *URL:* http://www.cs.brown.edu/cgc/papers/gt-ccurp-95.ps.gz. *Keywords:* graph drawing, planar, upward, rectilinear, orthogonal, NP-hardness.

5790 A. Garg and R. Tamassia. Planar drawings and angular resolution: Algorithms and bounds. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 12–23. Springer-Verlag, 1994. [gt-pdara-94] *Keywords:* graph drawing, planar, straight-line, angular resolution.

5791 A. Garg and R. Tamassia. Upward planarity testing. *Order*, 12:109–133, 1995. [gt-upt-95] *URL:* http://www.cs.brown.edu/cgc/papers/gt-upt-95.ps.gz. *Keywords:* graph drawing, planar, upward, survey.

5792 A. Garg, R. Tamassia, and P. Vocca. Drawing with colors. In *Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 12–26. Springer-Verlag, 1996. [gtv-dc-96] *URL:* http://www.cs.brown.edu/cgc/papers/gtv-dc-96.ps.gz. *Keywords:* graph drawing, 3D, straight-line.

A. Garg. See also [2436, 2437, 2441, 3629, 3630, 4123–4129, 13256].

5793 Naveen Garg and Dorit S. Hochbaum. An $O(\log k)$ approximation algorithm for the k minimum spanning tree problem in the plane. In *Proc. 26th Annu. ACM Sympos. Theory Comput.*, pages 432–438, 1994. [gh-oaakm-94]

5794 Naveen Garg, Goran Konjevod, and R. Ravi. A polylogarithmic approximation algorithm for the group Steiner problem. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 253–259, 1998. [gkr-paags-98]

5795 I. Gargantini. An effective way to represent quadtrees. *Commun. ACM*, 25(12):905–910, December 1982. [g-ewrq-82]

5796 I. Gargantini and H. H. Atkinson. Ray tracing an octree: Numerical evaluation of the first intersection. *Comput. Graph. Forum*, 12(4):199–210, October 1993. [ga-rtone-93]

I. Gargantini. See also [1057, 1058].

T. Gargiulo. See also [2523].

5797 Rao Garimella and Mark S. Shephard. Tetrahedral mesh generation with multiple elements through the thickness. In *Proc. 4th International Meshing Roundtable*, pages 321–334, Albuquerque, NM, 1995. Sandia National Laboratories. [gs-tmgme-95]

5798 M. Garland and P. S. Heckbert. Surface simplification using quadric error metrics. In *Proc. SIGGRAPH '97*, pages 209–216, 1997. [gh-ssqem-97]

M. Garland. See also [6759].

5799 B. Garlick, D. Baum, and J. Winget. Interactive viewing of large geometric databases using multiprocessor graphics workstations. In *SIGGRAPH '90 Course Notes: Parallel Algorithms and Architectures for 3D Image Generation*, 1990. [gbw-ivlgd-90]

5800 R. J. Garnder and P. Gritzmann. Successive determination and verification of polytopes by their x-rays, 1992. preprint. [gg-sdvpx-92]

Garret. See also [2037].

M. O. Garret. See also [10760].

W. Garret. See also [8409].

B. Garrett. See also [8410].

W. Garrett. See also [8411].

5801 M. A. Garrido and A. Márquez. Embedding a graph in the grid of a surface with the minimum number of bends is NP-hard. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 124–133. Springer-Verlag, 1997. [gm-eggsm-97] *Keywords:* graph drawing.

5802 Maria Angeles Garrido, Alberto Márquez, Jose Ramon Portillo, and Pedro Reyes. Orthogonal triangles in the plane. In *Abstracts 15th European Workshop Comput. Geom.*, pages 165–167. INRIA Sophia-Antipolis, 1999. [gmpr-otp-99]

5803 T. Garrity and J. Warren. On computing the intersection of a pair of algebraic surfaces. *Comput. Aided Geom. Design*, ??, 1987. [gw-cipas-87]

T. Garrity. See also [1254, 1261].

5804 G. D. Garson and R. S. Biggs. *Analytic Mapping and Geographic Databases.* Sage Publications, Newbury Park, 1992. [gb-amgd-92]

5805 Bernd Gärtner. A subexponential algorithm for abstract optimization problems. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 464–472, 1992. [g-saaop-92] *Keywords:* geometric optimization, randomized algorithm, smallest enclosing ball, distance of convex polyhedra.

5806 Bernd Gärtner. A subexponential algorithm for abstract optimization problems. Technical report, Princeton University, February 1993. [g-saaop-93] *Comments:* DIMACS Workshop on Randomized Algorithms for Combinatorial Optimization.

5807 Bernd Gärtner. A subexponential algorithm for abstract optimization problems. *SIAM J. Comput.*, 24:1018–1035, 1995. [g-saaop-95] *Keywords:* geometric optimization, randomized algorithm, smallest enclosing ball, distance of convex polyhedra.

5808 Bernd Gärtner. Exact arithmetic at low cost: A case study in linear programming. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 157–166, 1998. [g-ealcc-98]

5809 Bernd Gärtner. Pitfalls in computing with pseudorandom determinants. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 148–155, 2000. [g-pcpd-00]

5810 B. Gärtner. *Randomized Optimization by Simplex-Type Methods*. PhD thesis, Freie Universität Berlin, 1995. [g-rostm-95] *Keywords:* doctoral thesis.

5811 B. Gärtner. Set systems of bounded Vapnik-Chervonenkis dimension and a relation to arrangements. Masters thesis, Fachbereich Mathematik, Freie Univ. Berlin, Berlin, Germany, 1991. [g-ssbvc-91] *Keywords:* masters thesis.

5812 Bernd Gärtner and Svend Schönherr. An efficient, exact, and generic quadratic programming solver for geometric optimization. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 110–118, 2000. [gs-eegqp-00]

5813 B. Gärtner and S. Schönherr. Exact primitives for smallest enclosing ellipses. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 430–432, 1997. [gs-epsee-97] *Cites:* as-rssua-93, dll-udleu-57, d-ccpac-92, gs-seefe-97t, j-episc-48, msw-sblp-92, p-cmse-82, s-bkeup-94, st-mce-80, s-ac-57, t-odsga-75, w-sedbe-91a, ZZZ.

5814 B. Gärtner and S. Schönherr. Smallest enclosing ellipses - fast and exact. Technical Report, Free University Berlin, Berlin, Germany, 1997. [gs-seefe-97t]

5815 Bernd Gärtner and Emo Welzl. Linear programming – randomization and abstract frameworks. In *Proc. 13th Sympos. Theoret. Aspects Comput. Sci.*, volume 1046 of *Lecture Notes Comput. Sci.*, pages 669–687. Springer-Verlag, 1996. [gw-lpraf-96] *Keywords:* survey paper, linear programming, randomization, abstract frameworks.

5816 Bernd Gärtner and Emo Welzl. Random sampling in geometric optimization: New insights and applications. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 91–99, 2000. [gw-rsgon-00]

5817 B. Gärtner and Emo Welzl. Vapnik-Chervonenkis dimension and (pseudo-)hyperplane arrangements. *Discrete Comput. Geom.*, 12:399–432, 1994. [gw-vcdph-94]

5818 B. Gärtner and G. Ziegler. Randomized simplex algorithms on Klee-Minty cubes. In *Proc. 35th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 502–510, 1994. [gz-rsakm-94]

B. Gärtner. See also [360, 4481].

P. Garvan. See also [4575].

J. E. Gary. See also [9489].

5819 Saul I. Gass and Thomas Saaty. The computational algorithm for the parametric objective function. *Naval Research Logistics*, 2:39–45, 1955. [gs-capof-55]

5820 P. Gaston and T. Lozano-Perez. Tactile recognition and localization using object models: The case of polyhedra on a plane. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-6:257–266, May 1984. [gl-trluo-84]

5821 Joachim von zur Gathen. Algebraic complexity theory. In *Annu. Rev. Comput. Sci.*, volume 3, pages 317–347. Annual Reviews, Palo Alto, CA, 1988. [g-act-88]

M. C. Gaudel. See also [5622].

M. Gautherie. See also [5593].

5822 F. Gavril. Algorithms for minimum coloring, maximum clique, minimum covering by cliques and maximum independent set of a chordal graph. *SIAM J. Comput.*, 1(2):180–187, 1972. [g-amcmc-72]

5823 F. Gavril. Algorithms on circular-arc graphs. *Networks*, 4:357–369, 1974. [g-acag-74]

5824 F. Gavril. Some NP-complete problems on graphs. In *Proc. 11th Conf. Inform. Sci. Syst.*, pages 91–95. Johns Hopkins University, 1977. [g-sncpg-77]

5825 F. Gavril. The intersection graphs of subtrees is exactly the chordal graphs. *J. Combin. Theory Ser. B*, 16:47–56, 1974. [g-igsec-74]

Dmitri Gavrilov. See also [5827].

5826 M. Gavrilova, H. Ratschek, and J. Rokne. Exact computation of Voronoi diagram and Delaunay triangulation. *J. Reliable Computing*, 6(1):39–60, 2000. [grr-ecvdd-00]

5827 Marina Gavrilova, Jon Rokne, and Dmitri Gavrilov. Dynamic collision detection algorithms in computational geometry. In *Abstracts 12th European Workshop Comput. Geom.*, pages 103–106. Universität Münster, 1996. [grg-dcdac-96]

5828 H. Gazit. An improved algorithm for separating a planar graph. Manuscript, Univ. Southern California, Los Ageles, CA, 1986. [g-iaspg-86]

5829 H. Gazit and G. L. Miller. Planar separators and the Euclidean norm. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*. Information Processing Society of Japan, Springer-Verlag, August 1990. [gm-psen-90]

5830 P. Gburzynski and M. McLeish. An efficient heuristic algorithm for a 3-space n-partitioning problem used in polygon retrieval and non-parametric statistics. In *Proc. Allerton Conf.*, pages 908–916, 1987. [gm-eha3s-87]

C. W. Gear. See also [6622].

5831 W. C. Gear. *Numerical Initial Value Problems in Ordinary Differential Equations*. Prentice Hall, 1971. [g-nivpo-71]

Keith O. Geddes. See also [2855–2857].

5832 J. N. Gederquist, M. T. Eismann, and A. M. Tai. Holographic polar formatting and real-time optical processing of synthetic radar data. *Appl. Optics*, 1928(19):4182–4189, 1989. [get-hpfrt-89]

5833 J. N. Gederquist and A. M. Tai. Computer-generated holograms for geometric transformations. *Appl. Optics*, 23(18):3099–3104, 1984. [gt-cghgt-84]

5834 Carl Van Geem. Computation of a non-uniform grid on the configuration space of a robot arm amidst obstacles: Intersection problem. In *Abstracts 11th European Workshop Comput. Geom.*, pages 75–78. Universität Linz, 1995. [g-cnugc-95]

5835 Carl van Geem. Towards a fast solution method for the general robot motion planning problem using a Manhattan-like distance function on a non-uniform grid in configuration space. In *Abstracts 10th European Workshop Comput. Geom.*, pages 73–76. Universidad de Cantabria, Santander, 1994. [g-tfsmg-94] *Cites:* ZZZ.

V. Geffert. See also [581].

J. Gehrke. See also [324].

5836 Bernhard Geiger. 3D Modeling using the Delaunay triangulation. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages V11–V12, 1995. [g-3dmud-95] *Keywords:* video review. *Cites:* bg-tdrcs-93, ZZZ.

5837 Bernhard Geiger. Three-dimensional modeling of human organs and its application to diagnosis and surgical planning. Report 2105, INRIA Sophia-Antipolis, Valbonne, France, 1993. [g-tdmho-93b] *Succeeds:* g-tdmho-93.

5838 Bernhard Geiger. *Three-dimensional modeling of human organs and its application to diagnosis and surgical planning*. Thèse de doctorat en sciences, École Nationale Supérieure des Mines de Paris, France, 1993. [g-tdmho-93] *Keywords:* doctoral thesis. *Precedes:* g-tdmho-93b.

Bernhard Geiger. See also [1198, 2199, 2204–2206].

5839 Dr. Seuss [Theodore Seuss Geisel]. *The 500 Hats of Bartholomew Cubbins*. Vanguard Press, 1938. [s-5hbc-38] *Comments:* Early recursion [Jeff Erickson].

5840 Dr. Seuss [Theodore Seuss Geisel]. *The Cat in the Hat Comes Back*. Beginner Books. Random House, 1958. [s-chcb-58] *Comments:* Early recursion [Jeff Erickson].

S. Geisler. See also [8278].

C. D. Gelatt. See also [8096].

5841 H. Gelernter. Realization of a geometry theorem proving machine. In E. A. Feigenbaum and J. E. Feldman, editors, *Computers and Thought*. McGraw-Hill, New York, NY, 1963. [g-rgtpm-63]

5842 I. M. Gelfand, M. M. Kapranov, and A. V. Zelevinski. *Discriminants, Resultants and Mulidimensional Determinants*. Birkhäuser, Boston, MA, 1994. [gkz-drmd-94]

I. M. Gelfand. See also [13187].

5843 Natasha Gelfand, Michael T. Goodrich, and Roberto Tamassia. Teaching data structure design patterns. In *Proc. ACM Symp. Computer Science Education*, 1998. [ggt-tdsdp-98]

5844 Natasha Gelfand and Roberto Tamassia. Algorithmic patterns for orthogonal graph drawing. In S. H. Whitesides, editor, *Graph Drawing (Proc. GD '98)*, volume 1547 of *Lecture Notes Comput. Sci.*, pages 138–152. Springer-Verlag, 1998. [gt-apogd-98] *Keywords:* graph drawing, planar, orthogonal, system.

5845 Gellert, editor. *The VNR Concise Encyclopedia of Mathematics*. Van Nostrand Reinhold, 1977. [g-vcem-77]

5846 W. Gellert, S. Gottwald, M. Hellwich, H. Kästner, and H. Küstner. *The VNR Concise Encyclopedia of Mathematics*. Van Nostrand Reinhold, New York, 2nd edition, 1989. [gghkk-vcem-89]

5847 S. M. Gelston and D. Dutta. Boundary surface recovery from skeleton curves and surfaces. *Comput. Aided Geom. Design*, 12(1):27–51, February 1995. [gd-bsrsc-95]

D. Geman. See also [1995, 1996].

S. Geman. See also [1995, 1996].

D. Gemmill. See also [8465].

G. Gentili. See also [10227].

5848 G. Georgakopoulos and C. H. Papadimitriou. The 1-Steiner tree problem. *J. Algorithms*, 8:122–130, 1987. [gp-1stp-87]

D. D. George. See also [12206].

5849 J. A. George. Nested dissection of a regular finite element mesh. *SIAM J. Numer. Anal.*, 10:345–363, 1973. [g-ndrfe-73]

5850 J. A. George and J. W. Liu. *Computer Solution of Large Sparse Positive Definite Systems*. Prentice Hall, 1981. [gl-cslsp-81]

5851 Paul-Louis George and Houman Borouchaki. *Triangulation de Delaunay et maillage. Applications aux éléments finis*. Hermes, Paris, France, 1997. [gb-tdmae-97]

5852 P. L. George, F. Hecht, and E. Saltel. Automatic mesh generator with specified boundary. *Computer Methods in Applied Mechanics and Engineering*, 92(3):269–288, November 1991. [ghs-amgsb-91] *Keywords:* finite element mesh generation, automatic mesh generators, finite element boundary fitting, two-dimensional domain meshing, three-dimensional domain meshing, Voronoi's theory. *Abstract:* For the purpose of finite element computation for 2D or 3D geometry, one needs an appropriate mesh of the considered domain. A class of fully automatic methods, derived from Voronoi's theory, is suitable for generating a mesh of any shape via a set of points describing the geometry. Such methods, providing triangles in 2D and tetrahedra in 3D, can be seen, after an adequate initialization, as the merger of each given point in an existing mesh using an updating process. Unfortunately, this mesh, which contains all the given points, does not contain, in general, the edges (or the faces) of the boundary which are the natural data to be satisfied. The aim of this paper is, after a brief survey of the different steps of the abovementioned method, to point out the problem of the exact fitting of the given boundary and to present a method which guarantees this crucial property. (Edited author abstract) 18 Refs.

5853 P. L. George, F. Hecht, and M. G. Vallet. Creation of internal points in Voronoi's type method. control adaptation. *Advances in Engineering Software and Workstations*, 13(5–6):303–312, September 1991. [ghv-cipvt-91] *Keywords:* Voronoi's method, control adaptation, mesh generation, finite element automatic meshes, isotropic and anisotropic meshes. *Annote:* Inside flip insertion. Extra points added adaptively. *Abstract:* Devoted to mesh generation based upon a variant of the Delaunay-Voronoi type of method, this paper briefly recalls the different steps of such a process with special attention paid to the process concerning the creation of internal points. A general background is introduced which makes the control and the adaptation of the meshes so created according to some special specifications possible both for 2D and 3D situations. (Author abstract) 16 Refs.

5854 P. L. George and F. Hermeline. Delaunay's mesh of a convex polyhedron in dimension *d*. application to arbitrary polyhedra. *Internat. J. Numer. Methods Eng.*, 33(5):975–995, April 1992. [gh-dmcpd-92] *Keywords:* Delaunay triangulation, mesh generation, polyhedra. *Annote:* Watson's in arbitrary dimensions. Hybrid approach for robustness – calculation of simplex volumes is done exactly but not cc tests. Result is therefore guaranteed to be a valid mesh. *Abstract:* This paper presents a method for creating a Delaunay triangulation connected to a set of specified points. The theoretical aspect is recalled for an arbitrary dimension and the method is discussed in order to derive a practical approach, valid for dimensions 2 and 3, which is simple, robust and well adapted to computation. Convex polyhedral and arbitrary polyhedral situations are introduced. (Author abstract) 22 Refs.

Paul Louis George. See also [2283, 2284, 5594, 5595, 5726].

C. Georges. See also [9024].

5855 Alexandros Gerbessiotis and Constantinos Siniolakis. Communication efficient data structures on the bsp model with applications in computational geometry. In *Proceedings of EUROPAR'96*, August 1996. [gs-cedsb-96] *Keywords:* BSP Model, Data Structures.

5856 A. V. Gerbessiotis and L. G. Valiant. Direct bulk-synchronous parallel algorithms. *J. Parallel Distrib. Comput.*, 22:251–267, 1994. [gv-dbspa-94]

5857 L. Gerencsér and A. Gyárfás. On Ramsey-type problems. *Annales Universitatis Scientarium Budapestinensis Roland Eőtvős, Sectio Mathematica*, 10:167–170, 1967. [gg-rtp-67]

A. Germa. See also [5430].

R. Gershbein. See also [10757].

5858 A. Gersho and R. M. Gray. *Vector Quantization and Signal Compression*. Kluwer Academic Publishers, 1991. [gg-vqsc-91]

Michael Gervautz. See also [8263].

5859 J. L. Gerver. The dissection of a polygon into nearly equilateral triangles. *Geom. Dedicata*, 16:93–106, 1984. [g-dpnet-84]

5860 A. Getis and B. Boots. *Models of Spatial Processes*. Cambridge University Press, 1978. [gb-msp-78]

5861 P. Getto. Fast ray tracing of unevaluated constructive solid geometry models. In R. A. Earnshaw and B. Wyvill, editors, *New Advances in Computer Graphics: Proc. of Computer Graphics International '89*, pages 563–578. Springer-Verlag, 1989. [g-frtuc-89]

Jim Gettys. See also [11696].

5862 N. H. Getz. Control of balance for a nonlinear nonholonomic nonminimum-phase model of a bicycle. In *American Control Conference*. American Automatic Control Council, June 1994. [g-cbnnn-94]

5863 L. Gewali. *Efficient Algorithms for Path Planning and Visibility Problems*. Ph.D. dissertation, Computer Science, Univ. of Texas at Dallas, August 1989. [g-eappv-89] *Keywords:* doctoral thesis.

5864 L. Gewali. On computing stair-case visibility polygon. to appear in Proc. Vision Geometry II (SPIE), 1993. [g-cscvp-93] *Precedes:* gg-cscvp-93.

5865 L. Gewali. On minimum and maximum visibility problem. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 240–245, 1993. [g-mmvp-93] *Cites:* c-tsplt-90i, ea-lacvp-81, g-cscvp-93, fm-tspep-84, gkn-copss-92, gn-cgopp-93, ha-gmps-92, ll-ccagp-86, l-vsp-83, mrs-copsp-89, nt-opg-91, o-agta-87, rc-csopm-87, t-cm-88, s-rrag-92, ZZZ.

5866 L. Gewali. Placing guards inside orthogonal polygons. *Inform. Sci.*, 88:1–14, 1996. [g-pgiop-96]

5867 L. Gewali. Recognizing s-star polygons. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 183–188, 1994. [g-rssp-94] *Cites:* a-eafvp-85, bt-gcaim-92, ea-lacvp-81, fm-tspep-84, gg-cscvp-93, gn-cgopp-93, ha-gmps-92, o-agta-87, ps-cgi-85, s-rrag-92, srw-gsv-cccg-91, sw-gkph-93, t-cm-88, lp-oafkp-79, mrs-copsp-89, rc-csopm-87, ZZZ.

5868 L. Gewali. Recognizing *s*-star polygons. *Pattern Recogn.*, 28:1019–1032, 1995. [g-rssp-95]

5869 L. Gewali and D. Glasser. On computing stair-case visibility polygon. In *Proc. of the 1993 Systems Science Conf.*, 1993. [gg-cscvp-93] *Succeeds:* g-cscvp-93.

5870 L. Gewali, Mark Keil, and S. Ntafos. On covering orthogonal polygons with star-shaped polygons. *Inform. Sci.*, 65:45–63, 1992. [gkn-copss-92]

5871 L. Gewali, A. Meng, Joseph S. B. Mitchell, and S. Ntafos. Path planning in $0/1/\infty$ weighted regions with applications. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 266–278, 1988. [gmmn-pp0wr-88] *Keywords:* maximum concealment, shortest paths, Voronoi diagrams, continuous Dijkstra, visibility. *Precedes:* gmmn-pp0wr-90. *Cites:* aaghi-vpses-85, aai-spbts-87, cr-nlbtr-87, cn-owr-88, cn-wrsp-87, ea-lacvp-81, ft-fhtu-84, gm-osacv-87, l-prp-78, lc-pgdr-85, m-psp-86, m-aaspt-88, m-spozc-87, m-mcp-, m-mfpd-88, mmp-dgp-87, mp-wrp-85, o-agta-87, rs-spesp-85, r-naspa-86, ss-spps-86, w-cvgnl-85, ZZZ.

5872 L. Gewali, A. Meng, Joseph S. B. Mitchell, and S. Ntafos. Path planning in $0/1/\infty$ weighted regions with applications. *ORSA J. Comput.*, 2(3):253–272, 1990. [gmmn-pp0wr-90] *Keywords:* maximum concealment, shortest paths, Voronoi diagrams, continuous Dijkstra, visibility. *Succeeds:* gmmn-pp0wr-88.

5873 L. Gewali, S. Ntafos, and I. G. Tollis. Path planning in the presence of vertical obstacles. Technical report, Computer Science, University of Texas at Dallas, 1989. [gnt-pppvo-89]

5874 L. Gewali and I. Stojmenović. Computing external watchman routes on PRAM, BSR, and interconnection models of parallel computation. *Parallel Processing Letters*, 4:83–93, 1994. [gs-cewrp-94]

5875 L. Gewali and R. Venkatasubramanian. An optimum algorithm for computing maximum grazing area. Technical Report CS-92-023, Dept. of Comput. Sci., UNLV, Las Vegas, Nevada, June 1992. [gv-oacmg-92]

L. Gewali. See also [1223–1225, 10203, 10204].

5876 L. P. Gewali and S. Ntafos. Covering grids and orthogonal polygons with periscope guards. *Comput. Geom. Theory Appl.*, 2:309–334, 1993. [gn-cgopp-93]

5877 L. P. Gewali and S. Ntafos. Minimum covers for grids and orthogonal polygons by periscope guards. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 358–361, 1990. [gn-mcgop-90] *Cites:* cr-dduap-87, k-mchco-86, mrs-copsp-88, n-gwg-86, o-agta-87, st-gprp-88, ZZZ.

5878 Laxmi P. Gewali and Simeon Ntafos. Watchman routes in the presence of a pair of convex polygons. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 127–132, 1995. [gn-wrppc-95]

5879 S. Ghali. Computation and maintenance of visibility and shadows in the plane. In *Sixth Int. Conf. in Central Europe on Computer Graphics and Visualization, WSCG '98*, pages 117–124, February 1998. [g-cmvsp-98] *URL:* http://www.dgp.toronto.edu/~ghali/papers/wscg98.ps.gz. *Keywords:* visibility, shadows, dynamic algorithms, class hierarchy.

5880 Sherif Ghali and A. James Stewart. Incremental update of the visibility map as seen by a moving viewpoint in two dimensions. In *Seventh International Eurographics Workshop on Computer Animation and Simulation*, pages 1–11, August 1996. [gs-iuvms-96]

5881 Sherif Ghali and A. James Stewart. Maintenance of the set of segments visible from a moving viewpoint in two dimensions. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V3–V4, 1996. [gs-mssvm-96] *Cites:* bdeg-vmpv-90, gm-osacv-87, mn-lpcgc-95, ol-dmcp-80, ow-nmcvg-88, p-gfr-90, ZZZ.

S. Ghali. See also [12503, 12510].

Y. Ghallab. See also [6733].

M. A. Ghandehari. See also [2780].

5882 G. Ghione, R. D. Graglia, and C. Rosati. New general-purpose two-dimensional mesh generator for finite elements, generalized finite differences, and moment method applications. *IEEE Trans. Magn.*, 24(1):307–310, January 1987. [ggr-ngptd-87] *Keywords:* 2-d mesh generator, finite elements, generalized finite differences, moment method. *Annote:* Radial sweep for initial triangulation then switching as in Mirante. *Abstract:* Numerical techniques such as finite elements, generalized finite differences and moment method for the solution of two-dimensional-field boundary-value problems pose different constraints as far as the discretization of the solution domain is concerned. A general-purpose, two- dimensional grid generator is described that produces region triangularizations well suited to each of the aforementioned methods. The triangularization is based on the radial sweep algorithm, which was developed by A. Mirante and N. Weingarten (1982) for solving topological modelling problems. Some application results are presented. 13 refs.

B. Gholizadeh. See also [11746].

5883 A. Ghos, J. Kowalcyk, M. Peterson, and A. Treasurywala. Conformational searching methods for small molecules: I study of the sybyl search method. *J. Comput. Chemistry*, 14(9):1050–1065, 1993. [gkpt-csmsm-93]

A. Ghose. See also [1517].

A. Ghosh. See also [325].

5884 P. K. Ghosh. *A Computational Theoretic Framework for Shape Representation and Analysis using the Minkowski Addition and Decomposition Operators*. PhD thesis, Tata Institute of Fundamental Research, Bombay, 1986. [g-ctfsr-86] *Keywords:* doctoral thesis.

5885 P. K. Ghosh. Vision, geometry, and Minkowski operators. In *Contemporary Mathematics*, volume 119, pages 63–83. 1991. [g-vgmo-91]

5886 P. K. Ghosh and R. M. Haralick. Mathematical morphology of three-dimensional objects: the slope diagrammatic approach. In *Proc. SPIE*, pages 2–13, 1993. [gh-mmtdo-93]

5887 P. K. Ghosh and S. P. Mudur. A computational theoretic framework for Minkowski addition and decomposition of boundary represented regions. Report ??, National Centre Softw. Develop. Comput. Tech., Tata Inst. Fund. Res., Bombay, India, 1985. [gm-ctfma-85]

5888 P. K. Ghosh and S. P. Mudur. Parametric curves for graphic design systems. *Comput. J.*, 26:312–219, 1983. [gm-pcgds-83]

5889 P. K. Ghosh and S. P. Mudur. The brush-trajectory approach to figure specification: Some algebraic solutions. *ACM Trans. Graph.*, 3(2):110–134, 1984. [gm-btafs-84]

5890 S. K. Ghosh. A few applications of the set-visibility algorithm. Report CAR-TR-273, Center Automat. Res., Univ. Maryland, College Park, MD, 1987. [g-fasva-87]

5891 S. K. Ghosh. A linear time algorithm for decomposing a monotone polygon into star-shaped polygons. In *Proc. 3rd Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, pages 505–519, 1983. [g-ltadm-83]

5892 S. K. Ghosh. A linear time algorithm for determining the intersection type of two star polygons. In *Proc. 4th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 181 of *Lecture Notes Comput. Sci.*, pages 317–330. Springer-Verlag, 1984. [g-ltadi-84]

5893 S. K. Ghosh. A note on convex hull algorithms. *Pattern Recogn.*, 19:75, 1986. [g-ncha-86]

5894 S. K. Ghosh. Approximation algorithms for art gallery problems. In *Proc. Canadian Inform. Process. Soc. Congress*, page ??, 1987. [g-aaagp-87]

5895 S. K. Ghosh. Computing a viewpoint of a set of points inside a polygon. In *??*, volume 338 of *Lecture Notes Comput. Sci.*, pages 18–29. Springer-Verlag, 1988. [g-cvspi-88]

5896 S. K. Ghosh. Computing a viewpoint of a set of points inside a polygon. Technical Report, Computer Science, Tata Inst., Bombay, India, 1990. [g-cvspi-90]

5897 S. K. Ghosh. Computing the visibility polygon from a convex set. Report CAR-TR-246, Center Automat. Res., Univ. Maryland, College Park, MD, 1986. [g-cvpcs-86]

5898 S. K. Ghosh. Computing visibility polygon from a convex set and related problems. *J. Algorithms*, 12:75–95, 1991. [g-cvpcs-91] *Keywords:* polygon, visibility.

5899 S. K. Ghosh. On recognizing and characterizing visibility graphs of simple polygons. Report JHU/EECS-86/14, Johns Hopkins Univ., Baltimore, MD, 1986. [g-rcvgs-86] *Precedes:* g-rcvgs-88.

5900 S. K. Ghosh. On recognizing and characterizing visibility graphs of simple polygons. In *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 96–104. Springer-Verlag, 1988. [g-rcvgs-88] *Succeeds:* g-rcvgs-86.

5901 S. K. Ghosh. On recognizing and characterizing visibility graphs of simple polygons. *Discrete Comput. Geom.*, 17:143–162, 1997. [g-rcvgs-97] *Succeeds:* g-rcvgs-88.

5902 S. K. Ghosh. *Problems in Computational Geometry*. Ph.D. thesis, Univ. Bombay, 1987. [g-pcg-87] *Keywords:* doctoral thesis.

5903 Subir K. Ghosh and Joel W. Burdick. An on–line algorithm for exploring an unknown polygonal environment by a point robot. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 100–105, 1997. [gb-olaeu-97]

5904 Subir K. Ghosh and Joel W. Burdick. Understanding discrete visibility and related approximation algorithms. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 106–111, 1997. [gb-udvra-97]

5905 S. K. Ghosh and A. Maheshwari. An optimal algorithm for computing a minimum nested nonconvex polygon. Technical Report CS-90/2, Tata Inst., 1990. [gm-oacmn-90t] *Precedes:* gm-oacmn-90a.

5906 S. K. Ghosh and A. Maheshwari. An optimal algorithm for computing a minimum nested nonconvex polygon. *Inform. Process. Lett.*, 36:277–280, 1990. [gm-oacmn-90a] *Keywords:* Computational geometry, nested polygon, link path, relative convex hull.

5907 S. K. Ghosh and A. Maheshwari. An optimal parallel algorithm for determining the intersection type of two star-shaped polygons. Technical Report, TATA Inst., Bombay, India, March 1990. [gm-opadi-90]

5908 S. K. Ghosh and A. Maheshwari. An optimal parallel algorithm for determining the intersection type of two star-shaped polygons. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 2–6, 1991. [gm-opadi-91] *Cites:* ac-opavs-89, acg-cdctd-89, cg-opapp-88, g-ltadi-84, hr-omsep-89, kr-spasm-88t, v-ismaa-83, ZZZ.

5909 S. K. Ghosh and A. Maheshwari. Parallel algorithms for all minimum link paths and link center problems. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 106–117. Springer-Verlag, 1992. [gm-paaml-92]

5910 S. K. Ghosh, A. Maheshwari, S. P. Pal, S. Saluja, and C. E. Veni Madhavan. Characterizing and recognizing weak visibility polygons. *Comput. Geom. Theory Appl.*, 3:213–233, 1993. [gmpsv-crwvp-93]

5911 S. K. Ghosh, A. Maheshwari, S. P. Pal, S. Saluja, and C. E. Veni Madhavan. Characterizing weak visibility polygons and related problems. Technical Report IISc-CSA-90-1, Dept. Comput. Sci. Auto., Indian Inst. Sci., 1990. [gmpsv-cwvpr-90t]

5912 S. K. Ghosh, A. Maheshwari, S. P. Pal, S. Saluja, and C. E. Veni Madhavan. Characterizing weak visibility polygons and related problems. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 93–97, 1990. [gmpsv-cwvpr-90] *Cites:* at-oadvp-81, c-tsplt-90t, g-cvpcs-91, ghlst-ltavs-87, gmpsv-cwvpr-90t, hm-svpap-90, gpv-awvp-90, s-hpp-87, t-spsee-86, ZZZ.

5913 Subir Kumar Ghosh, Anil Maheshwari, Sudebkumar Prasant Pal, Sanjeev Saluja, and C. E. Veni Madhavan. Computing the shortest path tree in a weak visibility polygon. In *Proc. 11th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 560 of *Lecture Notes Comput. Sci.*, pages 369–389. Springer-Verlag, 1991. [gmpsv-csptw-91]

5914 S. K. Ghosh, A. Maheshwari, S. P. Pal, and C. E. Veni Madhavan. An algorithm for recognizing palm polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 246–251, 1990. [gmpv-arpp-90] *Cites:* c-tsplt-90t, et-gpprl-89, h-ovgat-89, lp-oafkp-79, ZZZ.

5915 S. K. Ghosh, A. Maheshwari, S. P. Pal, and C. E. Veni Madhavan. An algorithm for recognizing palm polygons. *Visual Comput.*, 10:443–451, 1994. [gmpv-arpp-94]

5916 S. K. Ghosh and D. M. Mount. An output sensitive algorithm for computing visibility graphs. Technical Report CS-TR-1874, Department of Computer Science, University of Maryland, July 1987. [gm-osacv-87t]

5917 S. K. Ghosh and D. M. Mount. An output sensitive algorithm for computing visibility graphs. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 11–19, 1987. [gm-osacv-87] *Precedes:* gm-osacv-91.

5918 S. K. Ghosh and D. M. Mount. An output-sensitive algorithm for computing visibility graphs. *SIAM J. Comput.*, 20:888–910, 1991. [gm-osacv-91] *Keywords:* visibility, two-dimensional, line segments, polygons, output-dependent. *Succeeds:* gm-osacv-87. *Annote:* weak visibility between edges of polygonal obstacles; $O(n \log n + E)$ time.

5919 S. K. Ghosh, S. P. Pal, and C. E. Veni Madhavan. Algorithms for weak visibility polygons. Technical Report IISc-CSA-90-2, TATA Inst., Bombay, India, January 1990. [gpv-awvp-90]

5920 S. K. Ghosh, S. P. Pal, and C. E. Veni Madhavan. Characterizing weak visibility polygons and related problems. Technical Report IISc-CSA-90-1, TATA Inst., Bombay, India, January 1990. [gpv-cwvpr-90]

5921 S. K. Ghosh and S. Saluja. Optimal on-line algorithms for walking with minimum number of turns in unknown streets. Manuscript RCS-94-2, TATA Institute of Fundamental Research, Bombay, India, 1995. [gs-oolaw-95] *Keywords:* link distance, shortest paths, competitive ratio, visibility, simple polygons. *Precedes:* gs-oolaw-97.

5922 S. K. Ghosh and S. Saluja. Optimal on-line algorithms for walking with minimum number of turns in unknown streets. *Comput. Geom. Theory Appl.*, 8(5):241–266, October 1997. [gs-oolaw-97] *Keywords:* link distance, shortest paths, competitive ratio, visibility, simple polygons. *Succeeds:* gs-oolaw-95.

5923 S. K. Ghosh and R. K. Shyamasundar. A linear time algorithm for computing the convex hull of an ordered crossing polygon. *Pattern Recogn.*, 17:351–358, 1984. [gs-ltacc-84]

5924 S. K. Ghosh and R. K. Shyamasundar. A linear time algorithm for obtaining the convex hull of a simple polygon. *Pattern Recogn.*, 16:587–592, 1983. [gs-ltaoc-83]

S. K. Ghosh. See also [287, 965, 1944, 2833, 2834, 4095, 4096].

5925 S. P. Ghosh and C. T. Abraham. Application of finite geometry in file organization for records with multiple-valued attributes. *IBM J. Res. Develop.*, 12:180–187, 1968. [ga-afgfo-68]

5926 M. Ghouse and M. Goodrich. Fast randomized parallel methods for planar convex hull construction. *Comput. Geom. Theory Appl.*, 7:219–236, 1997. [gg-frpmp-97]

5927 Mujtaba Ghouse and Michael T. Goodrich. Experimental evidence for the power of random sampling in practical parallel algorithms. In *??*, pages 549–556. IEEE Computer Society, 1993. [gg-eeprs-93]

5928 M. Ghouse and M. T. Goodrich. In-place techniques for parallel convex hull algorithms. In *Proc. 3rd ACM Sympos. Parallel Algorithms Architect.*, pages 192–203, 1991. [gg-ptpch-91]

M. Ghouse. See also [6169, 6170].

R. Giaccio. See also [3717].

A. Giammarco. See also [4130].

5929 D. Giammarresi and G. F. Italiano. Dynamic 2- and 3-connectivity on planar graphs. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 221–232. Springer-Verlag, 1992. [gi-d23cpg-92]

R. Giancarlo. See also [4956, 4957, 5709].

5930 A. Gibbons. *Algorithmic Graph Theory*. Cambridge University Press, Cambridge, 1985. [g-agt-85] *Keywords:* graph theory, graph algorithms.

5931 A. Gibbons and W. Rytter. *Efficient Parallel Algorithms*. Cambridge University Press, New York, 1988. [gr-epa-88]

5932 P. B. Gibbons. A more practical PRAM model. In *Proc. 1st ACM Sympos. Parallel Algorithms Architect.*, pages 158–168, 1989. [g-mppm-89]

5933 P. B. Gibbons, Y. Matias, and V. Ramachandran. The QRQW PRAM: Accounting for contention in parallel algorithms. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, 1994. [gmr-qpacp-94]

P. B. Gibbons. See also [5428].

5934 P. J. Giblin. *Graphs, Surfaces and Homology*. Chapman and Hall, London, 1st edition, 1977. [g-gsh-77]

5935 P. J. Giblin. *Graphs, Surfaces and Homology*. Chapman and Hall, London, UK, 2nd edition, 1981. [g-gsh-81]

P. J. Giblin. See also [2527].

5936 G. A. Gibson, J. S. Vitter, and J. Wilkes. Report of the working group on storage I/O issues in large-scale computing. *ACM Comput. Surv.*, 28(4), December 1996. Also available as http://www.cs.duke.edu/~jsv/report.ps. [gvw-rwgsi-96]

J. Gibson. See also [2117].

J. S. Gibson. See also [2118].

5937 T. S. Gieng, B. Hamann, K. I. Joy, G. L. Schussman, and I. J. Trotts. Constructing hierarchies for triangle meshes. *IEEE Trans. Visualizat. Comput. Graph.*, 4(2):145–161, April 1998. [ghjst-chtm-98]

5938 O. Giering. Bestimmung von eibereichen und eikörpern durch Steiner symmetrisierungen. *Sber. Bayer. Akad. Wiss. München, Math.-Nat. Kl.*, ??:225–253, 1962. [g-beess-62]

5939 J. Giesen. Curve reconstruction, the TSP, and Menger's theorem on length. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 207–216, 1999. [g-crtspmtl-99]

Joachim Giesen. See also [89].

5940 G.-J. Giezeman. PlaGeo - a library for planar geometry. Technical report, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, August 1993. [g-plpg-93]

Geert-Jan Giezeman. See also [5100–5102].

J. Giffin. See also [4574].

J. W. Giffin. See also [5428].

M. Gigante. See also [13413].

5941 Z. Gigus, J. Canny, and R. Seidel. Efficiently computing and representing aspect graphs of polyhedral objects. *IEEE Trans. Pattern Anal. Mach. Intell.*, 13(6):542–551, June 1991. [gcs-ecrag-91] *Keywords:* visibility, aspect graphs.

5942 Z. Gigus and J. Malik. Computing the aspect graph for line drawings of polyhedral objects. *IEEE Trans. Pattern Anal. Mach. Intell.*, 12(2):113–122, 1990. [gm-cagld-90]

5943 J. Gil, Y. Matias, and U. Vishkin. Towards a theory of nearly constant time parallel algorithms. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, 1992. [gmv-ttnct-92]

5944 J. Gil, W. Steiger, and A. Wigderson. Some geometric medians. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 5, 1989. [gsw-sgm-89]

J. Gil. See also [2432, 4200].

5945 Y. Gil and M. Werman. Computing 2d min, max and median filters. *IEEE Trans. Pattern Anal. Mach. Intell.*, 15:504–507, 1993. [gw-c2dmm-93]

5946 E. Gilbert and E. Moore. Variable-length binary encoding. *Bell Syst. Tech. J.*, 38:933–968, 1959. [gm-vlbe-59]

5947 E. G. Gilbert and C. P. Foo. Computing the distance between general convex objects in three-dimensional space. *IEEE Trans. Robot. Autom.*, 6(1):53–61, February 1990. [gf-cdgco-90]

5948 E. G. Gilbert and D. W. Johnson. Distance functions and their application to robot path planning in the presence of obstacles. *Internat. J. Robot. Autom.*, RA-1:21–30, 1985. [gj-dfarp-85]

5949 E. G. Gilbert, D. W. Johnson, and S. S. Keerthi. A fast procedure for computing the distance between complex objects. *Internat. J. Robot. Autom.*, 4(2):193–203, 1988. [gjk-fpcdb-88]

5950 E. G. Gilbert, D. W. Johnson, and S. S. Keerthi. A fast procedure for computing the distance between complex objects in three space. Report ??, Univ. Michigan, Ann Arbor, MI, ?? [gjk-fpcdb-??]

5951 E. N. Gilbert. Gray codes and paths on the n-cube. *Bell Syst. Tech. J.*, ??:815–826, 1958. [g-gcpnc-58]

5952 E. N. Gilbert. Random subdivisions of space into crystals. *Ann. Math. Statist.*, 33:958–972, 1962. [g-rssc-62]

5953 E. N. Gilbert. The probability of covering 2 sphere with N circular caps. *Biometrika*, 52:323–330, 1965. [g-pc2sn-65]

5954 E. N. Gilbert and H. O. Pollak. Steiner minimal trees. *SIAM J. Appl. Math.*, 16(1):1–29, 1968. [gp-smt-68]

5955 E. N. Gilbert and L. A. Shepp. Textures for discrimination experiments. Technical Report TM-74-1218-6, TM-74-1215-15, Bell Laboratories, Murray Hill, NJ, April 1974. [gs-tde-74]

E. N. Gilbert. See also [3399].

J. Gilbert. See also [1811, 1812, 1819].

5956 J. R. Gilbert, J. P. Hutchinson, and R. E. Tarjan. A separation theorem for graphs of bounded genus. *J. Algorithms*, 5:391–407, 1984. [ght-stgbg-84]

5957 J. R. Gilbert, G. L. Miller, and S.-H. Teng. A geometric approach to mesh partitioning: Implementation and experiments. Technical Report, Xerox Palo Alto Research Center, Palo Alto, CA, 1992. [gmt-gampi-92]

5958 J. R. Gilbert and R. E. Tarjan. The analysis of a nested dissection algorithm. *Numer. Math.*, 50:377–404, 1987. [gt-anda-87]

J. R. Gilbert. See also [2708].

5959 P. D. Gilbert. New results in planar triangulations. Report R-850, Coordinated Sci. Lab., Univ. Illinois, Urbana, IL, 1979. [g-nrpt-79]

J. E. Gilchrist. See also [2374].

H. Gill. See also [9355].

J. Gill. See also [1573].

5960 P. E. Gill, W. Murray, and M. H. Wright. *Practical Optimization*. Academic Press, New York, NY, 1981. [gmw-po-81]

5961 R. Gillespie and W. A. Davis. Tree data structures for graphics and image processing. In *Proc. Canad. Man-Computer Comm. Soc. Conf.*, pages 155–162, 1981. [gd-tdsgi-81]

M. Gilliland. See also [11829].

5962 P. C. Gilmore and R. E. Gomory. Sequencing a one-state variable machine: A solvable case of the traveling salesman problem. *Oper. Res.*, 12:655–679, 1964. [gg-sosvm-64]

5963 W. K. Giloi. *Interactive Computer Graphics: Data Structures, Algorithms, Languages*. Prentice Hall, Englewood Cliffs, NJ, 1978. [g-icgds-78]

Thierry Giordano. See also [4905].

5964 D. Girault-Beauquier and M. Nivat. Tiling the plane with one tile. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 128–138, 1990. [gn-tpot-90] *Precedes:* bn-toptp-91. *Cites:* bg-gd-72, b-udp-66, gs-tp-87, g-p-66, h-etiah-86, p-p-78, r-untp-71, s-tleup-78, w-glc-65, wl-avpss-84, ZZZ.

H. Gish. See also [9134].

5965 C. Gitlin, J. O'Rourke, and V. Subramanian. On reconstructing polyhedra from parallel slices. Technical Report 025, Dept. Comput. Sci., Smith College, Northampton, MA, March 1993. [gos-rpps-93] *Keywords:* triangulations, polyhedra, surface reconstruction.

5966 C. Gitlin, J. O'Rourke, and V. Subramanian. On reconstructing polyhedra from parallel slices. *Internat. J. Comput. Geom. Appl.*, 6(1):103–122, 1996. [gos-rpps-96] *Keywords:* triangulations, polyhedra, surface reconstruction. *Annote:* Gives an example of two polygons in parallel planes that cannot be connected to form a simple polyhedron on the same set of vertices. One polygon is a triangle, the other a complicated spiraling shape of 63 vertices.

5967 Carole S. Gitlin and Christopher R. Johnson. Meshview: visualizing 3d unstructured meshes. In *Proc. 5th International Meshing Roundtable*, pages 333–345, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [gj-mv3du-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

5968 G. Glaeser. *Fast Algorithms for 3D-Graphics.* Springer-Verlag, Berlin, Germany, 1994. [g-fa3dg-94] *ISBN:* 0-387-94288-2.

D. Glasser. See also [1224, 5869].

5969 Steve Glassman and Greg Nelson. An animation of Euclid's proposition 47: The Pythagorean theorem. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages V3–V4, 1995. [gn-aep47-95] *Keywords:* video review. *Cites:* b-1saf-93, e-e-56, ZZZ.

5970 Andrew Glassner. Building vertex normals from an unstructured polygon list. In Paul Heckbert, editor, *Graphics Gems IV*, pages 60–73. Academic Press, Boston, MA, 1994. [g-bvnup-94] *Keywords:* smooth shading, topology, polyhedron. *Annote:* Solves a fairly common rendering problem: if one is given a set of polygons in raw form, with no topological (adjacency) information, and asked to do smooth shading (Gouraud or Phong shading) of them, one must infer topology and compute vertex normals. Contains C code.

5971 Andrew Glassner and Eric Haines. C header file and vector library. In Paul Heckbert, editor, *Graphics Gems IV*, pages 558–570. Academic Press, Boston, MA, 1994. [gh-chfvl-94] *Keywords:* vector algebra, root-finding. *Annote:* Revised version of the "Graphics Gems" subroutine library, used in several other Gems in the book. Contains C code.

5972 A. S. Glassner. *An Introduction to Ray Tracing.* Academic Press, 1989. [g-irt-89]

5973 Andrew S. Glassner, editor. *Graphics Gems I.* Academic Press, Boston, MA, 1990. [g-gg-90]

5974 A. S. Glassner. Space subdivision for fast ray tracing. *IEEE Comput. Graph. Appl.*, 4(10):15–22, October 1984. [g-ssfrt-84]

5975 Andrew S. Glassner, Robert L. Cook, Eric Haines, Pat Hanrahan, Paul Heckbert, and L. Richard Speer. Introduction to ray tracing. In *SIGGRAPH '87 Introduction to Ray Tracing.* 1987. [gchhhr-irt-87]

5976 R. Glen, G. Martin, A. Hill, R. Hyde, P. Wollard, J. Salmon, J. Buckingham, and A. Robertson. Computer-aided design and sythesis of 5-substituted tryptamines and their pharmacology at the $5-HT_{10}$ receptor: Discovery of compounds with potential anti-migraine properties. *J. Medical Chemistry*, 38:3566–3580, 1995. [gmhhwsbr-cads5-95]

5977 J. Glimm, M. J. Graham, J. Grove, X. L. Li, T. M. Smith, D. Tan, F. Tangerman, and Q. Zhang. Front tracking in two and three dimensions. Technical Report SUNYSB-AMS-96-12, Applied Mathematics and Statistics, University at Stony Brook, 1996. [ggglsttz-ftttd-96]

5978 F. Glover. Maximum matching in bipartite graph. *Naval Res. Logist. Quart.*, ??, 1967. [g-mmbg-67]

5979 A. Glozman, K. Kedem, and G. Shpitalnik. Computing a double-ray center for a planar point set. *Internat. J. Comput. Geom. Appl.*, 9:109–123, 1999. [gks-cdrcp-99]

5980 Alex Glozman, Klara Kedem, and Gregory Shpitalnik. On some geometric selection and optimization problems via sorted matrices. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 26–37. Springer-Verlag, 1995. [gks-sgsop-95]

5981 Alex Glozman, Klara Kedem, and Gregory Shpitalnik. On some geometric selection and optimization problems via sorted matrices. *Comput. Geom. Theory Appl.*, 11:17–28, 1998. [gks-sgsop-98] *Succeeds:* gks-sgsop-95.

5982 A. F. Gmitro, J. E. Greivenkamp, W. Swindell, H. H. Barett, M. Y. Chiu, and S. K. Gordon. Optical computers for reconstructing objects from their x-ray projections. *Optical. Engineering*, 19(3):260–272, 1989. [ggsbcg-ocrot-89]

S. Gnutzmann. See also [512].

5983 N. Go and H. Scherga. Ring closure and local conformational deformations of chain molecules. *Macromolecules*, 3(2):178–187, 1970. [gs-rclcd-70]

5984 C. Goad. Special purpose automatic programming for hidden surface elimination. *Comput. Graph.*, 16(3):167–178, July 1982. Proc. SIGGRAPH '82. [g-spaph-82]

C. Godard. See also [11357].

5985 M. Godau. A natural metric for curves – computing the distance for polygonal chains and approximation algorithms. In *Proc. 8th Sympos. Theoret. Aspects Comput. Sci.*, volume 480 of *Lecture Notes Comput. Sci.*, pages 127–136. Springer-Verlag, 1991. [g-nmccd-91]

5986 M. Godau. Die Fréchet-Metrik für Polygonzüge – Algorithmen zur Abstandsmessung und Approximation. Masters thesis, Fachbereich Mathematik, Freie Univ. Berlin, Berlin, Germany, 1991. [g-fmpaa-91] *Keywords:* masters thesis.

5987 M. Godau. On the difficulty of embedding planar graphs with inaccuracies. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 254–261. Springer-Verlag, 1995. [g-depgi-95] *Keywords:* graph drawing, placement, NP-hardness.

Michael Godau. See also [570, 571, 582–587].

5988 W. Goddard, M. Katchalski, and D. J. Kleitman. Forcing disjoint segments in the plane. Manuscript, ??, ?? [gkk-fdsp-]

W. Goddard. See also [844, 845].

5989 L. Goddyn. Quantizers and the worst-case Euclidean traveling salesman problem. *J. Combin. Theory Ser. B*, 50:65–81, 1988. [g-qwcet-88]

A. Goel. See also [2859].

5990 Michel X. Goemans and David P. Williamson. A general approximation technique for constrained forest problems. *SIAM J. Comput.*, 24(2):296–317, 1995. [gw-agatc-95]

Michel X. Goemans. See also [1875, 13618].

5991 G. Goertzel and N. Tralli. *Some Mathematical Methods of Physics.* McGraw-Hill, 1960. [gt-smmp-60]

5992 J. L. Goffin. The relaxation method for solving systems of linear inequalities. *Math. Oper. Res.*, 5(3):388–414, August 1980. [g-rmssl-80]

I. T. Gohberg. See also [2248].

5993 I. Golan. Performance bounds for orthogonal oriented two-dimensional packing algorithms. *SIAM J. Comput.*, 10:571–582, 1981. [g-pboot-81]

5994 C. Gold. Crust and anti-crust: A one-step boundary and skeleton extraction algorithm. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 189–196, 1999. [g-cac-99]

5995 C. Gold and S. Cormack. Spatially ordered networks and topographic reconstructions. In *Proc. 2nd Internat. Sympos. Spatial Data Handling*, pages 74–85, 1986. [gc-sontr-86]

Christopher Gold. See also [702, 704].

5996 C. M. Gold. An object-based dynamic spatial model, and its application in the development of a user-friendly digitizing system. In *Proc. 5th Internat. Sympos. Spatial Data Handling*, pages 495–504, 1992. [g-odsma-92]

5997 C. M. Gold. Dynamic spatial data structures – the Voronoi approach. In *Proc. Canad. Conf. GIS*, pages 245–255, 1992. [g-dsdsv-92]

5998 C. M. Gold. Forestry spatial decision support system classification and the flight simulator approach. In *Proc. GIS'93*, pages 797–802, 1993. [g-fsdss-93]

5999 C. M. Gold. Ordering of Voronoi diagrams and their use in terrain database management. In *Proc. 8th Internat. Sympos. Comput.-Assist. Cartog.*, pages 185–194, 1987. [g-ovdtu-87]

6000 C. M. Gold. Persistent spatial relations - a systems design objective. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 219–224, 1994. [g-psrsd-94] *Cites:* a-vdsfg-91, bb-dvddt-90, cegss-cfals-91, f-savd-87, g-sdsed-90, g-srbb-90, g-odsma-92, g-fsdss-93, gcr-acmut-77, gks-ricdv-92, k-eccs-79, as-sdcav-94, obs-stcav-92, pc-cds-75, r-vdds-90, r-vdds-93, s-dmgsm-91, sh-cpp-75, t-tdrac-93, tcm-chgd-76, w-dpo-78, b-dgs-70, gc-sdsig-94, gmr-vdmpp-92, ZZZ.

6001 C. M. Gold. Problems with handling spatial data – The Voronoi approach. *CISM Journal ACSGC*, 45(1):65–80, 1991. [g-phsdv-91] *Keywords:* GIS, geography, surfaces, approximation.

6002 C. M. Gold. Space revisited: back to the basics. In *Proc. 4th Internat. Sympos. Spatial Data Handling*, pages 175–189, 1990. [g-srbb-90]

6003 C. M. Gold. Spatial data structures: the extension from one to two dimensions. In L. F. Pau, editor, *Mapping and Spatial Modelling in Navigation*, volume 65 of *NATO ASI Series F*, pages 11–39. Springer-Verlag, Berlin, 1990. [g-sdsed-90]

6004 C. M. Gold. Spatial ordering of Voronoi networks and their use in terrain modeling. Report ??, Contoursoft Corp., Edmonton, AB, 1985. [g-sovnt-85]

6005 C. M. Gold. Surface interpolation as a Voronoi spatial adjacency problem. In *Proc. Canad. Conf. GIS*, pages 419–431, 1992. [g-sivsa-92]

6006 C. M. Gold. The Voronoi spatial model – two and three dimensional applications in image analysis. *ITC J.*, ??, 1992. To appear. [g-vsmtt-92]

6007 C. M. Gold, T. D. Charters, and J. Ramsden. Automated contour mapping using triangular element data structures and an interpolant over each irregular triangular domain. *Comput. Graph.*, 11(2):170–175, 1977. [gcr-acmut-77] *Annote:* Fits surface to irregular points by triangulating and then using a polynomial over each triangle. An initial triangulation is found by subdividing the triangle enclosing each new point into four. The triangulation is then improved by switchings (empirical tests suggest time $3 \log t$ for switchings). Switchings based on "Maximize minimum triangle height".

6008 C. M. Gold and A. R. Condal. A spatial data structure integrating gis and simulation in a marine environment. *Marine Geodesy*, ??, 1994. submitted. [gc-sdsig-94]

6009 C. M. Gold and U. Maydell. Triangulation and spatial ordering in computer cartography. In *Proc. Canad. Cardographic Association Annu. Meeting*, pages 69–81, 1978. [gm-tsocc-78]

6010 Christopher M. Gold, Peter M. Remmele, and Thomas Roos. Voronoi diagrams of line segments made easy. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 223–228, 1995. [grr-vdlsm-95]

6011 Christopher M. Gold and Jean-Marc Robert, editors. *Proc. 7th Canad. Conf. Comput. Geom.*, Québec, QC, August 1995. Geomatics Research Centre, Univ. Laval. [gr-p7ccc-95] *URL:* http://www.uqac.uquebec.ca/DIM/prof/jmrobert/Proceedings_e.html.

Christopher M. Gold. See also [9662].

J. A. Goldack. See also [13845].

6012 J. A. Goldak, X. Yu, A. Knight, and L. Dong. Constructing discrete medial axis of 3-D objects. *Internat. J. Comput. Geom. Appl.*, 1(3):327–339, 1991. [gykd-cdma3-91] *Keywords:* Delaunay triangulation, medial axis.

J. A. Goldak. See also [13360].

6013 A. V. Goldberg, S. A. Plotkin, D. B. Shmoys, and E. Tardos. Interior-point methods in parallel computation. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 350–355, 1989. [gpst-ipmpc-89] *Comments:* Submitted to SIAM J. Comput.

6014 A. V. Goldberg, E. Tardos, and R. E. Tarjan. Network flow algorithms. In B. Korte, L. Lovász, H. J. Prömel, and A. Schrijver, editors, *Paths, Flows, and VLSI-Layout*, pages 101–164. Springer-Verlag, 1990. [gtt-nfa-90]

6015 A. V. Goldberg and R. E. Tarjan. A new approach to the maximum flow problem. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 136–146, 1986. [gt-namfp-86]

6016 A. V. Goldberg and R. E. Tarjan. A new approach to the maximum flow problem. *J. ACM*, 35:921–940, 1988. [gt-namfp-88]

6017 D. Goldberg. What every computer scientist should know about floating-point arithmetic. *ACM Comput. Surv.*, 23(1):5–48, March 1991. [g-wecss-91] *Keywords:* numerical precision, stability, robustness.

6018 K. Goldberg, D. Halperin, J.-C. Latombe, and R. Wilson, editors. *Algorithmic Foundations of Robotics*. A. K. Peters, Wellesley, MA, 1995. [ghlw-afr-95]

K. Goldberg. See also [1848, 1849, 2461, 6603, 11010, 11012, 11013, 12461, 13561, 13562].

6019 Kenneth Y. Goldberg. Orienting polygonal parts without sensors. *Algorithmica*, 10:201–225, 1993. [g-oppws-93] *Keywords:* part orientation, parallel-jaw gripper.

6020 K. Y. Goldberg. *Stochastic plans for robotic manipulation*. PhD thesis, School Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, August 1990. [g-sprm-90] *Keywords:* doctoral thesis.

6021 K. Y. Goldberg, M. T. Mason, and M. A. Erdmann. Generating stochastic plans for a programmable parts feeder. In *Proc. IEEE Internat. Conf. Robot. Autom.*, April 1991. [gme-gsppp-91]

K. Y. Goldberg. See also [2140, 2497, 2703, 2724, 7722, 7723, 11011, 11014–11019, 13899].

6022 M. Goldberg. The isoperimetric problem for polyhedra. *Tohoku Mathematics Journal*, 40:226–236, 1935. [g-ipp-35]

6023 M. Goldberg. The minimum path and the minimum motion of a moved line segments. *Math. Mag.*, 46:31–34, 1973. [g-mpmmm-73]

Mark Goldberg. See also [1852].

6024 T. Goldberg and U. Zwick. Optimal deterministic approximate parallel prefix sums and their applications. In *Proc. 4th IEEE Israel Symp. on Theory of Computing and Systems*, pages 220–228, 1995. [gz-odapp-95]

6025 Bruce L. Golden, Larry Levy, and Rakesh Vohra. The orienteering problem. *Naval Res. Logistics*, 34:307–318, 1991. [glv-op-91] *Keywords:* TSP, generalized TSP.

6026 D. Goldfarb. On the complexity of the simplex algorithm. In S. Gomez, editor, *IV. Workshop on Numerical Analysis and Optimization*, 1993. [g-ocsa-93]

6027 Donald Goldfarb. On the complexity of the simplex algorithm. In *Advances in optimization and numerical analysis*, pages 25–38, Dordrecht, 1994. Kluwer. [g-csa-94]

6028 D. Goldfarb. Worst case complexity of the shadow vertex simplex algorithm. Preprint, Columbia University, 1983. [g-wccsv-83]

6029 D. Goldfarb and W. Y. Sit. Worst case behavior of the steepest edge simplex method. *Discrete Appl. Math.*, 1:277–285, 1979. [gs-wcbse-79]

6030 J. Goldfeather, S. Molnar, G. Turk, and H. Fuchs. Near real-time CSG rendering using tree normalization and geometric pruning. *IEEE Comput. Graph. Appl.*, 9(3):20–28, 1989. [gmtf-nrtcr-89]

J. Goldfeather. See also [5637].

6031 J. R. Goldman. Infinitely divisible point processes in R^n. *J. Math. Anal. Appl.*, 17:133–146, 1967. [g-idppr-67]

6032 R. Goldman. The role of surfaces in solid geometric modeling. In G. E. Farin, editor, *Geometric Modeling: Algorithms and New Trends*, pages 69–90. Society for Industrial and Appliced Mathematics, 1987. [g-rssm-87]

R. Goldman. See also [1452, 11916, 13375].

6033 R. N. Goldman. The methods of resolvents: a technique for the implicitization, inversion and intersection of non-planar, parametric, rational cubic curves. *Comput. Aided Geom. Design*, ??, 1985. [g-mrtii-85]

6034 Ronald N. Goldman and Thomas W. Sederberg. Some applications of resultants to problems in computational geometry. *Visual Comput.*, 1(2):101–107, October 1985. [gs-sarpc-85]

R. N. Goldman. See also [13417].

6035 S. Goldman. A space efficient greedy triangulation algorithm. *Inform. Process. Lett.*, 31(4):191–196, 1989. [g-segta-89] *Annote:* CDT is used to compute GT. DT is constrained to include all the edges of the GT so far. Next edge can be found in time O(n). *Abstract:* We show that the greedy triangulation of n points in the plane can be computed in O(n**2 log n) time and O(n) memory and storage. In particular we show that, by maintaining a generalized Delaunay triangulation, the next edge to be added to the greedy triangulation can be found in O(n) time. Furthermore, if the generalized Delaunay triangulation of a simple polygon could be computed in O(n) time, our algorithm would compute the greedy triangulation in O(n**2) time. (Author abstract) 13 Refs.

Sally A. Goldman. See also [2554].

6036 R. Goldmann, T. Sederberg, and R. Anderson. Vector elimination: a technique for implicitization, inversion and intersection of planar parametric rational polynomial curves. *Comput. Aided Geom. Design*, 1:327–356, 1984. [gsa-vetii-84]

O. Goldreich. See also [536].

6037 J. Goldsmith and J. Salmon. Automatic creation of object hierarchies for ray tracing. *IEEE Comput. Graph. Appl.*, 7:14–20, 1987. [gs-acohr-87]

6038 A. A. Goldstein. *Constructive Real Analysis*. Harper & Row Publishers, New York, NY, 1967. [g-cra-67]

6039 A. S. Goldstein and E. M. Reingold. Improved bounds on the traveling salesman problem in the unit cube. Technical Report, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1987. [gr-ibtsp-87]

Arthur S. Goldstein. See also [552].

6040 H. Goldstein. *Classical Mechanics*. Addison-Wesley, Reading, MA, 1980. [g-cm-80]

6041 J. Goldstein, R. Ramakrishnan, U. Shaft, and J.-B. Yu. Processing queries by linear constraints. In *Proc. Annu. ACM Sympos. Principles Database Syst.*, pages 257–267, 1997. [grsy-pqlc-97]

6042 M. Goldstein, F. G. Pin, G. de Saussure, and C. R. Weisbin. 3-d world modeling with updating capability based on combinatorial geometry. Technical Report CESAR-87/02, Oak Ridge National Laboratory, 1987. [gpsw-3dwmu-87]

N. B. Goldstein. See also [7710].

6043 M. Goldwasser. A survey of linear programming in randomized subexponential time. *SIGACT News*, 26(2):96–104, 1995. [g-aslpr-95]

6044 Michael Goldwasser. An implementation for maintaining arrangements of polygons. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C32–C33, 1995. [g-imap-95] *Keywords:* randomized incremental algorithm. *Cites:* ci-tsc-84, egs-oplms-86, m-cgitr-93, rggr-esaac-94, s-sfira-91, s-opgfg-91, ZZZ.

M. Goldwasser. See also [11357].

S. Goldwasser. See also [1579].

D. I. Golenko. See also [2630].

Eric J. Golin. See also [11162].

6045 M. Golin. Probabilistic analysis of a closest pair algorithm. Technical Report TR-194-88, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, December 1988. [g-pacpa-88]

6046 M. Golin, R. Raman, C. Schwarz, and M. Smid. Randomized data structures for the dynamic closest-pair problem. Report MPI-I-93-102, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [grss-rdsdc-93t]

6047 M. Golin, R. Raman, C. Schwarz, and M. Smid. Randomized data structures for the dynamic closest-pair problem. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 301–310, January 1993. [grss-rdsdc-93i]

6048 M. Golin, R. Raman, C. Schwarz, and M. Smid. Randomized data structures for the dynamic closest-pair problem. *SIAM J. Comput.*, 27:1036–1072, 1998. [grss-rdsdc-98]

6049 M. Golin, R. Raman, C. Schwarz, and M. Smid. Simple randomized algorithms for closest pair problems. Report MPI-I-92-155, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [grss-sracp-92] *Precedes:* grss-sracp-93.

6050 M. Golin, R. Raman, C. Schwarz, and M. Smid. Simple randomized algorithms for closest pair problems. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 246–251, 1993. [grss-sracp-93] *Succeeds:* grss-sracp-92. *Cites:* b-lbact-83, bs-dcms-76, dm-nuchf-90, cms-frric-92i, grss-rdsdc-93i, km-srsac-91, ls-ekcpo-92i, sss-oaolc-92, s-sdlpc-91, r-pa-76, s-barg-92, ZZZ.

6051 M. Golin, R. Raman, C. Schwarz, and M. Smid. Simple randomized algorithms for closest pair problems. *Nordic J. Comput.*, 2:3–27, 1995. [grss-sracp-95]

6052 M. Golin and R. Sedgewick. Analysis of a simple yet efficient convex hull algorithm. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 153–163, 1988. [gs-asyec-88] *Cites:* bs-dclet-78, dt-nleta-81, e-nchap-77, gs-prp-85, ol-fcbch-80, ps-cgi-85, rs-udkhv-63, r-pma-76, s-a-83, ZZZ.

Mordecai Golin. See also [4026–4032].

6053 M. J. Golin. Dynamic closest pairs – a probabilistic approach. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 340–351. Springer-Verlag, 1992. [g-dcppa-92]

6054 M. J. Golin. How many maxima can there be? *Comput. Geom. Theory Appl.*, 2:335–353, 1993. [g-hmmcb-93]

6055 Mordecai J. Golin. Limit theorems for minimum-weight triangulations, other Euclidean functionals, and probabilistic recurrence relations. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 252–260, 1996. [g-ltmwt-96] *Keywords:* uniform distribution, MWT, degree probabilities of Delaunay triangulations.

6056 Mordecai J. Golin. Maxima in convex regions. In *Abstracts 8th European Workshop Comput. Geom.*, pages 23–27. Utrecht University, 1992. [g-mcr-92]

6057 M. J. Golin. Maxima in convex regions. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 352–360, 1993. [g-mcr-93] *Keywords:* probabilistic geometry.

6058 M. J. Golin. Probabilistic analyses of closest pair algorithms. Report 1471, INRIA, Rocquencourt, France, 1991. [g-pacpa-91]

6059 M. J. Golin. *Probabilistic analysis of geometric algorithms.* Ph.D. thesis, Dept. Comput. Sci., Princeton Univ., Princeton, NY, 1990. [g-paga-90] *Keywords:* doctoral thesis.

6060 Mordecai J. Golin and Hyeon-Suk Na. On the average complexity of 3d-voronoi diagrams of random points on convex polytopes. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 127–135, 2000. [gn-ac3vd-01]

6061 M. J. Golin, C. Schwarz, and M. Smid. Further dynamic computational geometry. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 154–159, 1992. [gss-fdcg-92] *Cites:* ako-iqco-91, a-dcg-83, dsst-mdsp-89, fl-vdmpp-91, ps-cgi-85, k-nrdsc-92, st-pplup-86, st-dsdt-83, ZZZ.

Mordecai J. Golin. See also [3110].

6062 S. W. Golomb. *Polyominoes.* Charles Scribner's Sons, New York, 1965. [g-p-65]

6063 S. W. Golomb. *Polyominoes.* Georges Allen and Unwin Ltd, London, UK, 1966. [g-p-66]

6064 G. Golub and C. van Loan. *Matrix Computations.* Johns Hopkins Univ. Press, Baltimore, MA, 1983. [gl-mc-83]

6065 G. H. Golub and C. F. van Loan. *Matrix computations.* Johns Hopkins University Press, Baltimore, MD, 2nd edition, 1989. [gl-mc-89]

6066 M. Golubitsky and V. Guillemin. *Stable mappings and their singularities.* Springer-Verlag, 1973. [gg-smts-73]

6067 M. C. Golumbic. *Algorithmic Graph Theory and Perfect Graphs.* Academic Press, New York, NY, 1980. [g-agtpg-80]

6068 M. C. Golumbic and C. L. Monma. A generalization of interval graphs with tolerances. In *Proc. 13th Southeastern Conf. on Combinatorics, Graph Theory and Computing*, volume 35 of *Congr. Numer.*, pages 321–331. Utilitas Math., 1982. [gm-gigt-82]

6069 M. C. Golumbic, C. L. Monma, and W. T. Trotter. Tolerance graphs. *Discrete Appl. Math.*, 9:157–170, 1984. [gmt-tg-84]

J. Gomes. See also [13216].

J. de Miranda Gomes. See also [5246].

6070 D. Gomez and A. Guzman. Digital model for three-dimensional surface representation. *Geo-Process.*, 1:53–70, 1979. [gg-dmtds-79]

6071 Teresa Gómez-Diaz. Let T be a triangle, is it isosceles? In *Abstracts 11th European Workshop Comput. Geom.*, pages 47–51. Universität Linz, 1995. [g-lttii-95]

6072 Francisco Gómez, Ferran Hurtado, Suneeta Ramaswami, Vera Sacristán, and Godfried Toussaint. Implicit convex polygons. In *Abstracts 14th European Workshop Comput. Geom.*, pages 83–85. Universitat Polytènica de Catalunya, Barcelona, 1998. [ghrst-icp-98]

6073 F. Gomez, S. Ramaswami, and G. Toussaint. On removing non-degeneracy assumptions in computational geometry. In *Algorithms and Complexity (Proc. CIAC' 97)*, volume 1203 of *Lecture Notes Comput. Sci.*, pages 86–99. Springer-Verlag, 1997. [grt-rnacg-97]

F. Gómez. See also [32, 33, 2312, 2653].

R. E. Gomory. See also [5962].

G. Gonnet. See also [5318].

6074 G. H. Gonnet and R. Baeza-Yates. *Handbook of Algorithms and Data Structures.* Addison-Wesley, 1991. [gb-hads-91]

6075 G. H. Gonnet, J. I. Munro, and D. Wood. Direct dynamic structures for some line segment problems. *Comput. Vision Graph. Image Process.*, ??:178–186, 1983. [gmw-ddssl-83]

Gaston H. Gonnet. See also [2855–2857, 3545].

6076 Harry Gonshor. *An introduction to the theory of surreal numbers*, volume 110 of *London Mathematical Society lecture note series.* Cambridge University Press, Cambridge, 1986. [g-itsn-86]

6077 C. C. Gonzaga. Search directions for interior linear-programming methods. *Algorithmica*, 6:153–181, 1991. [g-sdilp-91]

6078 T. M. Gonzales, M. Razzazi, M. Shing, and S. Zheng. On optimal d-guillotine partitions approximating hyperrectangular partitions. Technical Report 89-25, Dept. Comput. Sci., Univ. California, Santa Barbara, CA, October 1989. [grsz-odgpa-89]

M. J. González-López. See also [2122].

6079 T. Gonzalez. Algorithms on sets and related problems. Technical Report ??, Dept. Comput. Sci., Univ. Oklahoma, Norman, OK, 1975. [g-asrp-75]

6080 T. Gonzalez. Clustering to minimize the maximum intercluster distance. *Theoret. Comput. Sci.*, 38:293–306, 1985. [g-cmmid-85]

6081 T. Gonzalez. Covering a set of points in multidimensional space. *Inform. Process. Lett.*, 40:181–188, 1991. [g-cspms-91]

6082 T. Gonzalez and M. Razzazi. An approximation algorithm for partitioning a hyperrectilinear polytope with holes. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 183–186, August 1991. [gr-aaphp-91] *Keywords:* orthogonal hyperplane segments. *Cites:* dc-fhmel-86, dps-melgr-86, grz-edcaa-89, gz-bprp-85, gz-aaprp-85, gz-ibrgp-89, l-hmelr-83, lprs-melpr-82, l-mltfr-85, l-fhmlr-86, r-ppis-82, ZZZ.

6083 Teofilo Gonzalez and Mohammadreza Razzazi. Properties and algorithms for constrained Delaunay triangulations. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 114–117, August 1991. [gr-pacdt-91] *Cites:* c-tpca-82, c-cdt-87, j-oacdt-88, j-ccdt-88, f-savd-87, gs-pmgsc-85, l-scsi-77, ls-tacdt-80, ll-gdtpg-86, nf-scbut-83, ps-cgi-85, s-cdtvd-89, sh-cpp-75, ws-oacdt-87, ZZZ.

6084 T. Gonzalez, M. Razzazi, M.-T. Shing, and S.-Q. Zheng. On optimal guillotine partitions approximating optimal d-box partitions. *Comput. Geom. Theory Appl.*, 4(1):1–12, 1994. [grsz-ogpao-94] *Keywords:* approximation algorithms, d-box partitions, polynomial time complexity, guillotine partitions. *Annote:* Abstract: Given a set of n points, P, in E(d)(the plane when d = 2) that lie inside a d-box (rectangle when d = 2) R, we study the problem of partitioning R into d-boxes by introducing a set of orthogonal hyperplane segments (line segments when d = 2) whose total (d - 1)-volume (length when d = 2) is the least possible. In a valid d-box partition, each point in P must be included in at least one partitioning orthogonal hyperplane segment. Since this minimization problem is NP-hard and thus likely to be computationally intractable, we present an approximation algorithm to generate a suboptimal solution. This solution is obtained by finding an optimal guillotine partition, i.e., a special type of rectangular partition, which can be generated in O(dn2d+1) time. We present a simple proof that the (d - 1)-volume of an optimal guillotine partition is not greater than 2d - 4 + 4/d times the (d - 1)-volume of an optimal d-box partition.

6085 T. Gonzalez, M. Razzazi, and S.-Q. Zheng. An efficient divide-and-conquer approximation algorithm for hyperrectangular partitions. Report TR-89-24, CS Dept., UCSB, October 1989. [grz-edcaa-89] *Precedes:* grz-edcaa-90, gz-edcap-93.

6086 T. Gonzalez, M. Razzazi, and S.-Q. Zheng. An efficient divide-and-conquer approximation algorithm for hyperrectangular partitions. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 214–217, 1990. [grz-edcaa-90] *Succeeds:* grz-edcaa-89. *Precedes:* gz-edcap-93. *Cites:* dc-fhmel-86, dps-melgr-86, grsz-odgpa-89, gz-bprp-85, gz-aaprp-85, gz-ibrgp-89, k-ubsir-80, l-hmelr-83, lprs-melpr-82, l-mltfr-85, l-fhmlr-86, r-ppis-82, ZZZ.

6087 T. Gonzalez and S.-Q. Zheng. An efficient divide and conquer approximation algorithm for partitionning into D-boxes. *Internat. J. Comput. Geom. Appl.*, 3:417–428, 1993. [gz-edcap-93] *Succeeds:* grz-edcaa-89, grz-edcaa-90.

6088 T. Gonzalez and S.-Q. Zheng. Approximation algorithms for partitioning a rectangle with interior points. *Algorithmica*, 5:11–42, 1990. [gz-aapri-90] *Succeeds:* gz-bprp-85.

6089 T. Gonzalez and S.-Q. Zheng. Approximation algorithms for partitioning rectilinear polygons. Technical Report, Univ. California, Santa Barbara, CA, March 1985. [gz-aaprp-85]

6090 T. Gonzalez and S.-Q. Zheng. Bounds for partitioning rectilinear polygons. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 281–287, 1985. [gz-bprp-85] *Precedes:* gz-aapri-90. *Cites:* ahu-daca-74, at-eadps-81, cd-dpicp-79, gjpt-tsp-78, gz-aaprp-85, lllmp-tddo2-79, llmp-tddo1-79, lprs-melpr-82, r-ppis-82, s-oadrp-82, ZZZ.

6091 T. Gonzalez and S.-Q. Zheng. Improved bounds for rectangular and guillotine partitions. *J. Symbolic Comput.*, 7:591–610, 1989. [gz-ibrgp-89]

T. Gonzalez. See also [4824].

6092 Teofilo F. Gonzalez. The on-line d-dimensional dictionary problem. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 376–385, 1992. [g-olddd-92]

V. Gonzalez. See also [12256].

6093 V. Ramirez Gonzalez and M. L. Marquez Garcia. Triangulation in the plane with given nodes. triangulacion en el plano con nodos arbitrarios. triangulation in der ebene mit vorgegebenen knoten. *Epsilon*, 5:57–64, September 1985. [gg-tpgnt-85] *Abstract:* An algorithm for triangulation in the plane with given nodes is presented, as well as a program in BASIC and a calculated example. Es wird ein Algorithmus entwickelt, der bei gegebenen Punkten in der Ebene eine Zerlegung des Polygons in Dreiecke berechnet. Ein Programm in BASIC und ein Beispiel sind beigegeben.

6094 Laureano González-Vega and Henri Lombardi. Splines and Pierce-Birkhoff conjecture: The evaluation of continuous and piecewise polynomial functions. In *Abstracts 10th European Workshop Comput. Geom.*, pages 49–52. Universidad de Cantabria, Santander, 1994. [gl-spbce-94]

6095 M. F. Goodchild, B. O. Parks, and L. T. Steyaert. *Environmental Modeling with GIS*. Oxford University Press, New York, 1993. [gps-emg-93]

M. F. Goodchild. See also [9106].

6096 P. R. Goodey. Homothetic ellipsoids. *Math. Proc. Camb. Phil. Soc.*, 93:25–34, 1983. [g-he-83]

E. D. Goodman. See also [10268].

J. Goodman. See also [10225].

6097 J. E. Goodman. On the largest convex polygon contained in a non-convex n-gon or how to peel a potato. *Geom. Dedicata*, 11:99–106, 1981. [g-lcpcn-81]

6098 J. E. Goodman. Proof of a conjecture of Burr, Grünbaum and Sloane. *Discrete Math.*, 32:27–35, 1980. [g-pcbgs-80]

6099 J. E. Goodman. Pseudoline arrangements. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 5, pages 83–110. CRC Press LLC, Boca Raton, FL, 1997. [g-pa-97]

6100 J. E. Goodman. The complexity of order types: a survey. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 1, 1989. [g-cots-89]

6101 J. E. Goodman and J. O'Rourke, editors. *Handbook of Discrete and Computational Geometry*. CRC Press LLC, Boca Raton, FL, 1997. [go-chdcg-97] *Comments:* 52 chapters, xiv + 991 pages; published July 1997.

6102 J. E. Goodman and J. Pach. Cell decomposition of polytopes by bending. *Israel J. Math.*, 64(2):129–138, 1988. [gp-cdpb-88]

6103 J. E. Goodman, J. Pach, and C. K. Yap. Mountain climbing, ladder moving, and the ring width of a polygon. *Amer. Math. Monthly*, 96:494–510, 1989. [gpy-mclmr-89]

6104 J. E. Goodman and R. Pollack. A theorem of ordered duality. *Geom. Dedicata*, 12:63–74, 1982. [gp-tod-82]

6105 J. E. Goodman and R. Pollack. Allowable sequences and order types in discrete and computational geometry. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 103–134. Springer-Verlag, 1993. [gp-asotd-93] *Keywords:* survey paper, allowable sequences, order types, pseudolines, stretchability, geometric sorting, isotopy conjecture, lattice realization.

6106 Jacob E. Goodman and Richard Pollack. Foundations of a theory of convexity on affine Grassmann manifolds. *Mathematika*, 42:305–328, 1995. [gp-ftcagm-95]

6107 J. E. Goodman and R. Pollack. *Geometric Sorting*. Annals of Discrete Geometry and Convexity. New York Academie of Sciences, 1982. [gp-gs-82]

6108 J. E. Goodman and R. Pollack. Hadwiger's transversal theorem in higher dimensions. Manuscript, ??, 1986. [gp-htthd-86]

6109 J. E. Goodman and R. Pollack. Hadwiger's transversal theorem in higher dimensions. *J. Amer. Math. Soc.*, 1:301–309, 1988. [gp-htthd-88]

6110 J. E. Goodman and R. Pollack. Helly-type theorems for pseudoline arrangements in P^2. *J. Combin. Theory Ser. A*, 32:1–19, 1982. [gp-httpa-82]

6111 J. E. Goodman and R. Pollack. Modelling planar configurations. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 121–124, 1985. [gp-mpc-85] *Cites:* ag-nssfs-86, bp-ddnpp-79, c-sutds-82, c-ddnpp-83, eos-calha-83, ew-nlsfs-85, gp-ccncp-82, gp-httpa-82, gp-nkssn-84, gp-ms-83, gp-ubcpr-86, g-as-72, s-nrdec-84, u-2nnpd-82, ZZZ.

6112 J. E. Goodman and R. Pollack. Multidimensional sorting. *SIAM J. Comput.*, 12(3):484–507, August 1983. [gp-ms-83]

6113 J. E. Goodman and R. Pollack. On the combinatorial classification of nondegenerate configurations in the plane. *J. Combin. Theory Ser. A*, 29:220–235, 1980. [gp-ccncp-80]

6114 J. E. Goodman and R. Pollack. On the combinatorial classification of nondegenerate configurations in the plane. *J. Combin. Theory Ser. A*, 29:63–74, 1982. [gp-ccncp-82]

6115 J. E. Goodman and R. Pollack. On the number of k-subsets of a set of n points in the plane. *J. Combin. Theory Ser. A*, 36:101–104, 1984. [gp-nkssn-84]

6116 J. E. Goodman and R. Pollack. Polynomial realization of pseudoline arrangements. *Commun. Pure Appl. Math.*, 38:725–732, 1985. [gp-prpa-85]

6117 J. E. Goodman and R. Pollack. Proof of Grünbaum's conjecture on the stretchability of certain arrangements of pseudolines. *J. Combin. Theory Ser. A*, 29:385–390, 1980. [gp-pgcsc-80]

6118 J. E. Goodman and R. Pollack. Semispaces of configurations, cell complexes of arrangements. *J. Combin. Theory Ser. A*, 37:257–293, 1984. [gp-sccca-84]

6119 J. E. Goodman and R. Pollack. There are asymptotically fewer polytopes than we thought. *Bull. Amer. Math. Soc.*, 14:127–129, 1986. [gp-taafp-86]

6120 J. E. Goodman and R. Pollack. Three points do not determine a (pseudo-) plane. *J. Combin. Theory Ser. A*, 31:215–218, 1981. [gp-tpdnd-81]

6121 J. E. Goodman and R. Pollack. Upper bounds for configurations and polytopes in $\Re^d$. *Discrete Comput. Geom.*, 1:219–227, 1986. [gp-ubcpr-86]

6122 J. E. Goodman, R. Pollack, and W. Steiger, editors. *Discrete and Computational Geometry: Papers from the Dimacs Special Year*. DIMACS Series in Discrete Mathematics and Theoretical Computer Science. American Mathematical Society, Association for Computing Machinery, 1991. [gps-dcgpdsy-91]

6123 J. E. Goodman, R. Pollack, and B. Sturmfels. Coordinate representation of order types requires exponential storage. In *Proc. 21st Annu. ACM Sympos. Theory Comput.*, pages 405–410, 1989. [gps-crotr-89] *Precedes:* gps-iscir-90.

6124 J. E. Goodman, R. Pollack, and B. Sturmfels. The intrinsic spread of a configuration in $\Re^d$. *J. Amer. Math. Soc.*, 3:639–651, 1990. [gps-iscir-90] *Succeeds:* gps-crotr-89.

6125 J. E. Goodman, R. Pollack, and R. Wenger. Bounding the number of geometric permutations induced by k-transversals. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 192–197, 1994. [gpw-bngpi-94] *Cites:* bpr-ncdfp-95, bcr-gar-87, cgppsw-ccht-90, es-mnwsn-90, gp-ubcpr-86, gpw-gtt-93, kll-dwsdc-92, l-it-49, w-ubgpc-90, ZZZ.

6126 Jacob E. Goodman, Richard Pollack, and Rephael Wenger. Bounding the number of geometric permutations induced by k-transversals. *J. Combin. Theory Ser. A*, 75:187–197, 1996. [gpw-bngpi-96]

6127 J. E. Goodman, R. Pollack, and R. Wenger. Geometric transversal theory. Technical Report 91-76, DIMACS, Rutgers Univ., 1991. [gpw-gtt-91] *Precedes:* gpw-gtt-93.

6128 J. E. Goodman, R. Pollack, and R. Wenger. Geometric transversal theory. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 163–198. Springer-Verlag, Heidelberg, Germany, 1993. [gpw-gtt-93] *Keywords:* survey paper, transversal, Helly's theorem, Hadwiger's theorem, combinatorial complexity, Davenport-Schinzel sequences. *Succeeds:* gpw-gtt-91.

6129 J. E. Goodman, R. Pollack, and R. Wenger. On the connected components of the space of line transversals to a family of convex sets. *Discrete Comput. Geom.*, 13:469–476, 1995. [gpw-occsl-95]

6130 J. E. Goodman, R. Pollack, R. Wenger, and T. Zamfirescu. Arrangements and topological planes. *Amer. Math. Monthly*, 101(10):866–878, 1994. [gpwz-atp-94]

6131 J. E. Goodman, R. Pollack, R. Wenger, and T. Zamfirescu. Every arrangement extends to a spread. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 191–194, August 1991. [gpwz-eaes-91] *Cites:* g-as-72, s-cm-51, ZZZ.

6132 J. E. Goodman, R. Pollack, R. Wenger, and T. Zamfirescu. There is a universal topological plane. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 171–176, 1992. [gpwz-tiutp-92] *Cites:* eg-tsa-89, gp-pgcsc-80, gpwz-eaes-91, g-as-72, h-m-35, h-fggdg-71, l-dtdpe-26, sh-sac-91, ZZZ.

J. E. Goodman. See also [850, 851, 2717, 2718].

6133 J. W. Goodman. *Introduction to Fourier optics.* McGraw-Hill, New York, NY, 1968. [g-ifo-68]

6134 S. D. Goodman and W. T. Rhodes. Symbolic substituiton applications to image processing. *Applied Optics*, 27:1708–1714, 1988. [gr-ssaip-88]

6135 M. Goodrich, L. J. Guibas, J. Hershberger, and P. Tanenbaum. Snap rounding line segments efficiently in two and three dimensions. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 284–293, 1997. [ghts-srlse-97] *Cites:* am-rsss-94, abdpy-enmcs-95, bo-arcgi-79, b-carcg-81, c-rga-92, cms-frric-93, em-sstcd-90, f-nsa2d-95, fm-nsala-91, gy-frcg-86, gm-rad-95, gks-ricdv-92, gss-egbra-89, gs-pmgsc-85, h-psifp-93, hhk-tirgc-88, lpt-rpqiv-96, ms-temsi-92, m-dpggt-89, m-fppap-88, s-barga-93, si-gafpa-88, si-tdpga-89.

6136 Michael Goodrich, Rolf Klein, and Raimund Seidel, editors. *Computational Geometry*, volume 233 of *Dagstuhl-Seminar-Report*. Internat. Begegnungs- und Forschungszentrum für Informatik, Schloss Dagstuhl, Germany, 1999. [gks-cg-99] *URL:* ftp://ftp.dagstuhl.de/pub/Reports/99/99102.ps.gz.

6137 M. Goodrich and R. Tamassia. Dynamic trees and dynamic point location. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 523–533, 1991. [gt-dtdpl-91] *Keywords:* point location, on-line.

M. Goodrich. See also [1402, 1403, 1407, 5926, 7588, 12742].

6138 M. J. Atallah Michael T. Goodrich and S .R. Kosaraju. Parallel algorithms for evaluating sequences of set-manipulation operations. *J. ACM*, 41(6):1049–1088, 1994. [agk-paess-94]

6139 M. T. Goodrich. A polygonal approach to hidden-line and hidden-surface elimination. *CVGIP: Graph. Models Image Process.*, 54(1):1–12, 1992. [g-pahlh-92]

6140 M. T. Goodrich. A polygonal approach to hidden-line elimination. Report TR 87-18, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1987. [g-pahle-87]

6141 M. T. Goodrich. A polygonal approach to hidden line elimination. In *Proc. 25th Allerton Conf. Commun. Control Comput.*, pages 849–858, 1987. [g-pahle-87i]

6142 M. T. Goodrich. An improved ray shooting method for constructive solid geometry models via tree contraction. *Internat. J. Comput. Geom. Appl.*, 7:1–24, 1998. [g-airsm-98]

6143 M. T. Goodrich. An optimal parallel algorithm for the all nearest-neighbor problem for a convex polygon. Technical Report CSD-TR-533, Dept. Computer Science, Purdue University, USA, 1985. [g-opaan-85]

6144 M. T. Goodrich. Applying parallel processing techniques to classification problems in constructive solid geometry. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 118–128, 1990. [g-apptc-90]

6145 M. T. Goodrich. Communication-efficient parallel sorting. Technical Report, Dept. of Computer Science, Johns Hopkins Univeristy, 1995. [g-ceps-95]

6146 M. T. Goodrich. Communication-efficient parallel sorting. Research Report, under submission to *sicomp*, Center for Geometric Computing, Johns Hopkins Univ., 1997. [g-ceps-97]

6147 M. T. Goodrich. Constructing arrangements optimally in parallel. In *Proc. 3rd ACM Sympos. Parallel Algorithms Architect.*, pages 169–179, 1991. [g-caop-91]

6148 M. T. Goodrich. Constructing arrangements optimally in parallel. *Discrete Comput. Geom.*, 9:371–385, 1993. [g-caop-93] *Succeeds:* g-caop-91.

6149 M. T. Goodrich. Constructing the convex hull of a partially sorted set of points. Technical Report 91-10, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1991. [g-cchps-91]

6150 M. T. Goodrich. Constructing the convex hull of a partially sorted set of points. *Comput. Geom. Theory Appl.*, 2(5):267–278, March 1993. [g-cchps-93]

6151 M. T. Goodrich. *Efficient parallel techniques for computational geometry.* Ph.D. thesis, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1987. [g-eptcg-87] *Keywords:* parallel computation, convex hull, triangulation, domination, visibility, diameter, proximity, intersection, fractional cascading, doctoral thesis.

6152 M. T. Goodrich. Efficient piecewise-linear function approximation using the uniform metric. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 322–331, 1994. [g-eplfa-94] *Cites:* aaakss-cefns-91, aass-sdp-90, am-rsps-92, ast-apsgo-92, abosy-fmcnp-85, ams-olpqs-92, a-gvdps-89, br-cfssl-69, br-matmm-86, cegghss-rspug-91, cegs-dwclp-92, c-lpot-86, c-sdsno-87, c-pms-88, csss-otass-89, cb-enaaa-80, clr-ia-90, d-ia-63, d-csfs-93, d-ltatt-84, e-acg-87, eg-paspp-88, g-cvpcs-91, gm-paaml-92, gt-drssp-93, gh-ospqs-87, gh-ospqs-89, ghlst-ltavs-87, ghms-apsml-91, hs-fpfsp-91, h-ndssp-91, hs-cmlpg-91, ii-cgmpa-86, ii-oaapl-86a, ii-pacfa-88, j-adsfk-78, k-ealdp-89, lp-esppr-84, lpsssstwy-clcsp-88, msw-sblp-92, m-apcad-83, m-ltalp-83, m-lpltw-84, mo-pca-88, m-aaspt-88, mmp-dgp-87, mpa-csklp-92, mrw-mlpop-90, ms-saps-92, o-agta-87, ps-cgi-85, rt-laso-92, s-sdlpc-91, s-ltaml-86, s-mlppr-87, s-cgfns-89, t-capcp-85, whcl-psapa-93, ZZZ.

6153 M. T. Goodrich. Efficient piecewise-linear function approximation using the uniform metric. *Discrete Comput. Geom.*, 14:445–462, 1995. [g-eplfa-95] *Succeeds:* g-eplfa-94.

6154 M. T. Goodrich. Finding the convex hull of a sorted point set in parallel. *Inform. Process. Lett.*, 26:176–179, 1987. [g-fchsp-87] *Keywords:* parallel computation, convex hull, points, divide-and-conquer, two-dimensional.

6155 Michael T. Goodrich. Fixed-dimensional parallel linear programming via relative epsilon-approximations. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 132–141, 1996. [g-fdplp-96] *Keywords:* CRCW, PRAM, derandomization, ϵ-approximation, geometric random samples, independence.

6156 M. T. Goodrich. Geometric partitioning made easier, even in parallel. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 73–82, 1993. [g-gpmee-93] *Cites:* a-gpia-91t, aass-sdp-90, ast-apsgo-92, as-pm-92, ap-p3dch-92, av-fpahc-79, brs-enasc-89, c-ochan-91, cf-dvrsi-90, cm-dosch-95, cm-ltdao-93, cegs-dwclp-92, c-maeth-52, c-racpq-88, cs-arscg-89, c-sdsno-87, c-pms-88, cg-opapp-92, csss-otass-89, csy-khrp-87, cz-opabd-90, clr-ia-90, dk-pcsh-89, dd-ekdnp-91, dc-hcpc-80, e-acg-87, g-caop-93, hr-gtcb-90, hw-ensrq-87, j-ipa-92, kr-pasmm-90, l-spami-86, l-rrpcw-88, m-cha-91, m-aogdc-91, m-ept-92, mww-deabv-91, m-apcad-83, mnn-pmydp-89, rs-oprat-92, r-tclir-90, sss-chbal-93, s-dfs-72, vc-ucrfe-71, y-ptptc-88, ZZZ.

6157 M. T. Goodrich. Intersectin line segments in parallel with an output sensitive number of processors. In *Proc. 1st ACM Sympos. Parallel Algorithms Architect.*, pages 127–137, 1989. [g-ilspo-89]

6158 M. T. Goodrich. Intersecting line segments in parallel with an output-sensitive number of processors. *SIAM J. Comput.*, 20:737–755, 1991. [g-ilspo-91]

6159 M. T. Goodrich. Parallel algorithms in geometry. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 36, pages 669–682. CRC Press LLC, Boca Raton, FL, 1997. [g-pag-97]

6160 M. T. Goodrich. Planar separators and parallel polygon triangulation. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 507–516, 1992. [g-psppt-92]

6161 M. T. Goodrich. Planar separators and parallel polygon triangulation. *J. Comput. Syst. Sci.*, 51(3):374–389, 1995. [g-psppt-95]

6162 M. T. Goodrich. Randomized fully-scalable BSP techniques for multi-searching and convex hull construction. In *Proc. ACM-SIAM Sympos. Discrete Algorithms*, pages 767–776, 1997. [g-rfsbt-97]

6163 M. T. Goodrich. Triangulating a polygon in parallel. Report TR-679, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1987. [g-tpp-87] *Precedes:* g-tpp-89.

6164 M. T. Goodrich. Triangulating a polygon in parallel. *J. Algorithms*, 10:327–351, 1989. [g-tpp-89] *Keywords:* parallel computation, triangulation, polygons, simple, divide-and-conquer, two-dimensional. *Succeeds:* g-tpp-87.

6165 M. T. Goodrich. Using approximation algorithms to design parallel algorithms that may ignore processor allocation. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 711–722, 1991. [g-uaadp-91]

6166 M. T. Goodrich, M. J. Atallah, and M. H. Overmars. An input-size/output-size trade-off in the time complexity of rectilinear hidden-surface removal. In *Proc. 17th Internat. Colloq. Automata Lang. Program.*, volume 443 of *Lecture Notes Comput. Sci.*, pages 689–702. Springer-Verlag, 1990. [gao-isost-90]

6167 M. T. Goodrich, M. J. Atallah, and M. H. Overmars. Output-sensitive methods for rectilinear hidden surface removal. Technical Report 90-13, DIMACS, Rutgers Univ., 1990. [gao-osmrh-90]

6168 M. T. Goodrich, M. J. Atallah, and M. H. Overmars. Output-sensitive methods for rectilinear hidden surface removal. *Inform. Comput.*, 107:1–24, 1993. [gao-osmrh-93]

6169 M. T. Goodrich, M. Ghouse, and J. Bright. Generalized sweep methods for parallel computational geometry. In *Proc. 2nd ACM Sympos. Parallel Algorithms Architect.*, pages 280–289, 1990. [ggb-gsmpc-90]

6170 M. T. Goodrich, M. Ghouse, and J. Bright. Sweep methods for parallel computational geometry. *Algorithmica*. To appear. [ggb-smpcg-]

6171 M. T. Goodrich, M. Handy, B. Hudson, and R. Tamassia. Abstracting positional information in data structures: Locators and positions in JDSL. In *OOPSLA '98 Technical Notes*, 1998. [ghht-apids-98]

6172 M. T. Goodrich, M. Handy, B. Hudson, and R. Tamassia. Accessing the internal organization of data structures in the JDSL library. In M. T. Goodrich and C. C. McGeoch, editors, *Proc. Workshop on Algorithm Engineering and Experimentation*, volume 1619 of *Lecture Notes Comput. Sci.*, pages 124–139. Springer-Verlag, 1999. [ghht-aiods-99]

6173 M. T. Goodrich and S. R. Kosaraju. Sorting on a parallel pointer machine with applications to set expression evaluation. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 190–196, 1989. [gk-sppma-89]

6174 M. T. Goodrich and S. R. Kosaraju. Sorting on a parallel pointer machine with applications to set expression evaluation. *J. ACM*, ??, to appear. [gk-sppma-]

6175 Michael T. Goodrich, Yossi Matias, and Uzi Vishkin. Approximate parallel prefix computation and its applications. In *??*, pages 318–325. IEEE Computer Society, 1993. [gmv-appci-93]

6176 M. T. Goodrich, Y. Matias, and U. Vishkin. Optimal parallel approximation for prefix sums and integer sorting. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 241–250, 1994. [gmv-opaps-94]

6177 M. T. Goodrich, V. Mirelli, M. Orletsky, and J. Salowe. Decision tree construction in fixed dimensions: being global is hard but local greed is good. Technical Report, Dept. Computer Sci., Johns Hopkins Univ., 1995. [gmos-dtcfd-95]

6178 M. T. Goodrich, Joseph S. B. Mitchell, and M. W. Orletsky. Practical methods for approximate geometric pattern matching under rigid motion. *IEEE Trans. Pattern Anal. Mach. Intell.*, ??(??):to appear, ?? [gmo-pmagp-??] *Succeeds:* gmo-pmagp-94.

6179 M. T. Goodrich, Joseph S. B. Mitchell, and M. W. Orletsky. Practical methods for approximate geometric pattern matching under rigid motion. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 103–112, 1994. [gmo-pmagp-94] *Precedes:* gmo-pmagp-?? *Cites:* aass-sdp-90, abb-amps-91, amww-cssgo-88, akmsw-mppdn-92, amnsw-oaann-94, cghkkk-gpmem-93, ck-igpmp-92, c-sdsno-84, c-pms-88, csss-otass-89, clr-ia-90, e-acg-87, fd-ficg-82, gj-cigtn-79, gt-dtdpl-91, h-gaaps-93, hs-adaps-92, hk-cmhdp-90, hkk-dvdmh-92i, hks-uevsi-91, isi-mgftc-89, m-apcad-83, m-mdscg-84, ps-cgi-85, r-cmhdb-91, r-lbchd-93, ZZZ.

6180 M. T. Goodrich, C. Ó'Dúnlaing, and C. Yap. Constructing the Voronoi diagram of a set of line segments in parallel. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 12–23. Springer-Verlag, 1989. [goy-cvdsl-89]

6181 M. T. Goodrich, C. Ó'Dúnlaing, and C. Yap. Constructing the Voronoi diagram of a set of line segments in parallel. *Algorithmica*, 9:128–141, 1993. [goy-cvdsl-93] *Succeeds:* goy-cvdsl-89.

6182 M. T. Goodrich, C. Ó'Dunlaing, and C. K. Yap. Fast parallel algorithms for Voronoi diagrams. Technical Report CSD-TR-538, Dept. Computer Science, Purdue University, USA, 1985. [goy-fpavd-85]

6183 M. T. Goodrich, M. Orletsky, and K. Ramaiyer. Methods for achieving fast query times in point location data structures. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 757–766, 1997. [gor-mafqt-97]

6184 Michael T. Goodrich and Kumar Ramaiyer. Geometric data structures. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 463–489. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [gr-gds-00] *Annote:* Chapter 10 of su-hcg-00.

6185 M. T. Goodrich and E. A. Ramos. Bounded-independence derandomization of geometric partitioning with applications to parallel fixed-dimensional linear programming. *Discrete Comput. Geom.*, 18:397–420, 1997. [gr-bidgp-97]

6186 M. T. Goodrich, S. Shauck, and S. Guha. Addendum to "parallel methods for visibility and shortest path problems in simple polygons". *Algorithmica*, 9:515–516, 1993. [gsg-apmvs-93] *Succeeds:* gsg-pmvsp-90.

6187 M. T. Goodrich, S. Shauck, and S. Guha. Parallel methods for visibility and shortest path problems in simple polygons. *Algorithmica*, 8:461–486, 1992. [gsg-pmvsp-92] *Succeeds:* gsg-pmvsp-90.

6188 M. T. Goodrich, S. B. Shauck, and S. Guha. Parallel methods for visibility and shortest path problems in simple polygons. Technical Report, Dept. Comput. Sci., Johns Hopkins University, Baltimore, MD, 1989. [gsg-pmvsp-89]

6189 M. T. Goodrich, S. B. Shauck, and S. Guha. Parallel methods for visibility and shortest path problems in simple polygons. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 73–82, 1990. [gsg-pmvsp-90] *Cites:* ap-psmma-89, am-dplr-88, ac-opavs-89, acg-cdctd-89, at-oadvp-81, bn-absop-89, c-tpca-82, c-iies-84, c-ept-90, cg-fclds-86, cg-vippg-88, e-acg-87, emprww-sls-82, ea-lacvp-81, eg-paspp-88, gjpt-tsp-78, g-tpp-89, g-ilspo-89, gh-ospqs-89, ghlst-ltavs-86, grs-kfcg-83, h-ovgat-89, krs-ppp-85, lf-ppc-80, lp-esppr-84, mp-fitcp-78, ol-mcp-81, ps-cgi-85, r-plsir-89, s-opg-87, s-cgfns-89, tv-opatc-89, tv-otats-86, y-ptptc-87, ZZZ.

6190 M. T. Goodrich and J. Snoeyink. Stabbing parallel segments with a convex polygon. *Comput. Vision Graph. Image Process.*, 49:152–170, 1990. [gs-spscp-90] *Succeeds:* gs-spscp-89.

6191 M. T. Goodrich and J. Snoeyink. Stabbing vertical segments with a convex polygon. Report JHU 87-19, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1987. [gs-svscp-87] *Precedes:* gs-spscp-89.

6192 M. T. Goodrich and J. S. Snoeyink. Stabbing parallel segments with a convex polygon. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 231–242. Springer-Verlag, 1989. [gs-spscp-89] *Succeeds:* gs-svscp-87. *Precedes:* gs-spscp-90.

6193 Michael T. Goodrich and Roberto Tamassia. *Data Structures and Algorithms in Java.* John Wiley & Sons, New York, NY, 1998. [gt-dsaj-98]

6194 M. T. Goodrich and R. Tamassia. *Data Structures and Algorithms in Java.* John Wiley & Sons, New York, NY, 2nd edition, 2001. [gt-dsaj-01]

6195 M. T. Goodrich and R. Tamassia. Dynamic ray shooting and shortest paths in planar subdivisions via balanced geodesic triangulations. *J. Algorithms*, 23:51–73, 1997. [gt-drssp-97]

6196 M. T. Goodrich and R. Tamassia. Dynamic ray shooting and shortest paths via balanced geodesic triangulations. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 318–327, 1993. [gt-drssp-93] *Cites:* as-anps-91, cegghss-rspug-91, cg-vippg-89, cpt-uadpl-93, cj-nrdpl-90, cj-sersi-91, clr-ia-90, eittwy-mmsfd-90, fmn-dgds-85, ggb-gsmpc-90, gt-dtdpl-91, gh-ospqs-89, ghlst-ltavs-86, gs-dfbt-78, h-opats-92, hs-parss-93, l-cspc-72, lp-esppr-84, m-pst-85, m-ss-84, o-ddds-83, ps-cgi-85, st-dsdt-83, stt-rdthg-88, t-dsna-83, wl-arrcd-85, ZZZ.

6197 M. T. Goodrich and R. Tamassia. Dynamic trees and dynamic point location. *SIAM J. Comput.*, 28:612–636, 1998. [gt-dtdpl-98]

6198 M. T. Goodrich and R. Tamassia. Teaching the analysis of algorithms with visual proofs. In *Proc. ACM Symp. Computer Science Education*, 1998. [gt-taavp-98]

6199 Michael T. Goodrich, Jyh-Jong Tsay, Darren E. Vengroff, and Jeffrey Scott Vitter. External-memory computational geometry. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 714–723, 1993. [gtvv-emcg-93]

M. T. Goodrich. See also [175,618–622, 772, 1012, 1013, 1023–1025, 1032–1039, 1400, 1401, 2479, 2480, 2654, 2811, 3157, 3158, 3174, 3275, 3449–3452, 3746–3749, 4486–4488, 4865, 4866, 5777, 5778, 5843, 5927, 5928, 10167, 10168, 12797].

R. Kent Goodrich. See also [13621].

6200 P. Goossens. Shelling pseudopolyhedra. *Discrete Comput. Geom.*, 7:207–215, 1992. [g-sp-92]

6201 M. Gopi, S. Krishnan, and C. T. Silva. Surface reconstruction based on lower dimensional localized Delaunay triangulation. In *Eurographics*, 2000. [gks-srbld-00]

6202 R. Gordon and G. T. Herman. 3-d reconstruction from projections: a review of algorithms. *Internat. Review Cytology*, 38:111–151, 1974. [gh-3drpr-74]

S. K. Gordon. See also [5982].

6203 W. J. Gordon and R. F. Riesenfeld. B-spline curves and surfaces. In F. Barnhill and R. Riesenfeld, editors, *Comput. Aided Geom. Design*, pages 95–120. Academic Press, New York, NY, 1974. [gr-bscs-74]

6204 M. Goresky and R. MacPherson. *Stratified Morse theory.* Springer-Verlag, 1987. [gm-smt-87]

M. Gorkani. See also [5336].

A. Gorpinevich. See also [12370, 12371].

6205 P. K. Gosh. A solution of polygon containment spatial planning and other related problems using Minkowski operators. *Comput. Vision Graph. Image Process.*, 49:1–35, 1990. [g-spcsp-90]

6206 J. Gosling. *Algebraic constraints.* PhD thesis, Dept. Comput. Sci., Carnegie Mellon Univ., Pittsburgh, PA, May 1983. Technical Report CMU-CS-83-132. [g-ac-83] *Keywords:* doctoral thesis.

6207 J. Gosling, F. Yellin, and The Java Team. *The Java Application Programming Interface: Window Toolkit and Applets.* Addison-Wesley, Reading, MA, 1996. [gy-japi-96]

J. Gosling. See also [815].

D. C. Gossard. See also [12154].

B. Gostiaux. See also [1765].

6208 C. Gotsman, O. Sudarsky, and J. A. Fayman. Optimized occlusion culling using five-dimensional subdivision. *Comput. & Graphics*, 23(5):645–654, October 1999. [gsf-oocuf-99]

6209 C. Gotsman and M. Werman. Recognition of affine transformed planar curves by extremal geometric properties. *Internat. J. Comput. Geom. Appl.*, 2:183–202, 1993. [gw-ratpc-93]

C. Gotsman. See also [1359, 1360, 4620, 4801, 4802, 7829, 12654, 12966].

A. Gottlieb. See also [520].

H. J. Gottschalk. See also [4490].

6210 S. Gottschalk, M. C. Lin, and D. Manocha. OBB-tree: A hierarchical structure for rapid interference detection. *Comput. Graph.*, ??:171–180, 1996. Proc. SIGGRAPH '96. [glm-othsr-96] *Keywords:* collision detection.

S. Gottwald. See also [5846].

H. Gould. See also [13762].

6211 K. D. Gourley and D. M. Green. A polygon-to-rectangle conversion algorithm. *IEEE Comput. Graph. Appl.*, 3:31–36, 1983. [cg-prca-83]

6212 L. Gournay and J.-J. Risler. Construction of roadmaps in semi-algebraic sets. *Appl. Algebra Engrg. Comm. Comput.*, 4:239–252, 1993. [gr-crsas-93]

6213 D. Gouyou-Beauchamps. The Hamiltonian circuit problem is polynomial for 4-connected planar graphs. *SIAM J. Comput.*, 11:529–539, 1982. [g-hcppc-82]

D. Gouyou-Beauchamps. See also [5764].

6214 I. G. Gowda. Dynamic problems in computational geometry. M.Sc. thesis, Dept. Comput. Sci., Univ. British Columbia, Vancouver, BC, 1980. [g-dpcg-80] *Keywords:* master thesis.

6215 I. G. Gowda and D. G. Kirkpatrick. Exploiting linear merging and extra storage in the maintenance of fully dynamic geometric data structures. In *Proc. 18th Allerton Conf. Commun. Control Comput.*, pages 1–10, 1980. [gk-elmes-80] *Keywords:* data structuring, dynamizing data structures, Voronoi diagrams, convex hull.

6216 I. G. Gowda, D. G. Kirkpatrick, D. T. Lee, and A. Naamad. Dynamic Voronoi diagrams. *IEEE Trans. Inform. Theory*, IT-29:724–731, 1983. [gkln-dvd-83] *Keywords:* data structuring, dynamizing data structures, Voronoi diagrams.

6217 K. C. Gowda and G. Krishna. The condensed nearest neighbor rule using the concept of mutual nearest neighborhood. *IEEE Trans. Inform. Theory*, IT-25:488–490, 1979. [gk-cnnru-79]

F. Gracer. See also [4194, 13650].

Albert Gräf. See also [13451].

6218 T. Graf and K. Hinrichs. A plane sweep algorithm for the all nearest neighbors problem for a set of convex planar objects. Report 17/92-I, Angew. Math. Inform., Univ. Münster, Münster, Germany, 1992. [gh-psaan-92]

6219 Thorsten Graf and Klaus Hinrichs. A plane-sweep algorithm for the all-nearest-neighbors problem for a set of convex planar objects. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 349–360. Springer-Verlag, 1993. [gh-psaan-93] *Succeeds:* gh-psaan-93p.

6220 Thorsten Graf and Klaus Hinrichs. A plane-sweep algorithm for the all-nearest-neighbors problem for a set of convex planar objects. In *Abstracts 9th European Workshop Comput. Geom.*, pages 74–77. FernUniversität Hagen, 1993. [gh-psaan-93p] *Precedes:* gh-psaan-93.

6221 T. Graf and K. Hinrichs. Algorithms for proximity problems on colored point sets. Report 18/92-I, Angew. Math. Inform., Univ. Münster, Münster, Germany, 1992. [gh-appcp-92] *Precedes:* gh-appcp-93.

6222 T. Graf and K. Hinrichs. Algorithms for proximity problems on colored point sets. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 420–425, 1993. [gh-appcp-93] *Succeeds:* gh-appcp-93p, gh-appcp-92. *Cites:* aert-otbsp-92, hns-arsa2-92, lw-vdllm-80, m-pst-85, o-ncbbs-82, iko-pstsm-88, s-raplg-91, v-famst-84, y-cmstk-82, ZZZ.

6223 Thorsten Graf and Klaus Hinrichs. Algorithms for proximity problems on colored point sets. In *Abstracts 9th European Workshop Comput. Geom.*, pages 78–81. FernUniversität Hagen, 1993. [gh-appcp-93p] *Precedes:* gh-appcp-93.

6224 T. Graf and K. Hinrichs. Distribution algorithms for the all-nearest-foreign-neighbors problem in arbitrary L^t metrics. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 69–74, 1994. [gh-daanf-94] *Cites:* aert-otbsp-92, gh-appcp-93, hns-arsa2-92, l-tdvdl-80, ow-ad-93, ZZZ.

6225 Thorsten Graf and Klaus Hinrichs. Simple search for nearest foreign neighbors in arbitrary L^t-metrics. In *Abstracts 10th European Workshop Comput. Geom.*, pages 25–28. Universidad de Cantabria, Santander, 1994. [gh-ssnfn-94]

6226 T. Graf and V. Kamakoti. An optimal algorithm for computing visible nearest foreign neighbors among colored line segments. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 59–70. Springer-Verlag, 1998. [gk-oacvn-98]

6227 T. Graf and V. Kamakoti. Morphing simple polygons optimally – A proof for an improved conjecture. In *Proc. 25th Internat. Colloq. Automata Lang. Prog.*, volume ?? of *Lecture Notes Comput. Sci.*, page ?? Springer-Verlag, 1998. [gk-mspop-98] *Annote:* To appear, July 13-17 in Aalborg, Denmark.

T. Graf. See also [2450].

R. D. Graglia. See also [5882].

M. J. Graham. See also [5977].

6228 N. Graham. The visual system does a crude Fourier analysis of patterns. In *SIAM-AMS Proc.*, volume 13, pages 1–16, 1981. [g-vscfa-81]

6229 R. Graham, B. Rothschild, and J. Spencer. *Ramsey Theory.* Wiley-Interscience, New York, 1980. [grs-rt-80]

6230 R. Graham and F. Yao. A whirlwind tour of computational geometry. *Amer. Math. Monthly*, 97(8):687–701, 1990. [gy-wtcg-90] *Keywords:* survey paper, Voronoi diagrams, convex hull.

R. Graham. See also [3294].

6231 R. L. Graham. An efficient algorithm for determining the convex hull of a finite planar set. *Inform. Process. Lett.*, 1:132–133, 1972. [g-eadch-72] *Keywords:* design of algorithms, convex hull, worst-case analysis. *Precedes:* gs-ngcha-87. *Annote:* $O(n \log n)$ time, polar sorting.

6232 R. L. Graham. Euclidean Ramsey theory. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 8, pages 153–166. CRC Press LLC, Boca Raton, FL, 1997. [g-ert-97]

6233 R. L. Graham. Problem 85-5/EATCS: Euclidean minimum spanning trees. *J. Algorithms*, 6:285, 1985. [g-p855e-85]

6234 R. L. Graham. The largest small hexagon. *J. Combin. Theory*, 18:165–170, 1975. [g-lsh-75]

6235 R. L. Graham and P. Hell. On the history of the minimum spanning tree problem. *Annals of the History of Computing*, 7:43–57, 1985. [gh-hmstp-85]

6236 R. L. Graham and F. K. Hwang. Remarks on Steiner minimum trees. *Bull. Inst. Math. acad. Sinica*, 4:177–182, 1976. [gh-rsmt-76]

6237 R. L. Graham, D. E. Knuth, and O. Patashnik. *Concrete Mathematics.* Addison-Wesley, Reading, MA, 1989. [gkp-cm-89] *Precedes:* gkp-cm-94.

6238 Ronald L. Graham, Donald E. Knuth, and Oren Patashnik. *Concrete Mathematics.* Addison-Wesley, Reading, MA, second edition, 1994. [gkp-cm-94] *Succeeds:* gkp-cm-89.

6239 R. L. Graham, B. L. Rothschild, and J. Spencer. *Ramsey Theory.* John Wiley & Sons, 1990. [grs-rt-90]

6240 R. L. Graham and N. J. A. Sloane. Penny-packing and two-dimensional codes. *Discrete Comput. Geom.*, 5:1–11, 1990. [gs-pptdc-90]

6241 R. L. Graham and F. F. Yao. Finding the convex hull of a simple polygon. *J. Algorithms*, 4:324–331, 1983. [gy-fchsp-83] *Keywords:* designing algorithms, convex hull, two-dimensional, worst-case analysis. *Annote:* $O(n)$ time where points are ordered vertices.

R. L. Graham. See also [3297–3299, 4442, 5742, 5767, 5768, 7574].

C. Gram. See also [7563].

6242 Torbjörn Granlund. GMP, the GNU multiple precision arithmetic library. http://www.swox.com/gmp/. [g-ggmpa-] *URL:* http://www.swox.com/gmp/.

6243 Torbjörn Granlund. *GMP, The GNU Multiple Precision Arithmetic Library*, 2.0.2 edition, 1996. http://www.swox.com/gmp/. [g-ggmpa-96] *URL:* http://www.swox.com/gmp/.

G. Granot. See also [5067, 5068].

E. D. Grant. See also [5634].

6244 Jack E. Graver. *Counting on Frameworks: Mathematics to Aid the Design of Rigid Structures.* Mathematical Association of America, 2001. [g-cof-01] *Location:* Washington, D.C.

6245 J. E. Graver and M. E. Watkins. *Combinatorics with Emphasis on the Theory of Graphs.* Springer-Verlag, 1977. [gw-cetg-77]

6246 J. Gravesen. Adaptive subdivision and the length and energy of Bézier curves. *Comput. Geom. Theory Appl.*, 8:13–31, 1997. [g-asleb-97]

6247 J. Gray, A. Bosworth, A. Layman, and H. Patel. Data cube: A relational aggregation operator generalizing group-by, cross-tab, and sub-totals. In *Proc. 12th IEEE Internat. Conf. Data Eng.*, pages 152–159, 1996. [gblp-dcrao-96]

6248 L. Gray, L. Martha, and A. Ingraffea. Hypersingular integrals in boundary element fracture analysis. *Internat. J. Numer. Methods Eng.*, 20:1135–1158, 1990. [gmi-hibef-90]

R. M. Gray. See also [5858, 8833].

D. N. Grece. See also [11843].

6249 J. Green-Cottingham. *Thrackles, Surfaces and Drawings of Graphs.* PhD thesis, Clemson Univ., 1993. [g-tsdg-93] *Keywords:* doctoral thesis.

D. M. Green. See also [6211].

6250 P. J. Green. Convex hulls in the analysis of bivariate data. Paper read at the conference "Looking at Multivariate Data", Univ. Durham, Sheffield, England, 1980. [g-chabd-80]

6251 P. J. Green. Peeling bivariate data. In Vic Barnet, editor, *Interpreting Multivariate Data*, pages 3–19. John Wiley & Sons, Chichester, 1981. [g-pbd-81] *Annote:* Suggested Delaunay peeling, successive removing layers from DT.

6252 P. J. Green and R. R. Sibson. Computing Dirichlet tessellations in the plane. *Comput. J.*, 21:168–173, 1978. [gs-cdtp-78] *Keywords:* implementing algorithms, Delaunay triangulations, two-dimensional.

6253 P. J. Green and B. W. Silverman. Constructing the convex hull of a set of points in the plane. *Comput. J.*, 22:262–266, 1979. [gs-cchsp-79] *Keywords:* implementing algorithms, convex hull, two-dimensional. *Annote:* Implementation notes and benchmarks for Eddy's algorithm [e-nchap-77].

Donald Greenberg. See also [4366, 8907].

D. P. Greenberg. See also [1055, 3420, 3421, 8908, 11913, 12206, 13421].

6254 M. Greenberg. *Lectures on Algebraic Topology*. Benjamin, Reading, MA, 1967. [g-lat-67]

6255 M. Greenberg and J. Harper. *Algebraic Topology: A First Course*. Benjamin-Cummings, Reading, MA, 1981. [gh-atfc-81]

6256 Ronald I. Greenberg, Shih-Chuan Hung, and Jau-Der Shih. Parallel algorithms for single-layer channel routing. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 456–465. Springer-Verlag, 1993. [ghs-paslc-93]

6257 R. I. Greenberg and C. E. Leiserson. Randomized routing on fat-trees. *Adv. Comput. Res.*, 5:345–374, 1989. [gl-rrft-89]

C. Greene. See also [4635, 4636].

6258 D. Greene. An implementation and performance analysis of spatial data access methods. In *Proc. 5th IEEE Internat. Conf. Data Eng.*, pages 606–615, 1989. [g-aipas-89]

D. Greene. See also [1820].

6259 D. H. Greene. Integer line segment intersection. Unpublished Manuscript. [g-ilsi-]

6260 Daniel H. Greene. The decomposition of polygons into convex parts. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 235–259. JAI Press, Greenwich, Conn., 1983. [g-dpcp-83] *Annote:* minimal decomposition; finds optimal in $O(n^4)$ time, constant-factor in $O(n \log n)$.

6261 D. H. Greene and D. E. Knuth. *Mathematics for the analysis of algorithms*. Birkhäuser, Boston, 1982. [gk-maa-82]

6262 D. H. Greene and F. F. Yao. Finite-resolution computational geometry. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 143–152, 1986. [gy-frcg-86]

D. H. Greene. See also [5155, 5156].

J. Greene. See also [1440].

6263 Ned Greene. Detecting intersection of a rectangular solid and a convex polyhedron. In Paul Heckbert, editor, *Graphics Gems IV*, pages 74–82. Academic Press, Boston, MA, 1994. [g-dirsc-94] *Keywords:* collision detection, octree, computational geometry. *Annote:* Presents an optimized technique to test for intersection between a convex polyhedron and a box. This is useful when comparing bounding boxes against a viewing frustum in a rendering program, for instance. Contains pseudocode.

6264 N. Greene, M. Kass, and G. Miller. Hierachical z-buffer visibility. In *Computer Graphics Proceedings, Annu. Conference Series, 1993*, pages 273–278, 1993. [gkm-hzbv-93]

6265 L. Greengard. The numerical solution of the N-body problem. *Computers in Physics*, ??:142–152, 1990. [g-nsnbp-90]

6266 L. Greengard. *The rapid evaluation of potential fields in particle systems*. MIT Press, Cambridge, 1988. [g-repfp-88]

6267 M. Greenlinger. Dehn's algorithm for the word problem. *Commun. Pure Appl. Math.*, 13:67–83, 1960. [g-dawp-60]

C. Greenough. See also [7210].

E. Greenwood. See also [11917].

T. Greer. See also [5637].

6268 A. Gregori. Unit length embedding of binary trees on a square grid. *Inform. Process. Lett.*, 31:167–172, 1989. [g-ulebt-89] *Keywords:* graph drawing.

6269 J. Gregory. Error bounds for linear interpolation on triangles. In J. R. Whiteman, editor, *The Mathematics of Finite Elements and Applications II*, pages 163–170. Academic Press, 1975. [g-eblit-75]

6270 J. A. Gregory and Charrot. A c^1 triangular interpolation patch for computer-aided geometric design. *Comput. Graph. Image Process.*, 13:80–87, 1980. [gc-tipca-80]

J. A. Gregory. See also [2864].

S. L. Greitzer. See also [3587].

J. E. Greivenkamp. See also [5982].

6271 U. Grenander. Statistical geometry: a tool for pattern analysis. *Bull. Amer. Math. Soc.*, 79:829–856, 1973. [g-sgtpa-73]

6272 U. Grenander, Y. Chow, and D. M. Keenan. Connectivity of configuration space. In *Hands: A Pattern Theoretic Study of Biological Shapes*, appendix D, pages 108–128. Springer-Verlag, 1991. [gck-ccs-91]

6273 J. Gretenkort, P. Kleinschmidt, and B. Sturmfels. On the existence of certain smooth toric varieties. *Discrete Comput. Geom.*, 5:255–262, 1990. [gks-ecstv-90]

6274 D. Gries and I. Stojmenović. A note on Graham's convex hull algorithm. *Inform. Process. Lett.*, 25:323–327, 1987. [gs-ngcha-87] *Succeeds:* g-eadch-72.

D. Gries. See also [9687].

L. D. Griffin. See also [3437].

P. Griffin. See also [13518].

6275 D. A. Griffith. *Spatial Autocorrelation: a primer*. Association of American Cartographers, Washington, 1987. [g-sap-87]

J. Griffith. See also [1450, 1451].

6276 J. G. Griffith. Eliminating hidden edges in line drawing. *Comput. Aided Design*, 11:71–78, 1979. [g-eheld-79]

6277 H. Griffiths. Cayley's version of the resultant of two polynomials. *Amer. Math. Monthly*, ??:328–338, May 1981. [g-cvrtp-81]

6278 M. Grigni, E. Koutsoupias, and C. H. Papadimitriou. An approximation scheme for planar graph TSP. In *Proc. 36th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 640–645, 1995. [gkp-aspgt-95]

M. Grigni. See also [885, 2961–2965].

6279 Dima Grigorév and Nicolai Vorobjov. Counting connected components of a semi-algebraic set in subexponential time. *Comput. Complexity*, 2:133–186, 1992. [gv-cccsa-92]

Dima Grigorév. See also [2704].

M. D. Grigoriadis. See also [5723].

6280 Dima Grigoriev, Marek Karpinski, Friedhelm Meyer auf der Heide, and Roman Smolensky. A lower bound for randomized algebraic decision trees. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 612–619, 1996. [gkms-lbrad-96]

6281 Dima Grigoriev, Marek Karpinski, and Nicolai Vorobjov. Complexity lower bounds on testing membership to a polyhedron by algebraic decision trees. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, 1994. [gkv-clbtm-94]

6282 Dima Grigoriev and Nicolai Vorobjov. Complexity lower bounds for computation trees with elementary transcendental function gates. *Theoret. Comput. Sci.*, 157:185–214, 1996. [gv-clbct-96] *Comments:* Proves an $\Omega(\sqrt{logN})$ lower bound for testing membership in a set whose sum of Betti numbers is N, or membership in a polyhedron with N faces (of all dimensions). The model of computation generalizes Ben-Or's algebraic computation trees by also allowing the computation of Pfaffian functions such as exp, log, sin, cos, etc.

d. Grigoryev. See also [3225].

6283 D. Y. Grigoryev. Complexity of deciding Tarski algebra. *J. Symbolic Comput.*, ??, 1987. To appear. [g-cdta-87]

6284 C. I. Grima, A. Márquez, and L. Ortega. A locus approach to angle problems in computational geometry. In *Abstracts 14th European Workshop Comput. Geom.*, page 87. Universitat Polytènica de Catalunya, Barcelona, 1998. [gmo-laapc-98] *Cites:* ZZZ.

6285 Clara I. Grima, Alberto Márquez, and Lidia Ortega. Polar diagrams of geometric objects. In *Abstracts 15th European Workshop Comput. Geom.*, pages 149–151. INRIA Sophia-Antipolis, 1999. [gmo-pdgo-99]

C. I. Grima. See also [2639, 3384, 3385, 3553, 3554, 3720, 3721].

C. Grimm. See also [1810].

6286 G. R. Grimmet and D. R. Stirzaker. *Probability and Random Processes*. Clarendon Press, Oxford, UK, 1985. [gs-prp-85]

R. L. Grimsdale. See also [10570].

L. Grimson. See also [5005].

6287 W. E. Grimson. The combinatorics of local constraints in model-based recognition and localization from sparse data. *J. ACM*, 33:658–686, 1986. [g-clcmb-86]

6288 W. E. Grimson and T. Lozano-Perez. Localizing overlapping parts by searching the interpretation tree. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-9:469–482, 1987. [gl-lopsi-87]

6289 W. E. L. Grimson. *Form Images to Surfaces: A Computational Study of the Human Early Visual System*. MIT Press, Cambridge, MA, 1981. [g-iscsh-81]

6290 W. E. L. Grimson and D. P. Huttenlocher. On the sensitivity of geometric hashing. In *Proc. 3rd Internat. Conf. Comput. Vision*, pages 334–338, 1990. [gh-sgh-90]

6291 R. Grinde and T. Cavalier. Containment of a single polygon using mathematical programming. Technical Report IMSE Working Paper 92-164, Dept. Industrial and Management Systems Engineering, Pennsylvania State Univ., 1993. [gc-cspum-93]

6292 R. Grinde and T. M. Cavalier. A new algorithm for the two-polygon containment problem. *Comput. Oper. Res.*, ??, 1996. To appear. [gc-natpc-96]

G. G. Grinstein. See also [13374].

R. Grinwald. See also [1361, 1362].

V. P. Grishukhin. See also [1162].

6293 P. Gritzmann. Tight polyhedral realizations of closed 2-dimensional manifolds in R^3. *J. Geom.*, 17:69–76, 1981. [g-tprc2-81]

6294 P. Gritzmann, L. Habsieger, and V. Klee. Good and bad radii of convex polygons. *SIAM J. Comput.*, 20:395–403, 1991. [ghk-gbrcp-91]

6295 Peter Gritzmann and Alexander Hufnagel. A polynomial time algorithm for Minkowski reconstruction. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 1–9, 1995. [gh-ptamr-95] *Keywords:* polytopes, convexity, computer vision, facet volumes. *Cites:* df-ccv-88, dgh-ccmv-94, gj-cigtn-79, gh-acmrt-94, gk-csbpc-94, g-immv-90, g-sgi-93, gls-gaco-88, h-egi-84, h-rv-86, h-apbmt-95, l-pvc-91, l-imrcp-83, l-egimv-85, m-aludk-97, m-vuo-03, s-mv-93, s-cbbmt-93, ZZZ.

6296 P. Gritzmann and A. Hufnagel. On the algorithmic complexity of Minkowski's reconstruction theorem. Manuscript, ??, 1994. [gh-acmrt-94]

6297 P. Gritzmann and V. Klee. Computational complexity of inner and outer j-radii of polytopes in finite-dimensional normed spaces. *Math. Program.*, 59:163–213, 1993. [gk-ccioj-93]

6298 P. Gritzmann and V. Klee. Computational convexity. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 27, pages 491–516. CRC Press LLC, Boca Raton, FL, 1997. [gk-cc-97]

6299 P. Gritzmann and V. Klee. Inner and outer j-radii of convex bodies in finite-dimensional normed spaces. *Discrete Comput. Geom.*, 7:255–280, 1992. [gk-iojrc-92]

6300 P. Gritzmann and V. Klee. On the complexity of some basic problems in computational convexity: II. Volume and mixed volumes. In T. Bisztriczky, P. McMullen, R. Schneider, and A. I. Weiss, editors, *Polytopes: Abstract, Convex and Computational*, pages 373–466. Kluwer Academic Publischers, 1994. [gk-csbpc-94]

6301 P. Gritzmann, V. Klee, and J. Westwater. On the limited power of linear probes and other optimization oracles. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 92–101, 1990. [gkw-lplpo-90] *Cites:* bb-ca-85, cy-sp-87, dey-pcp-86, gls-gaco-88, sk-ctnmx-78, s-gp-88, s-pgp-89, ZZZ.

6302 Peter Gritzmann, Victor Klee, and John Westwater. Polytope containment and determination by linear probes. In *Abstracts 9th European Workshop Comput. Geom.*, pages 59–60. FernUniversität Hagen, 1993. [gkw-pcdlp-93]

6303 P. Gritzmann and M. Lassak. Estimates for the minimal width polytopes inscribed in convex bodies. *Discrete Comput. Geom.*, 4:627–635, 1989. [gl-emwpi-89]

6304 P. Gritzmann, B. Mohar, J. Pach, and R. Pollack. Embedding a planar triangulation with vertices at specified points. *Amer. Math. Monthly*, 98(2):165–166, 1991. [gmpp-eptvs-91]

6305 P. Gritzmann and B. Sturmfels. Minkowski addition of polytopes: Computational complexity and applications. *SIAM J. Discrete Math.*, 6:246–269, 1993. [gs-mapcc-93]

P. Gritzmann. See also [4562, 5166, 5761, 5800].

6306 H. Groemer. On an inequality of Minkowski for mixed volumes. *Geom. Dedicata*, 33:117–122, 1990. [g-immv-90]

6307 H. Groemer. On convex bodies that permit packings of high density. *Discrete Comput. Geom.*, 5:357–364, 1990. [g-cbtpp-90]

6308 H. Groemer. Some basic properties of packing and covering constants. *Discrete Comput. Geom.*, 1:183–193, 1986. [g-sbppc-86]

6309 H. Groemer. Stability of geometric inequalities. In P. M. Gruber and J. M. Wills, editors, *Handbook of Convex Geometry*, volume A, pages 125–150. North-Holland, Amsterdam, Netherlands, 1993. [g-sgi-93]

6310 F. C. A. Groen, P. W. Verbeek, N. DeJong, and J. W. Klumper. The smallest box around a package. *Pattern Recogn.*, 14(1–6):173–178, 1981. [gvdk-sbap-81]

D. Grogan. See also [3620].

6311 U. Groh and G. Hotz. Ein Planaritätstest für planar-konvexe Grapheneinbettungen mit linearer Komplexität. Report ??, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1984. [gh-epfpk-84]

6312 V. Grolmusz. A lower bound to diameter searching. Report ??, Comput. Sci. Dept., Eötvös Loraánd Univ., Budapest, Hungary, 1985. [g-lbds-85]

J. Gromicho. See also [5233].

6313 M. L. Gromov. Simplexes inscribed on a hypersurface. *Mat. Zametki*, 5:81–89, 1969. In Russian. English translation in Transl. Math. Notes Acad. Sci. USSR 5:52–56, 1969. [g-sih-69]

M. de Groot. See also [1688, 1700–1704].

6314 M. P. Groover and E. W. Zimmers. *CAD/CAM: Computer Aided Design and Manufacturing.* Prentice Hall, 1984. [gz-cccad-84]

6315 Harald Gropp. Configurations between geometry and combinatorics. In *Abstracts 13th European Workshop Comput. Geom.*, pages 30–32. Universität Würzburg, 1997. [g-cgc-30]

Harald Gropp. See also [2115].

6316 W. I. Grosky and R. Jain. On optimizing quadtrees, a data structure for image representation. Report ??, Dept. Comput. Sci., Wayne State Univ., Detroit, MI, 1980. [gj-oqdsi-80]

6317 J. L. Gross. Voltage graphs. *Discrete Math.*, 9:239–246, 1974. [g-vg-74]

6318 J. L. Gross and S. R. Alpert. The topological theory of current graphs. *J. Combin. Theory Ser. B*, 17:218–233, 1974. [ga-ttcg-74]

6319 J. L. Gross and R. H. Rosen. A linear time planarity algorithm for 2-complexes. *J. ACM*, 26:611–617, 1979. [gr-ltpa2-79]

6320 J. L. Gross and T. W. Tucker. *Topological Graph Theory.* John Wiley & Sons, 1987. [gt-tgt-87]

6321 J. L. Gross and W. Tucker. Generating all graph coverings by permutation voltage assignments. *Discrete Math.*, 18:273–283, 1977. [gt-gagcp-77]

M. Gross. See also [12315].

S. Grossberg. See also [3418].

E. Grosse. See also [1297, 1302, 1305].

6322 Roberto Grossi, Andrea Pietracaprina, and Geppino Pucci. Optimal deterministic protocols for mobile robots on a grid. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 181–192. Springer-Verlag, 1998. [gpp-odpmr-98]

B. M. Grossman. See also [8531].

6323 D. D. Grossman. Opportunities for research on numerical control machining. *Commun. ACM*, 29(6):515–522, June 1986. [g-orncm-86]

6324 D. D. Grossman and M. W. Blasgen. Orienting mechanical parts by computer-controlled manipulator. *IEEE Trans. Syst. Man Cybern.*, SMC-5(5):561–565, 1975. [gb-ompcc-75]

6325 I. Grossman and W. Magnus. *Groups and their Graphs.* Random House, 1964. [gm-gtg-64]

R. Grossman. See also [1796, 1797].

6326 E. Grosswald. *Topics from the Theory of Numbers.* Macmillan, New York, NY, 1966. [g-ttn-66]

6327 M. Grötschel, L. Lovász, and A. Schrijver. *Geometric Algorithms and Combinatorial Optimization*, volume 2 of *Algorithms and Combinatorics*. Springer-Verlag, Berlin Heidelberg, 1988. 2nd edition 1994. [gls-gaco-88]

6328 M. Grötschel, L. Lovász, and A. Schrijver. Polynomial algorithms for perfect graphs. In C. Berge and V. Chvátal, editors, *Topics on Perfect Graphs*, volume 21 of *Ann. Discrete Math.* North-Holland, 1984. [gls-papg]

6329 M. Grötschel, L. Lováz, and A. Schrijver. The ellipsoid method and its consequences on combinatorial optimization. *Combinatorica*, 1:169–197, 1981. [gls-emicc-81]

the Smith Problem Solving Group. See also [10396].

6330 Edward F. Grove, T. M. Murali, and Jeffrey Scott Vitter. The object complexity model for hidden-surface elimination. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 273–278, 1995. [gmv-ocmhs-95]

6331 E. F. Grove, T. M. Murali, and J. S. Vitter. The object complexity model for hidden-surface removal. *Internat. J. Comput. Geom. Appl.*, 9(2):207–217, April 1999. [gmv-ocmhs-99]

E. F. Grove. See also [176, 177, 1472, 3174].

J. Grove. See also [5977].

6332 P. M. Gruber. Approximation of convex bodies. In Peter M. Gruber and J. M. Wills, editors, *Convexity and its Applications*, pages 131–162. Birkhäuser, Basel, Switzerland, 1983. [g-acb-83] *Keywords:* survey paper.

6333 P. M. Gruber. Aspects of approximation of convex bodies. In Peter M. Gruber and J. M. Wills, editors, *Handbook of Convex Geometry*, volume A, chapter 1.10, pages 319–345. North-Holland, Amsterdam, Netherlands, 1993. [g-aacb-93] *Keywords:* survey paper.

6334 P. M. Gruber. History of convexity. In P. M. Gruber and J. M. Wills, editors, *Handbook of Convex Geometry*. North-Holland, 1993. [g-hc-93]

6335 Peter M. Gruber and C. G. Lekkerkerker. *Geometry of Numbers*. North-Holland, Amsterdam, Netherlands, 2nd edition, 1987. [gl-gn-87] *Succeeds:* l-gn-69.

6336 Peter M. Gruber and J. M. Wills, editors. *Convexity and its Applications*. Birkhäuser, Basel, Switzerland, 1983. [gw-cia-83] *Keywords:* collection, survey papers.

6337 Peter M. Gruber and J. M. Wills, editors. *Handbook of Convex Geometry*, volume A. North-Holland, Amsterdam, Netherlands, 1993. [gw-hcg-93a] *Keywords:* collection, survey papers.

6338 Peter M. Gruber and J. M. Wills, editors. *Handbook of Convex Geometry*, volume B. North-Holland, Amsterdam, Netherlands, 1993. [gw-hcg-93b] *Keywords:* collection, survey papers.

P. M. Gruber. See also [4990].

6339 B. Grünbaum. A proof of Vázsonyi's conjecture. *Bull. Research Council Israel, Section A*, 6:77–78, 1956. [g-pvc-56]

6340 B. Grünbaum. *Arrangements and Spreads*. Regional Conf. Ser. Math. American Mathematical Society, Providence, RI, 1972. [g-as-72]

6341 B. Grünbaum. Arrangements of hyperplanes. *Congr. Numer.*, 3:41–106, 1971. [g-ah-71] *Comments:* Louisiana Conf. on Comb., Graph Theory & Comput.

6342 B. Grünbaum. *Convex Polytopes*. John Wiley & Sons, New York, NY, 1967. [g-cp-67]

6343 B. Grünbaum. How to convexify a polygon. *Geombinatorics*, 5:24–30, July 1995. [g-hcp-95]

6344 B. Grünbaum. Lectures on combinatorial geometry. Mimeographed Note, Univ. Washington, Seattle, WA, 1974. [g-lcg-74]

6345 B. Grünbaum. On a theorem of l. a. santalo. *Pacific J. Math.*, 5:351–359, 1955. [g-ts-55]

6346 B. Grünbaum. On common transversals. *Arch. Math.*, 9:465–469, 1958. [g-ct-58]

6347 B. Grünbaum. On intersections of similar sets. *Portugal Math.*, 18:155–164, 1959. [g-iss-59]

6348 B. Grünbaum. The importance of being straight. In *Proceedings of the 12th Biennial Seminar of the Canadian Mathematical Congress on TimeSeries and Stochastic Processes; Convexity and Combinatorics*, pages 243–254, 1970. [g-ibs-70]

6349 B. Grünbaum and T. S. Motzkin. On components in some families of sets. *Proc. Amer. Math. Soc.*, 12:607–613, 1961. [gm-csfs-61]

6350 B. Grünbaum and G. C. Shephard. Rotation and winding numbers for polygons and curves. *Trans. Amer. Math. Soc.*, 322(1):169–187, 1990. [gs-rwnpc-90]

6351 B. Grünbaum and G. C. Shephard. Some problems on polyhedra. *J. Geom.*, 29(2):182–190, August 1987. [gs-spp-87]

6352 B. Grünbaum and G. C. Shephard. The geometry of planar graphs. In *Proc. 8-th British Combinatorial Conference*, 1981. [gs-gpg-81]

6353 B. Grünbaum and G. C. Shephard. *Tilings and Patterns*. W. H. Freeman, New York, NY, 1987. [gs-tp-87]

6354 Branko Grünbaum and Joseph Zaks. Convexification of polygons by flips and by flipturns. Technical Report 6/4/98, Department of Mathematics, University of Washington, Seattle, 1998. [gz-cpff-98]

Branko Grünbaum. See also [2620, 3739, 3740].

6355 A. Grzegorczyk. On the definition of computable real continuous functions. *Fund. math.*, 44:61–71, 1957. [g-dcrcf-57]

6356 D. J. Gschwind and T. P. Murtagh. A recursive algorithm for drawing hierarchical directed graphs. Technical Report CS-89-02, Department of Computer Science, Williams College, 1989. [gm-radhd-89] *Keywords:* graph drawing.

S. Gschwind. See also [1555–1559].

6357 C. Gu, S. Campbell, J. Hong, Q. He, D. Zhang, and P. Yeh. Optical thresholding and maximum operations. *Appl. Optics*, 31(26):5661–5665, 1992. [gchhzy-otmo-92]

A. Gualtieri. See also [13488].

D. J. Guan. See also [5542, 5543, 5552].

6358 Roser Guàrdia and Ferran Hurtado. On the equipartitions of convex bodies and convex polygons. In *Abstracts 16th European Workshop Comput. Geom.*, pages 47–50. Ben-Gurion University of the Negev, 2000. [gh-ecbcp-00]

V. A. Guarna. See also [7437].

6359 M. D. Guay and D. C. Kay. On sets having finitely many points of local nonconvexity. *Israel J. Math.*, ??:39–52, 1970. [gk-shfmp-70]

6360 Joachim Gudmundsson and Christos Levcopoulos. A fast approximation algorithm for TSP with neighborhoods. Technical Report LU-CS-TR:97-195, Dept. of Comp. Sci., Lund University, 1997. [gl-faatn-97]

6361 J. Gudmundsson and C. Levcopoulos. A fast approximation algorithm for TSP with neighborhoods. *Nordic J. Comput.*, 6:469–488, 1999. [gl-faatn-99]

6362 J. Gudmundsson and C. Levcopoulos. A parallel approximation algorithm for minimum weight triangulation. *Nordic J. Comput.*, 7:32–57, 2000. [gl-paamw-00]

6363 J. Gudmundsson, C. Levcopoulos, and G. Narasimhan. Approximating a minimum Manhattan network. *Nordic J. Comput.*, 8:219–232, 2001. [gln-ammn-01]

6364 J. Gudmundsson, C. Levcopoulos, and G. Narasimhan. Improved greedy algorithms for constructing sparse geometric spanners. In *Proc. 7th Scand. Workshop Algorithm Theory*, volume 1851 of *Lecture Notes Comput. Sci.*, pages 314–327, Berlin, 2000. Springer-Verlag. [gln-igacs-00]

6365 J. Gudmundsson, C. Levcopoulos, G. Narasimhan, and M. Smid. Approximate distance oracles for geometric graphs. In *Proc. 13th ACM-SIAM Sympos. Discrete Algorithms*, pages 828–837, 2002. [glns-adogg-02]

J. Gudmundsson. See also [8736, 8737].

6366 A. Guénoche. Random spanning tree. *J. Algorithms*, 4:214–220, 1983. [g-rst-83]

C. Guerra. See also [1867, 1868].

J. A. Guevara. See also [3099].

6367 E. Guevremont and J. Snoeyink. Recognizing an envelope of lines in linear time. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 370–377. Springer-Verlag, 1992. [gs-rellt-92]

E. Guévremont. See also [1135–1137, 5048–5050].

A. Guéziec. See also [12831].

6368 H. W. Guggenheimer. *Applicable Geometry: global and local convexity*. R. E. Krieger, Huntington, NY, 1977. [g-agglc-77]

6369 H. W. Guggenheimer. *Differential Geometry*. McGraw-Hill, New York, NY, 1963. [g-dg-63]

6370 S. Guha. An optimal parallel algorithm using exclusive read/writes for the rectilinear Voronoi diagram. *Comput. Geom. Theory Appl.*, 3:37–52, 1993. [g-opaue-93] *Keywords:* parallel algorithm, rectilinear metric, Voronoi diagram.

6371 Sumanta Guha. Optimal mesh computer algorithms for simple polygons. In *Proc. 7th IEEE Internat. Parallel Process. Sympos.*, pages 182–187. IEEE Computer Society, 1993. [g-omcas-93]

6372 Sumanta Guha. Parallel analog algorithms for processing polygonal images on a systolic screen. In *Proc. 7th IEEE Internat. Parallel Process. Sympos.*, pages 557–562. IEEE Computer Society, 1993. [g-paapp-93]

6373 S. Guha. Parallel computation of internal and external farthest neighbors in simple polygons. Manuscript, EECS Dept., Univ. Michigan, Ann Arbor, MI, 1991. [g-pcief-91]

6374 S. Guha. Parallel computation of internal and external farthest neighbours in simple polygons. *Internat. J. Comput. Geom. Appl.*, 2(2):175–190, 1992. [g-pcief-92] *Keywords:* parallel algorithm, simple polygons, farthest neighbors.

S. Guha. See also [1930, 2859–2861, 3051, 3052, 4081, 4100, 4102, 4103, 6186–6189].

6375 L. Guibas, J. Hershberger, D. Leven, M. Sharir, and R. E. Tarjan. Linear time algorithm for visibility and shortest path problems inside a triangulated simple polygon. Technical Report 218, Dept. Comput Sci., Courant Institute, New York, NY, April 1986. [ghlst-ltavs-86t]

6376 L. Guibas, J. Hershberger, and J. Snoeyink. Bridge trees: a data structure for convex hulls. In preparation, 1988. [ghs-btdsc-88]

6377 Leonidas Guibas, John Hershberger, Subash Suri, and Li Zhang. Kinetic connectivity for unit disks. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 331–340, 2000. [ghsz-kcud-00]

6378 Leonidas Guibas and David Marimont. Rounding arrangements dynamically. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 190–199, 1995. [gm-rad-95] *Keywords:* robustness, randomized incremental algorithm. *Precedes:* gm-rad-98. *Cites:* bo-arcgi-79, ce-oails-92, cs-arscg-89, f-smpst-89, fm-nsala-91, g-ilsi-, gy-frcg-86, h-psifp-94, hhk-tirgc-88, m-grs-93, m-vigau-88p, m-fppa-90, m-cgitr-93, gss-egbra-89, si-gafpa-88, ZZZ.

6379 Leonidas Guibas and David Marimont. Rounding arrangements dynamically. *Internat. J. Comput. Geom. Appl.*, 8:157–176, 1998. [gm-rad-98] *Succeeds:* gm-rad-95.

6380 L. Guibas, M. H. Overmars, and M. Sharir. Intersecting line segments, ray shooting and other applications of geometric partitioning techniques. Technical Report RUU-CS-88, Dept. Computer Science, University of Utrecht, 1988. [gos-ilsrs-88t]

6381 L. Guibas and M. Pellegrini. New algorithmic results for lines-in-3-space problems. Technical Report TR-92-005, Int. Comput. Sci. Institute, 1992. [gp-narlp-92]

6382 L. Guibas and J. Stolfi. Lecture notes on computational geometry. Technical Report CS 445, Stanford University, Stanford, California, 1983. [gs-lncg-83]

6383 L. Guibas and J. Stolfi. Primitives for the manipulation of subdivisions. Technical Report, DEC, ?? [gs-pms-]

L. Guibas. See also [178, 1404, 1705, 1706, 2966, 2967, 4290].

6384 Leonidas J. Guibas. Computational geometry and visualization: Problems at the interface. *??*, ??:45–59, ?? [g-cgvpi-??]

6385 Leonidas J. Guibas. Implementing geometric algorithms robustly. In *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, pages 24–28, May 1996. [g-igar-96]

6386 L. J. Guibas. Kinetic data structures — a state of the art report. In P. K. Agarwal, L. E. Kavraki, and M. Mason, editors, *Proc. Workshop Algorithmic Found. Robot.*, pages 191–209. A. K. Peters, Wellesley, MA, 1998. [g-kdssar-98]

6387 Leonidas J. Guibas. Maintenance of geometric configurations under continuous object motion. In *Abstracts 13th European Workshop Comput. Geom.*, page 10. Universität Würzburg, 1997. [g-mgcco-97] *Cites:* ZZZ.

6388 Leonidas J. Guibas and Helmut Alt. Discrete geometric shapes: Matching, interpolation, and approximation. Technical Report Report B 96-11, Institut für Informatik, Freie Universität Berlin, 1996. [ag-dgsmi-96] *URL:* http://www.inf.fu-berlin.de/pub/reports/tr-b-96-11.ps.gz,http://www.inf.fu-berlin.de/inst/pubs/tr-b-96-11.abstract.html.

6389 Leonidas J. Guibas, D. Halperin, H. Hirukawa, J.-C. Latombe, and R. H. Wilson. A simple and efficient procedure for assembly partitioning under infinitesimal motions. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 2553–2560, 1995. [ghhlw-sepap-95] *Keywords:* robotics, assembly planning, separability, polytopes.

6390 Leonidas J. Guibas, D. Halperin, H. Hirukawa, J.-C. Latombe, and R. H. Wilson. Polyhedral assembly partitioning using maximally covered cells in arrangements of convex polytopes. *Internat. J. Comput. Geom. Appl.*, 8:179–200, 1998. [ghhlw-papum-98]

6391 Leonidas J. Guibas, D. Halperin, J. Matoušek, and Micha Sharir. On vertical decomposition of arrangements of hyperplanes in four dimensions. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 127–132, 1993. [ghms-vdahf-93] *Cites:* c-racpq-88, ams-sscch-91, a-caecc-87, cegs-sessr-91, ZZZ.

6392 Leonidas J. Guibas, D. Halperin, J. Matoušek, and Micha Sharir. On vertical decomposition of arrangements of hyperplanes in four dimensions. *Discrete Comput. Geom.*, 14:113–122, 1995. [ghms-vdahf-95]

6393 Leonidas J. Guibas and J. Hershberger. Computing the visibility graph of n line segments in $O(n^2)$ time. *Bull. EATCS*, 26:13–20, 1985. [gh-cvgnl-85]

6394 Leonidas J. Guibas and J. Hershberger. Morphing simple polygons. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 267–276, 1994. [gh-msp-94] *Cites:* cr-tgsps-85, cw-nstsm-82, kr-sidc-92, sgwm-2dsbi-93, sg-pba2d-92, stt-rdthg-86, t-dpg-83, v-gpga-86, ZZZ.

6395 Leonidas J. Guibas and J. Hershberger. Optimal shortest path queries in a simple polygon. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 50–63, 1987. [gh-ospqs-87] *Precedes:* gh-ospqs-89. *Cites:* aaghi-vdp-86, akmsw-gamsa-86, bt-ladts-86, egs-oplms-86, c-tpca-82, cg-vippg-85, ghlst-ltavs-86, lp-esppr-84, ol-mcp-81, ps-cgi-85, rs-spesp-85, s-agfnp-87, tv-otats-86, ZZZ.

6396 Leonidas J. Guibas and J. Hershberger. Optimal shortest path queries in a simple polygon. *J. Comput. Syst. Sci.*, 39(2):126–152, October 1989. [gh-ospqs-89] *Succeeds:* gh-ospqs-87.

6397 Leonidas J. Guibas, J. Hershberger, D. Leven, Micha Sharir, and R. E. Tarjan. Linear time algorithms for visibility and shortest path problems inside simple polygons. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 1–13, 1986. [ghlst-ltavs-86] *Precedes:* ghlst-ltavs-87. *Cites:* a-eafvp, at-oadvp-81, c-tpca-82, cg-vippg-85, egs-oplms-86, e-eacwv-84, ea-lacvp-81, f-spcrd-86, fm-tspep-84, gjpt-tsp-78, gmpr-nrll-77, grs-kfcg-83, gy-fchsp-83, h-ep-82, hm-ndsrs-82, k-osps-83, l-vsp-83, ll-cvpe-86, lp-esppr-84, ma-lafch-79, ps-rgpcr-86, ps-tspm-81, s-ltaml-86, t-dsna-83, tv-ltats-86, t-spsee-85, ZZZ.

6398 Leonidas J. Guibas, J. Hershberger, D. Leven, Micha Sharir, and R. E. Tarjan. Linear-time algorithms for visibility and shortest path problems inside triangulated simple polygons. *Algorithmica*, 2:209–233, 1987. [ghlst-ltavs-87] *Keywords:* polygons, simple, shortest paths, visibility, finger search trees. *Succeeds:* ghlst-ltavs-86.

6399 Leonidas J. Guibas, J. Hershberger, and J. Snoeyink. Compact interval trees: a data structure for convex hulls. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 169–178, 1990. [ghs-citds-90] *Precedes:* ghs-citds-91.

6400 Leonidas J. Guibas, J. Hershberger, and J. Snoeyink. Compact interval trees: a data structure for convex hulls. *Internat. J. Comput. Geom. Appl.*, 1(1):1–22, 1991. [ghs-citds-91] *Keywords:* data structures, convex hull, lower bounds, common tangents. *Succeeds:* ghs-citds-90. *Annote:* replaces the bridge tree data structure used in eghsssw-irals-89.

6401 Leonidas J. Guibas, J. E. Hershberger, Joseph S. B. Mitchell, and J. S. Snoeyink. Approximating polygons and subdivisions with minimum link paths. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 151–162. Springer-Verlag, 1991. [ghms-apsml-91] *Precedes:* ghms-apsml-93.

6402 Leonidas J. Guibas, J. E. Hershberger, Joseph S. B. Mitchell, and J. S. Snoeyink. Approximating polygons and subdivisions with minimum link paths. *Internat. J. Comput. Geom. Appl.*, 3(4):383–415, December 1993. [ghms-apsml-93] *Succeeds:* ghms-apsml-91.

6403 Leonidas J. Guibas, D. Knuth, and Micha Sharir. Randomized incremental construction of Delaunay and Voronoi diagrams. Technical Report 481, Courant institute of mathematical sciences, December 1989. [gks-ricdv-89]

6404 Leonidas J. Guibas, Donald E. Knuth, and Micha Sharir. Randomized incremental construction of Delaunay and Voronoi diagrams. In M. S. Paterson, editor, *Proc. 17th Internat. Colloq. Automata Lang. Program.*, volume 443 of *Lecture Notes Comput. Sci.*, pages 414–431. Springer-Verlag, 1990. [gks-ricdv-90] *Precedes:* gks-ricdv-92. *Annote:* Main result: If the order of point insertion is randomized, then the the total number of changes to DT when insertion algorithm is used is $O(n)$. By keeping previous triangulations around and searching in old triangulations first, the point location problem takes $O(\log n)$ expected time, meaning that insertion algorithm takes $O(n \log n)$ on average.

6405 Leonidas J. Guibas, D. E. Knuth, and Micha Sharir. Randomized incremental construction of Delaunay and Voronoi diagrams. *Algorithmica*, 7:381–413, 1992. [gks-ricdv-92] *Succeeds:* gks-ricdv-90.

6406 Leonidas J. Guibas, E. McCreight, M. Plass, and J. Roberts. A new representation for linear lists. In *Proc. 9th Annu. ACM Sympos. Theory Comput.*, pages 49–60, 1977. [gmpr-nrll-77]

6407 Leonidas J. Guibas, Joseph S. B. Mitchell, and T. Roos. Voronoi diagrams of moving points in the plane. manuscript, 1991. [gmr-vdmpp-91t] *Precedes:* gmr-vdmpp-92, agmr-vdmp-98.

6408 Leonidas J. Guibas, Joseph S. B. Mitchell, and T. Roos. Voronoi diagrams of moving points in the plane. In *Proc. 17th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 570 of *Lecture Notes Comput. Sci.*, pages 113–125. Springer-Verlag, 1992. [gmr-vdmpp-92] *Keywords:* Voronoi diagrams, Davenport-Schinzel sequences. *Succeeds:* gmr-vdmpp-91t. *Precedes:* agmr-vdmp-98.

6409 Leonidas J. Guibas, R. Motwani, and P. Raghavan. The robot localization problem. *SIAM J. Comput.*, 26(4):1120–1138, August 1997. [gmr-rlp-97]

6410 Leonidas J. Guibas, R. Motwani, and P. Raghavan. The robot localization problem in two dimensions. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 259–268, 1992. [gmr-rlptd-92] *Precedes:* gmr-rlp-97.

6411 Leonidas J. Guibas, M. H. Overmars, and J.-M. Robert. The exact fitting problem for points. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 171–174, August 1991. [gor-efpp-91] *Precedes:* gor-efpp-96. *Cites:* a-pal2a-90, bb-atp-88, b-gtfga-80, cegsw-ccbac-90, e-acg-87, eg-tsa-89, hiiry-owlll-90, m-cha-90i, mg-fre-82, st-epdg-83, ZZZ.

6412 Leonidas J. Guibas, M. H. Overmars, and J.-M. Robert. The exact fitting problem for points. *Comput. Geom. Theory Appl.*, 6:215–230, 1996. [gor-efpp-96] *Succeeds:* gor-efpp-91.

6413 Leonidas J. Guibas, M. H. Overmars, and Micha Sharir. Counting and reporting intersections in arrangements of line segments. Technical Report 434, Dept. Comput. Sci, New York Univ., New York, NY, March 1989. [gos-crial-89]

6414 Leonidas J. Guibas, M. H. Overmars, and Micha Sharir. Intersecting line segments, ray shooting, and other applications of geometric partitioning techniques. In *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 64–73. Springer-Verlag, 1988. [gos-ilsrs-88]

6415 Leonidas J. Guibas, M. H. Overmars, and Micha Sharir. Ray shooting, implicit point location, and related queries in arrangements of segments. Report 433, Dept. Comput. Sci., New York Univ., New York, NY, March 1989. [gos-rsipl-89] *Keywords:* random sampling, ray tracing, arrangements, point location.

6416 Leonidas J. Guibas, L. Ramshaw, and J. Stolfi. A kinetic framework for computational geometry. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 100–111, 1983. [grs-kfcg-83]

6417 Leonidas J. Guibas, D. Salesin, and J. Stolfi. Constructing strongly convex approximate hulls with inaccurate primitives. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 261–270. Springer-Verlag, 1990. [gss-cscah-90]

6418 Leonidas J. Guibas, D. Salesin, and J. Stolfi. Constructing strongly convex approximate hulls with inaccurate primitives. *Algorithmica*, 9:534–560, 1993. [gss-cscah-93]

6419 Leonidas J. Guibas, D. Salesin, and J. Stolfi. Epsilon geometry: building robust algorithms from imprecise computations. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 208–217, 1989. [gss-egbra-89] *Cites:* em-sstcd-88, gy-frcg-86, hhk-tirgc-88, grs-kfcg-83, k-acp-73, m-vigau-88a, mk-impgo-84, otu-nsga-87, y-gctsp-88, ZZZ.

6420 Leonidas J. Guibas and J. Saxe. Solution to problem 80-15: computing the connected components of a collection of rectangles. Report ??, Carnegie-Mellon Univ., Pittsburgh, PA, 1982. [gs-sp801-82]

6421 Leonidas J. Guibas and R. Sedgewick. A dichromatic framework for balanced trees. In *Proc. 19th Annu. IEEE Sympos. Found. Comput. Sci.*, Lecture Notes Comput. Sci., pages 8–21. Springer-Verlag, 1978. [gs-dfbt-78]

6422 Leonidas J. Guibas and R. Seidel. Computing convolutions by reciprocal search. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 90–99, 1986. [gs-ccrs-86] *Keywords:* intersection, subdivisions, plane-sweep. *Precedes:* gs-ccrs-87. *Cites:* bo-arcgi-79, c-fsnaq-86, eg-tsa-86, g-cp-67, grs-kfcg-83, gs-pmgsc-85, np-psaig-82, s-at-66, ZZZ.

6423 Leonidas J. Guibas and R. Seidel. Computing convolutions by reciprocal search. *Discrete Comput. Geom.*, 2:175–193, 1987. [gs-ccrs-87] *Keywords:* intersection, subdivisions, plane-sweep. *Succeeds:* gs-ccrs-86.

6424 Leonidas J. Guibas and Micha Sharir. Arrangements of thick lines and related problems. Manuscript, 1990. [gs-atlrp-90]

6425 Leonidas J. Guibas and Micha Sharir. Combinatorics and algorithms of arrangements. Manuscript, 1990. [gs-caa-90]

6426 Leonidas J. Guibas and Micha Sharir. Combinatorics and algorithms of arrangements. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 9–36. Springer-Verlag, Heidelberg, 1993. [gs-caa-93] *Keywords:* survey paper, arrangements, lower envelopes, Davenport-Shinzel sequences, face complexity, partitioning.

6427 Leonidas J. Guibas, Micha Sharir, and S. Sifrony. On the general motion planning problem with two degrees of freedom. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 289–298, 1988. [gss-gmppt-88] *Precedes:* gss-gmppt-89. *Cites:* ass-sulbl-87, astsbac-88, a-dcg-83, bo-arcgi-79, cg-vippg-85, dsstmdsp-86, eg-tsa-86, egppss-acptc-88, eghppsss-ajati-88, egs-cmfal-88, es-mnwsn-87, fwy-cmtra-86, ghlst-ltavs-87, hs-ndssg-86, ks-eapcf-85, ks-empac-90, klps-ujrcf-86, ls-esmpa-87, ls-pptmc-87, lw-apcfp-79, osy-gvdl-86, osy-gvdl-87, oy-rmpmd-85, ps-ueplf-87, pss-stsps-88, ss-pmp1c-83, ss-pmp2g-83, ss-pmp3c-83, ss-pmp5c-84, s-tddsp-85, sa-pmp4v-84, s-alubl-87, s-ilbld-88, ss-cmpti-88, ss-nempa-87, ws-prnds-88, ZZZ.

6428 Leonidas J. Guibas, Micha Sharir, and S. Sifrony. On the general motion planning problem with two degrees of freedom. *Discrete Comput. Geom.*, 4:491–521, 1989. [gss-gmppt-89] *Keywords:* motion planning, arrangements. *Succeeds:* gss-gmppt-88.

6429 Leonidas J. Guibas and J. Stolfi. Notes on computational geometry. Technical report, XEROX PARK, 1982. [gs-ncg-82]

6430 Leonidas J. Guibas and J. Stolfi. On computing all north-east nearest neighbors in the L_1 metric. *Inform. Process. Lett.*, 17:219–223, 1983. [gs-canen-83]

6431 Leonidas J. Guibas and J. Stolfi. Primitives for the manipulation of general subdivisions and the computation of Voronoi diagrams. In *Proc. 15th Annu. ACM Sympos. Theory Comput.*, pages 221–234, 1983. [gs-pmgsc-83] *Precedes:* gs-pmgsc-85.

6432 Leonidas J. Guibas and J. Stolfi. Primitives for the manipulation of general subdivisions and the computation of Voronoi diagrams. *ACM Trans. Graph.*, 4(2):74–123, April 1985. [gs-pmgsc-85] *Keywords:* design of algorithms, data structuring. *Succeeds:* gs-pmgsc-83. *Annote:* data structure for convex hull.

6433 Leonidas J. Guibas and J. Stolfi. Ruler, compass and computer: the design and analysis of geometric algorithms. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 111–165. Springer-Verlag, 1988. [gs-rccda-88] *Keywords:* survey paper.

6434 Leonidas J. Guibas, J. Stolfi, and K. Clarkson. Solving related two- and three-dimensional linear programming in logarithmic time. *Theoret. Comput. Sci.*, 49(1):81–84, 1987. [gsc-srttd-87]

6435 Leonidas J. Guibas and F. Frances Yao. On translating a set of rectangles. In *Proc. 12th Annu. ACM Sympos. Theory Comput.*, pages 154–160, 1980. [gy-tsr-80] *Precedes:* gy-tsr-83.

6436 Leonidas J. Guibas and F. Frances Yao. On translating a set of rectangles. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 61–77. JAI Press, Greenwich, Conn., 1983. [gy-tsr-83] *Succeeds:* gy-tsr-80.

Leonidas J. Guibas. See also [155, 169, 173, 174, 179–181, 282, 283, 288, 289, 459, 588, 655, 833, 834, 839–841, 939, 940, 966, 967, 1482–1487, 1707, 1708, 1810, 1813, 2313, 2314, 2363, 2364, 2961–2965, 2968–2983, 2989–2997, 3332, 3359, 3360, 3434, 4279, 4291, 4691–4706, 6135, 6854, 8043, 8534, 12545, 13202, 13203].

6437 W. Guida, R. Bohacek, and M. Erion. Probing the conformational space available to inhibitors on the thermolysin active site using Monte-Carlo/energy minimization techniques. *J. Comput. Chemistry*, 13(2):214–228, 1992. [gbe-pcsai-92]

W. Guida. See also [2842].

Philippe Guigue. See also [4033].

6438 V. Guillemin and A. Pollack. *Differential Topology*. Prentice Hall, Englewood Cliffs, NJ, 1974. [gp-dt-74]

V. Guillemin. See also [6066].

6439 M. Guisti. Some effectivity problems in polynomial ideal theory. In *Proc. EUROSAM 84*, volume 174 of *Lecture Notes Comput. Sci.*, pages 159–171. Springer-Verlag, 1984. [g-seppi-84]

U. G. Gujar. See also [3782].

T. Gum. See also [1163].

6440 S. Gumhold and W. Straßer. Real time compression of triangle mesh connectivity. In *Proc. SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, pages 133–140, July 1998. [gs-rtctm-98]

D. Gunopulos. See also [324, 2244, 3750, 4292, 4293].

6441 O. Günther. A lower bound and two approximative algorithms for the k-partitioning of rectilinear polygons. In *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 86–95. Springer-Verlag, 1988. [g-lbtaa-88]

6442 O. Günther. *Efficient Structures for Geometric Data Management*, volume 337 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1988. [g-esgdm-88] *ISBN:* 3-540-50463-X.

6443 O. Günther. Minimum k-partitioning of rectilinear polygons. *J. Symbolic Comput.*, 9(4):457–483, April 1990. [g-mkprp-90]

6444 O. Günther. The design of the cell tree: An object oriented index structure for geometric data bases. In *Proc. 5th IEEE Internat. Conf. Data Eng.*, pages 598–605, 1989. [g-tdcto-89]

6445 O. Günther and J. Bilmes. Tree based access methods for spatial databases: Implementation and performance evaluation. *IEEE Trans. Knowledge and Data Enginerring*, 3:342–356, 1991. [gb-tbams-91]

6446 O. Günther and E. Wong. A dual approach to detect polyhedral intersections in arbitrary dimensions. *Bit*, 31(1):2–14, 1991. [gw-dadpi-91]

6447 O. Günther and E. Wong. A dual space representation for geometric data. In *Proc. 13th VLDB Conference*, pages 501–506, 1987. [gw-dsrgd-87]

O. Günther. See also [4344, 5699].

H. J. Guntherodt. See also [11230, 11231].

6448 H. Günzel. The universal partition theorem for oriented matroids. *Discrete Comput. Geom.* (to appear). [g-uptom-96]

6449 B. Guo. Free-form surface modeling using implicit patches. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 176–180, 1990. [g-ffsmu-90] *Cites:* hk-crcs-85i, hh-gpbs-88, w-asmgc-86, bi-hiura-89, p-dlsfas-87, s-pasp-85, d-spqs-, d-pimcc-85, f-spm-86, p-lssic-, ZZZ.

6450 B. Guo. On the difficulty of deciding the convexity of polynomials over simplexes. *Internat. J. Comput. Geom. Appl.*, 6:227–230, 1996. [g-ddcps-96]

6451 B. Guo, J. Menon, and B. Willette. Surface reconstruction using alpha shapes. *Comput. Graph. Forum*, 16(4):177–190, October 1997. [gmw-sruas-97]

B. Guo. See also [9536].

A. Gupta. See also [3780].

6452 H. Gupta, V. Harinarayan, A. Rajaraman, and J. D. Ullman. Index selection for OLAP. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 205–216, 1996. [ghru-hso-97]

6453 Himanshu Gupta and Rephael Wenger. Constructing pairwise disjoint paths with few links. In *Proc. 5th Workshop Algorithms Data Struct.*, 1997. [gw-cpdp-97]

6454 Himanshu Gupta and Rephael Wenger. Constructing piecewise linear homeomorphisms of simple polygons. *J. Algorithms*, 22:142–157, 1997. [gw-cplh-97]

6455 Neelima Gupta and Sandeep Sen. Faster output-sensitive parallel convex hulls for $d \leq 3$: Optimal sublogarithmic algorithms for small outputs. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 176–185, 1996. [gs-fospc-96] *Cites:* acgoy-pcg-85, agr-pahdc-94, a-oacch-84, ag-epssg-86, ag-pasft-88, ap-p3dch-92, bh-fpsae-93, cd-icott-87, c-pagp-80, c-osrch-95, csy-oscpf-95, cf-dvrsi-90, cm-dosch-92, c-oesa-87, cs-arscg-89, d-opalp-90, dk-pcsh-89, e-acg-87, gg-ptpch-91, g-gpmee-93, g-fdplp-96, g-eadch-72, h-fdpa-93, hr-wmhtb-92, hw-ensrq-87, gz-odapp-95, kr-lbmcl-89, ks-upcha-86, mv-chpnc-91, ph-chfsp-77, p-ortap-79, ps-cgi-85, rs-oprat-92, rs-rstpa-93, rs-rabsl-94, s-lbadt-94, s-pmsua-96, s-cg-78, ZZZ.

6456 P. Gupta. *Efficient algorithms and data structures for geometric intersection problems*. Ph.D. thesis, University of Minnesota, Minneapolis, 1995. [g-eadsg-95] *Keywords:* doctoral thesis.

6457 Prosenjit Gupta, Ravi Janardan, Jayanth Majhi, and Tony Woo. Efficient geometric algorithms for workpiece orientation in 4- and 5-axis NC-machining. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 171–182. Springer-Verlag, 1995. [gjmw-egawo-95]

6458 P. Gupta, R. Janardan, J. Majhi, and T. C. Woo. Efficient geometric algorithms for workpiece orientation in 4- and 5-axis NC machining. *Comput. Aided Design*, 28(8):577–587, August 1996. [gjmw-egawo-96]

6459 P. Gupta, R. Janardan, and M. Smid. A technique for adding range restrictions to generalized searching problems. Report MPI-I-96-1-017, Max-Planck-Institut Inform., Saarbrücken, Germany, 1996. [gjs-atarr-96]

6460 P. Gupta, R. Janardan, and M. Smid. A technique for adding range restrictions to generalized searching problems. *Inform. Process. Lett.*, 64:263–269, 1997. [gjs-atarr-97]

6461 P. Gupta, R. Janardan, and M. Smid. Algorithms for generalized halfspace range searching and other intersection searching problems. *Comput. Geom. Theory Appl.*, 5:321–340, 1996. [gjs-aghrs-96] *Annote:* also published (erroneously) in Volume 6 (1996), pp. 1–19.

6462 P. Gupta, R. Janardan, and M. Smid. Algorithms for some intersection searching problems involving circular objects. *International Journal of Mathematical Algorithms*, 1:35–52, 1999. [gjs-asisp-99]

6463 P. Gupta, R. Janardan, and M. Smid. Efficient algorithms for counting and reporting pairwise intersections between convex polygons. Report TR 96-03, Department of Computer Science, King's College, London, UK, 1996. [gjs-eacrp-96t]

6464 P. Gupta, R. Janardan, and M. Smid. Efficient algorithms for counting and reporting pairwise intersections between convex polygons. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 8–13. Carleton University Press, Ottawa, Canada, 1996. [gjs-eacrp-96i]

6465 P. Gupta, R. Janardan, and M. Smid. Efficient algorithms for counting and reporting pairwise intersections between convex polygons. *Inform. Process. Lett.*, 69:7–13, 1999. [gjs-eacrp-99]

6466 P. Gupta, R. Janardan, and M. Smid. Efficient algorithms for generalized intersection searching on non-iso-oriented objects. Report MPI-I-93-166, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [gjs-eagis-93]

6467 P. Gupta, R. Janardan, and M. Smid. Efficient algorithms for generalized intersection searching on non-iso-oriented objects. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 369–378, 1994. [gjs-eagis-94] *Cites:* ahl-sqrpc-90, ak-ccspi-93, ako-iqco-93, cgl-pgd-85, ds-tamol-87, dsst-mdsp-89, e-acg-87, gjs-frgis-93, gjs-ispic-93, gjs-eagis-93, jl-gisp-93, m-cha-91, m-ept-92, m-rsehc-92, m-cgitr-93, oy-nubkm-88, ZZZ.

6468 P. Gupta, R. Janardan, and M. Smid. Fast algorithms for collision and proximity problems involving moving geometric objects. Report MPI-I-94-113, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [gjs-facpp-94t]

6469 P. Gupta, R. Janardan, and M. Smid. Fast algorithms for collision and proximity problems involving moving geometric objects. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 278–289. Springer-Verlag, 1994. [gjs-facpp-94i] *Precedes:* gjs-facpp-96.

6470 P. Gupta, R. Janardan, and M. Smid. Fast algorithms for collision and proximity problems involving moving geometric objects. *Comput. Geom. Theory Appl.*, 6:371–391, 1996. [gjs-facpp-96] *Succeeds:* gjs-facpp-94i.

6471 P. Gupta, R. Janardan, and M. Smid. Further results on generalized intersection searching problems: counting, reporting and dynamization. Report MPI-I-92-154, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [gjs-frgis-92]

6472 Prosenjit Gupta, Ravi Janardan, and Michiel Smid. Further results on generalized intersection searching problems: Counting, reporting, and dynamization. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 361–372. Springer-Verlag, 1993. [gjs-frgis-93]

6473 P. Gupta, R. Janardan, and M. Smid. Further results on generalized intersection searching problems: counting, reporting and dynamization. *J. Algorithms*, 19:282–317, 1995. [gjs-frgis-95]

6474 P. Gupta, R. Janardan, and M. Smid. On intersection searching problems involving curved objects. Report MPI-I-93-124, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [gjs-ispic-93]

6475 P. Gupta, R. Janardan, and M. Smid. On intersection searching problems involving curved objects. In *Proc. 4th Scand. Workshop Algorithm Theory*, volume 824 of *Lecture Notes Comput. Sci.*, pages 183–194. Springer-Verlag, 1994. [gjs-ispic-94]

6476 P. Gupta, R. Janardan, M. Smid, and B. Dasgupta. The rectangle enclosure and point-dominance problems revisited. Report MPI-I-94-142, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [gjsd-repdp-94]

6477 Prosenjit Gupta, Ravi Janardan, Michiel Smid, and Bhaskar Dasgupta. The rectangle enclosure and point-dominance problems revisited. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 162–171, 1995. [gjsd-repdp-95] *Keywords: Cites:* eo-esrp-82, gjsd-repdp-94, ko-sag-88, lp-iarep-82, lw-firrs-81, m-pst-85, pl-pdavs-88, ps-cgi-85, ekz-diepq-77, e-pofll-77, vw-dsrce-80, ZZZ.

6478 Prosenjit Gupta, Ravi Janardan, Michiel Smid, and Bhaskar Dasgupta. The rectangle enclosure and point-dominance problems revisited. *Internat. J. Comput. Geom. Appl.*, 7:437–455, 1997. [gjsd-repdp-97]

6479 P. Gupta and S. Saluja. Optimal algorithms for some proximity problems on the Gaussian sphere with applications. Report MPI-I-96-1-022, Max-Planck-Institut Inform., Saarbrücken, Germany, 1996. [gs-oappg-96]

P. Gupta. See also [9122–9129].

6480 S. Gupta and S. Khuller. Greedy strikes back: Improved facility location problems. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 649–657, 1998. [gk-gsbif-98]

6481 Satyandra K. Gupta. Sheet metal bending operation planning: Using virtual node generation to improve search efficiency. *J. Manuf. Sys.*, 18(2):127–139, 1999. [g-smbop-99]

6482 S. K. Gupta, D. A. Bourne, K. H. Kim, and S. S. Krishnan. Automated process planning for sheet metal bending operations. *J. Manufacturing Systems*, 17(5):338–360, 1998. [gbkk-appsmbo-98] *Keywords:* manufacturing.

6483 Satyandra K. Gupta and Dana S. Nau. Systematic approach to analysing the manufacturability of machined parts. *Comput. Aided Design*, 27(5):323–342, 1995. [gn-saamm-95] *Keywords:* design for manufacturability, CAM, CAD, feature-based models.

6484 A. B. Gurevich. The 'most economical' displacement of a segment. *Differential Equations*, 11:1583–1589, 1975. [g-meds-75]

H. Gurla. See also [1919].

6485 H. N. Gürsoy. *Shape Interrogation by Medial Axis Transform for Automated Analysis*. Ph.D. thesis, Dept. Ocean Engineering, MIT, Cambridge, MA, November 1989. [g-simat-89] *Keywords:* doctoral thesis.

6486 H. N. Gürsoy and N. M. Patrialakis. Automated interrogation and adaptive subdivision of shape using medial axis transform. *Advances in Engineering Software and Workstations*, 13(5–6):287–302, September 1991. [gp-aiass-91] *Annote:* Vd of region is used break it up into quads and tris, which are then triangulated.

6487 H. N. Gürsoy and N. M. Patrikalakis. An automatic coarse and fine surface mesh generation scheme based on medial axis transform: Part I algorithm. *Engineering with Computers*, 8:121–137, 1992. [gp-acfsm1-92]

6488 H. N. Gürsoy and N. M. Patrikalakis. An automatic coarse and fine surface mesh generation scheme based on medial axis transform: Part II implementation. *Engineering with Computers*, 8:179–196, 1992. [gp-acfsm2-92]

H. N. Gürsoy. See also [10664, 10673].

E. L. Gursoz. See also [13376].

6489 D. Gusfield. Bounds for the parametric spanning tree problem. In *Proc. West Coast Conf. Combinatorics, Graph Theory and Comput.*, pages 173–181, 1979. [g-bpstp-79]

6490 D. Gusfield. Parametric combinatorial computing and a problem in program module allocation. *J. ACM*, 30:551–563, 1983. [g-pccpp-83]

6491 D. Gusfield. Sensitivity analysis for combinatorial optimization. Technical Report UCB/ERLM80/22, Univ. of California, Berkeley, CA, 1980. [g-saco-80]

6492 D. Gusfield, K. Balasubramanian, and D. Naor. Parametric optimization of sequence alignment. *Algorithmica*, 12:312–326, 1994. [gbn-posa-94]

6493 D. Gusfield and R. Irving. Parametric stable marriage and minimum cuts. *Inform. Process. Lett.*, 30:255–259, 1989. [gi-psmmc-89]

6494 D. Gusfield and C. Martel. A fast algorithm for the generalized parametric minimum cut problem and applications. Technical Report CSE-89-21, UC Davis, 1989. [gm-fagpm-89]

J. Gustedt. See also [5202].

6495 R. H. Güting. A message to the line sweeper: don't forget divide-and-conquer. Report 170, Lehrstuhl Inform. VI, Univ. Dortmund, Dortmund, West Germany, 1983. [g-mlsdf-83]

6496 R. H. Güting. Algorithmen und Datenstrukturen für geometrische Probleme. Report SS 84-1984, Lehrstuhl Inform. VI, Univ. Dortmund, Dortmund, West Germany, 1984. [g-audfg-84]

6497 R. H. Güting. An introduction to spatial database systems. *VLDB Journal*, 4:357–399, 1994. [g-isds-94]

6498 R. H. Güting. An optimal contour algorithm for iso-oriented rectangles. *J. Algorithms*, 5:303–326, 1984. [g-ocaio-84]

6499 R. H. Güting. *Conquering contours: Efficient algorithms for computational geometry*. Ph.D. thesis, Abteilung Inform., Dortmund Univ., Dortmund, West Germany, 1983. [g-cceac-83] *Keywords:* doctoral thesis.

6500 R. H. Güting. Dynamic c-oriented polygonal intersection searching. Technical report, Lehrstuhl Inform. VI, Univ. Dortmund, Dortmund, Germany, 1984. [g-dcopi-84]

6501 R. H. Güting. Dynamic C-oriented polygonal intersection searching. *Inform. Control*, 63:143–163, 1984. [g-dcopi-84a]

6502 R. H. Güting. Fast dynamic intersection searching in a set of isothetic line segments. *Inform. Process. Lett.*, 21:165–171, 1985. [g-fdiss-85]

6503 R. H. Güting. Fast dynamic line segment intersection searching. Report 87, Forschungsberichte Fachber. Inform., Univ. Dortmund, Dortmund, West Germany, 1984. [g-fdlsi-84] *Keywords:* intersection searching, line segment, segment tree, range tree, halfobject technique.

6504 R. H. Güting. Geo-relational algebra: a model and query language for geometric database systems. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 90–96. Springer-Verlag, 1988. [g-gramq-cga-88] *Comments:* extended abstract. *Precedes:* g-gramq-edbt-88. *Annote:* 4th Intern. Workshop Comput. Geom.

6505 R. H. Güting. Geo-relational algebra: a model and query language for geometric database systems. In *Advances in Database Technology: EDBT '88*, volume 303 of *Lecture Notes Comput. Sci.*, pages 506–527. Springer-Verlag, 1988. [g-gramq-edbt-88] *Succeeds:* g-gramq-cga-88.

6506 R. H. Güting. Geo-relational algebra: an integrated view of geometric and standard data in databases. Report 226, Fachber. Inform., Univ. Dortmund, Dortmund, West Germany, 1986. [g-graiv-86]

6507 R. H. Güting. Optimal divide-and-conquer to compute measure and contour for a set of iso-rectangles. *Acta Inform.*, 21:271–291, 1984. [g-odccm-84]

6508 R. H. Güting. Stabbing c-oriented polygons. *Inform. Process. Lett.*, 16:35–40, 1983. [g-scop-83]

6509 R. H. Güting and H. P. Kriegel. Dynamic k-dimensional multiway search under time-varying access frequencies. In *Proc. 5th GI Conf. Theoret. Comput. Sci.*, volume 104 of *Lecture Notes Comput. Sci.*, pages 135–145. Springer-Verlag, 1981. [gk-dkdms-81]

6510 R. H. Güting and H. P. Kriegel. Multidimensional B-tree: An efficient dynamic file structure for exact match queries. In *Proc. 10th GI Conf.*, pages 375–388. Springer-Verlag, 1980. [gk-mbted-80]

6511 R. H. Güting, O. Nurmi, and T. Ottmann. Fast algorithms for direct enclosures and direct dominances. *J. Algorithms*, 10:170–186, 1989. [gno-faded-89] *Succeeds:* gno-ddp-85.

6512 R. H. Güting, O. Nurmi, and T. Ottmann. The direct dominance problem. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 81–88, 1985. [gno-ddp-85] *Precedes:* gno-faded-89. *Cites:* b-skrp-77, em-ioo-81, eo-esrp-82, gw-pt-82, k-ddp-85, klp-fmsv-75, lp-iarep-82, l-tarrc-79, m-eaeii-80, nr-bstbb-73, vw-dsrce-80, w-isbt-79, ZZZ.

6513 R. H. Güting and T. Ottmann. New algorithms for special cases of the hidden line elimination. In *Proc. 2nd Sympos. Theoret. Aspects Comput. Sci.*, 1985. [go-nasch-85]

6514 R. H. Güting and T. Ottmann. New algorithms for special cases of the hidden line elimination problem. Report 184, Lehrstuhl Inform. VI, Univ. Dortmund, Dortmund, West Germany, 1984. [go-nasch-84] *Precedes:* go-nasch-87.

6515 R. H. Güting and T. Ottmann. New algorithms for special cases of the hidden line elimination problem. *Comput. Vision Graph. Image Process.*, 40:188–204, 1987. [go-nasch-87] *Succeeds:* go-nasch-84.

6516 R. H. Güting and W. Schilling. A practical divide-and conquer algorithm for the rectangle intersection problem. Report 196, Lehrstuhl Inform. VI, Univ. Dortmund, Dortmund, West Germany, 1985. [gs-pdcar-85]

6517 R. H. Güting and D. Wood. Finding rectangle intersections by divide-and-conquer. Report 82-CS-04, Unit Comput. Sci., McMaster Univ., Hamilton, ON, 1982. [gw-fridc-82] *Precedes:* gw-fridc-84.

6518 R. H. Güting and D. Wood. Finding rectangle intersections by divide-and-conquer. *IEEE Trans. Comput.*, C-33:671–675, 1984. [gw-fridc-84] *Succeeds:* gw-fridc-82.

6519 R. H. Güting and D. Wood. The parenthesis tree. *Inform. Sci.*, 27:151–162, 1982. [gw-pt-82]

R. H. Güting. See also [2069–2072].

6520 W. Gutjahr, Emo Welzl, and G. Woeginger. Polynomial graph-colorings. In *Proc. 6th Sympos. Theoret. Aspects Comput. Sci.*, volume 349 of *Lecture Notes Comput. Sci.*, pages 108–119. Springer-Verlag, 1989. [gww-pgc-89]

6521 W. Gutjahr, Emo Welzl, and G. Woeginger. Polynomial graph-colorings. *Discrete Appl. Math.*, 8:29–45, 1992. [gww-pgc-92]

6522 E. Gutkin. Billards in polygons. *Physica D*, 19:311–333, 1986. [g-bp-86]

6523 A. Guttman. R-trees: A dynamic index structure for spatial searching. In *Proc. ACM SIGMOD Conf. Principles Database Systems*, pages 47–57, 1984. [g-rtdis-84]

C. Gutwenger. See also [462].

C. A. Gutwin. See also [7971, 7972].

6524 A. G. Guy. *Introduction to Materials Science*. McGraw-Hill, 1972. [g-ims-72]

6525 R. K. Guy. Crossing numbers of graphs. In *Graph Theory and Applications*, volume 303 of *Lecture Notes Math.*, pages 111–124. Springer-Verlag, Berlin, West Germany, 1972. [g-cng-72] *Keywords:* graph drawing.

R. K. Guy. See also [3616, 4991].

6526 M. K. Guyder. Automating the optimization of $2\frac{1}{2}$-axis milling. In F. Kimura and A. Rolstadås, editors, *Proc. Computer Applications in Production and Engineering*, page (supplement). North-Holland, October 1989. [g-ao2am-89] *Keywords:* survey, pocket machining, milling. *Comments:* This paper doesn't have page numbers. It was a supplement to the printed proceeding. (For whatever reasons, it did not get included into the printed proceedings.).

A. Guzman. See also [6070].

6527 A. Gyárfás. Covering complete graphs by monochromatic paths. In G. Halász and V. T. Sós, editors, *Irregularities of Partitions*, volume 8 of *Algorithms and Combinatorics*, pages 89–91. Springer-Verlag, Heidelberg, 1989. [g-ccgmp-89]

6528 A. Gyárfás. Vertex coverings by monochromatic paths and cycles. *J. Graph Theory*, 7:131–135, 1983. [g-vcmpc-83]

6529 A. Gyárfás and J. Lehel. Covering and coloring problems for relatives of intervals. *Discrete Math.*, 55:167–180, 1985. [gl-ccpri-85]

6530 A. Gyarfas and J. Lehel. On-line and first-fit colorings of graphs. *J. Graph Theory*, 12(2):217–227, 1988. [gl-ofcg-88]

A. Gyárfás. See also [4992, 4993, 5857].

6531 E. Györi. A short proof of the rectilinear art gallery theorem. *SIAM J. Algebraic Discrete Methods*, 7:452–454, 1986. [g-sprag-86]

6532 Ervin Györi, Frank Hoffman, Klaus Kriegel, and Thomas Shermer. Generalized guarding and partitioning for rectilinear polygons. Technical Report CMPT94-01, School of Computing Science, Simon Fraser University, January 1994. [ghks-ggprp-94t] *Succeeds:* ghks-ggprp-94, ghks-ggprp-96.

6533 E. Györi, F. Hoffmann, K. Kriegel, and T. Shermer. Generalized guarding and partitioning for rectilinear polygon. Technical Report B 93-17, Frei Universität Berlin, FB Mathematik-Informatik, December 1993. [ghks-ggprp-93]

6534 E. Győri, F. Hoffmann, K. Kriegel, and T. Shermer. Generalized guarding and partitioning for rectilinear polygons. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 302–307, 1994. [ghks-ggprp-94] *Precedes:* ghks-ggprp-96, ghks-ggprp-94t. *Cites:* a-agpiv-84, c-tsplt-91a, g-sprag-86, ghks-ggprp-93, h-ragp-90, hkk-agtph-91, kkk-tgrfw-83, o-aprag-83, o-agta-87, s-rrag-92, s-cgpul-91, s-cgopl-91, bs-tbgph-91, eow-sgrag-84, ZZZ.

6535 E. Győri, F. Hoffmann, K. Kriegel, and T. Shermer. Generalized guarding and partitioning for rectilinear polygons. *Comput. Geom. Theory Appl.*, 6:21–44, 1996. [ghks-ggprp-96] *Succeeds:* ghks-ggprp-94.

E. Győri. See also [537, 2000].

K. von Haam. See also [501, 502].

6536 H. P. A. Haas, E. Backer, and I. J. Boxma. Convex hull nearest neighbor rule. In *Proc. 5th IEEE Internat. Conf. Pattern Recogn.*, pages 87–90, 1980. [hbb-chnnr-80]

R. Haas. See also [464, 465].

J. Håstad. See also [536].

Johan Håastad. See also [669].

M. Habar. See also [11230, 11231].

6537 M. Habib, D. Kelly, and R. H. Möhring. Comparability invariance of geometric notion of order dimension. Technical Report 320/1992, Technical University of Berlin, Berlin, Germany, 1992. [hkm-cigno-92]

M. Habib. See also [3742, 5203].

L. Habsieger. See also [6294].

6538 R. Hacker. Certification of algorithm 112: position of point relative to polygon. *Commun. ACM*, 5:606, 1962. [h-ca112-62]

6539 H. Hadwiger. Eine Schnittrekursion für die Eulersche Charakteristik euklidischer Polyeder mit Anwendungen innerhalb der kombinatorischen Geometrie. *Elem. Math.*, 23:121–132, 1968. [h-esfde-68]

6540 H. Hadwiger. Eulers Charakteristik und kombinatorische Geometrie. *J. Reine Angew. Math.*, 134:101–110, 1955. [h-ecukg-55]

6541 H. Hadwiger. Über eibereiche mit gemeinsamer treffgeraden. *Portugal Math.*, 6:23–29, 1957. [h-uegt-57]

6542 H. Hadwiger and H. Debrunner. *Kombinatorische Geometrie in der Ebene*, volume 2 of *Monograph. Enseign. Math.* Enseignement Mathematique, Geneva, Switzerland, 1960. [hd-kgde-60] *Precedes:* hdk-cgp-64.

6543 H. Hadwiger and H. Debrunner. Über eine Variante zum Helly'schen Satz. *Arch. Math.*, 8:309–313, 1957. [hd-uevzh-57]

6544 H. Hadwiger, H. Debrunner, and V. Klee. *Combinatorial Geometry in the Plane*. Holt, Rinehart & Winston, New York, 1964. [hdk-cgp-64] *Succeeds:* hd-kgde-60.

J. Hafner. See also [5336].

6545 J. Hagauer and Günter Rote. Three-clustering of points in the plane. In T. Lengauer, editor, *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 192–199. Springer-Verlag, 1993. [hr-tcpp-93] *Precedes:* hr-tcpp-97.

6546 J. Hagauer and Günter Rote. Three-clustering of points in the plane. *Comput. Geom. Theory Appl.*, 8:87–95, 1997. [hr-tcpp-97] *Abstract:* Given n points in the plane, we partition them into three classes such that the maximum distance between two points in the same class is minimized. The algorithm takes $O(n^2 \log^2 n)$ time.

J. Hagauer. See also [1103].

6547 Michiel Hagedoorn, Mark Overmars, and Remco C. Veltkamp. A robust affine invariant similarity measure based on visibility. In *Abstracts 16th European Workshop Comput. Geom.*, pages 112–116. Ben-Gurion University of the Negev, 2000. [hov-raism-00]

6548 M. Hagedoorn and R. Veltkamp. A general method for partial point set matching. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 406–408, 1997. [hv-gmpps-97] *Cites:* hks-uevsi-93, hr-mrtci-92, cghkkk-gpmem-93, ZZZ.

6549 Michiel Hagedoorn and Remco C. Veltkamp. Reliable and efficient pattern matching using an affine invariant metric. Technical Report UU-CS-1997-33, Utrecht University, Department of Computing Science, October 1997. [hv-repma-97]

6550 H. Hagen. Geometric modeling of smooth surfaces. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 158–167. Springer-Verlag, 1988. [h-gmss-88] *Annote:* 4th Intern. Workshop Comput. Geom.

6551 H. Hagen. Offset-Flächen-Algorithmen. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [h-ofa-89]

6552 Hans Hagen. Qualitätsanalyse-Algorithmen. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 10. Universität Siegen, 1990. [h-qa-90]

6553 Hans Hagen. Variational surface design and surface interrogation. In *Abstracts 9th European Workshop Comput. Geom.*, pages 52–55. FernUniversität Hagen, 1993. [h-vsdsi-93]

6554 H. Hagen, H. Müller, and G. M. Nielson. *Focus on Scientific Visualization*. Springer-Verlag, 1993. [hmn-fsv-93]

J. W. Hagerman. See also [3651].

Hagerup. See also [668].

6555 T. Hagerup. Fast deterministic processor allocation. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 1–10, 1993. [h-fdpa-93]

6556 T. Hagerup, H. Jung, and Emo Welzl. Efficient parallel computation of arrangements of hyperplanes in d dimensions. In *Proc. 2nd ACM Sympos. Parallel Algorithms Architect.*, pages 290–297, 1990. [hjw-epcah-90]

6557 T. Hagerup and R. Raman. Waste makes haste: Tight bounds for loose, parallel sorting. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 628–637, 1992. [hr-wmhtb-92]

6558 T. Hagerup and C. Rüb. A guided tour of Chernoff bounds. *Inform. Process. Lett.*, 33:305–308, 1990. [hr-gtcb-90]

6559 T. Hagerup and C. Rüb. Optimal merging and sorting on the erew pram. *Inform. Process. Lett.*, 33:181–185, 1989. [hr-omsep-89]

T. Hagerup. See also [669, 1490, 3274, 4201, 4202, 5372–5374].

R. Haggenmuller. See also [5272].

6560 J. K. Hahn. Realistic animation of rigid bodies. *Comput. Graph.*, 22(4):299–308, 1988. [h-rarb-88]

6561 M. Haiman. A simple and relatively efficient triangulation of the n-cube. *Discrete Comput. Geom.*, 6:287–289, 1991. [h-sretn-91]

6562 Eric Haines. Point in polygon strategies. In Paul Heckbert, editor, *Graphics Gems IV*, pages 24–46. Academic Press, Boston, MA, 1994. [h-pps-94] *Keywords:* computational geometry, inclusion testing, ray-polygon intersection testing. *Annote:* Provides algorithms for testing if a point is inside a polygon, a task known as point inclusion testing in computational geometry. Point-in-polygon testing is a basic task when ray tracing polygonal models, so these methods are useful for 3D as well as 2D graphics. Haines surveys a number of algorithms for point inclusion testing in both convex and concave polygons, with empirical speed tests and practical optimizations. Contains C code.

Eric Haines. See also [5971, 5975].

E. A. Haines. See also [13331].

6563 Reinhard Hainz, Oswin Aichholzer, and Franz Aurenhammer. New results on minimum weight triangulations and the LMT-skeleton. In *Abstracts 13th European Workshop Comput. Geom.*, pages 4–6. Universität Würzburg, 1997. [haa-nrmwt-97]

6564 A. Hajnal, P. Komjáth, L. Soukup, and I. Szalkai. Decompositions of edge colored infinite complete graphs. In *Combinatorics*, volume 52 of *Colloquia Mathematica Societatis János Bolyai*, pages 277–280. 1987. [hkss-decic-87]

P. Hajnal. See also [4707, 4708, 5678, 5679].

6565 G. Häjos. Über eine art von graphen. *Intern. Math. Nachr.*, 11, 1957. Problem 65. [h-ag-57]

D. Haken. See also [1643].

6566 Wolfgang Haken. Recognizing the trivial knot by planar diagrams. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 44–45, 1997. [h-rtkpd-97]

6567 W. Haken. Theorie der Normalflächen: Ein Isotopiekriterium für den Kreisknoten. *Acta Math.*, 105:245–375, 1961. [h-tdnei-61]

W. Haken. See also [719].

6568 S. l. Hakimi. A problem on rectangular floorplans. In *Proc. Int. Sympos. on Circuits and Systems*, pages 1533–1536, 1988. [h-prf-88]

6569 S. Louis Hakimi, Martine Labbé, and Edward Schmeichel. The Voronoi partition of a network and its implications in location theory. *ORSA J. Comput.*, 4(4):412–417, 1992. [hls-vpnil-92] *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

6570 S. L. Hakimi and E. F. Schmeichel. Fitting polygonal functions to a set of points in the plane. *CVGIP: Graph. Models Image Process.*, 53(2):132–136, 1991. [hs-fpfsp-91]

S. L. Hakimi. See also [7810, 9430, 9431, 9438].

6571 Lorenz Halbelsen and Norbert Hungerbühler. On periodic billiard trajectories in obtuse triangles. *SIAM Rev.*, 42(4):657–670, 2000. [hh-opbtot-00]

6572 H. Halberstam and K. F. Roth. Sequences. In *??*, page 90. Springer-Verlag, NY, 1983. [hr-s-83]

6573 W. K. Hale. Frequency assignment: Theory and applications. In *Proc. IEEE*, volume 68, pages 1497–1514, 1980. [h-fata-80]

6574 D. W. Hall and G. Spencer. *Elementary Topology*. John Wiley & Sons, New York, 1955. [hs-et-55]

E. l. Hall. See also [7173].

E. L. Hall. See also [7174].

G. W. C. Hall. See also [3392].

6575 M. Hall and J. Warren. Adaptive polygonalization of implicitly defined surfaces. *IEEE Comput. Graph. Appl.*, 10(6):33–40, 1990. [hw-apids-90] *Annote:* 3D tetrahedronization.

6576 M. Hall, Jr. *Combinatoial Theory*. John Wiley & Sons, 1967. [h-ct-67]

M. M. Halldorsson. See also [451].

Michael T. Hallett. See also [5196].

6577 D. Halperin. *Algorithmic Motion Planning via Arrangements of Curves and of Surfaces*. Ph.D. thesis, Computer Science Department, Tel-Aviv University, Tel Aviv, July 1992. [h-ampac-92] *Keywords:* doctoral thesis.

6578 D. Halperin. Arrangements. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 21, pages 389–412. CRC Press LLC, Boca Raton, FL, 1997. [h-a-97]

6579 D. Halperin. On the complexity of a single cell in certain arrangements of surfaces in 3-space. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 314–323, 1991. [h-cscca-91] *Cites:* aa-cfi-89, ao-ampps-87, as-tsbac-90, as-cocat-91, a-pdpaa-87, c-crmp-87, cegss-cfals-91, cy-olmpm-89, egs-ccmfa-90, gs-caa-90, gss-gmppt-89, hos-empls-88, hs-icbet-90, klps-ujrcf-86, ks-empac-90, ls-esmpa-87, ps-ueplf-89, p-rmmpc-81, pss-stsps-88, ss-nempa-87, ws-prnds-88, ZZZ.

6580 D. Halperin. On the complexity of a single cell in certain arrangements of surfaces related to motion planning. *Discrete Comput. Geom.*, 11:1–34, 1994. [h-cscca-94] *Succeeds:* h-cscca-91.

6581 D. Halperin. Robot motion planning and the single cell problem in arrangements. *Journal of Intelligent and Robotic Systems*, 11:45–65, 1994. [h-rmpsc-94]

6582 D. Halperin, L. E. Kavraki, and J.-C. Latombe. Robotics. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 41, pages 755–778. CRC Press LLC, Boca Raton, FL, 1997. [hkl-r-97]

6583 D. Halperin, J.-C. Latombe, and R. Motwani. Dynamic maintenance of kinematic structures. In J. P. Laumond and M. Overmars, editors, *Robotic Motion and Manipulation*, pages 155–170. A. K. Peters. WAFR 2. [hlm-dmks-97]

6584 D. Halperin, J.-C. Latombe, and R. H. Wilson. A general framework for assembly planning: The motion space approach. unpublished manuscript, 1997. [hlw-gfapm-97]

6585 D. Halperin and M. H. Overmars. Efficient motion planning for an L-shaped object. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 156–166, 1989. [ho-empls-89] *Precedes:* hos-empls-92. *Cites:* abf-pempa-89, as-tsbac-88, ao-ampps-87, c-crmp-87, gss-gmppt-88, ko-lbmlt-87a, ko-cst-88, ks-eapcf-85, ks-empac-90, ls-esmpa-87, lw-apcfp-79, m-mdscg-84, oy-rmpmd-85, o-gdscg-88, ss-nempa-87, ss-pmp1c-83, ZZZ.

6586 D. Halperin and M. H. Overmars. Spheres, molecules, and hidden surface removal. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 113–122, 1994. [ho-smhsr-94] *Cites:* abbkw-pdb-87, bkwmbrkst-pdbcb-77, cegs-sessr-91, cegsw-ccbac-90, c-saspn-83, b-rsdoh-93, dkmmrt-dphul-88, fp-eagcs-93, fo-fdmm-, gs-pmgsc-85, s-hb-70, kos-ehsro-92, klps-ujrcf-86, lr-ipses-71, mmpssw-ftdlm-91, m-ms-90, o-plfs-92, ps-cgi-85, s-atubl-93, sho-cfsrm-93, vb-facrs-93, ZZZ.

6587 D. Halperin, M. H. Overmars, and Micha Sharir. Efficient motion planning for an L-shaped object. Technical Report 418, Courant Institute of Mathematical Science, 1988. [hos-empls-88]

6588 D. Halperin, M. H. Overmars, and Micha Sharir. Efficient motion planning for an L-shaped object. *SIAM J. Comput.*, 21:1–23, 1992. [hos-empls-92] *Succeeds:* ho-empls-89.

6589 D. Halperin and Micha Sharir. A near-quadratic algorithm for planning the motion of a polygon in a polygonal environment. *Discrete Comput. Geom.*, 16:121–134, 1996. [hs-nqapm-96] *Succeeds:* hs-nqbmp-93t.

6590 D. Halperin and Micha Sharir. Almost tight upper bounds for the single cell and zone problems in three dimensions. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 11–20, 1994. [hs-atubs-94] *Precedes:* hs-atubs-95. *Cites:* ass-sulbl-89, ams-sscch-91, aps-zsha-93, as-tsbac-90, as-car-92, as-tmp3s-94, bcr-gar-87, cegss-cfals-93, cs-arscg-89, bgh-vdt3s-94, e-acg-87, egppss-acptc-92, ess-ztha-93, gss-gmppt-89, h-ampac-92, hs-nblet-93, hs-nqbmp-93, hs-ndssg-86, h-ag-77, h-dt-76, m-mnfcp-70, ps-ueplf-89, pr-ncdsp-93, ss-tddsp-90, s-ksacs-91, s-atubl-93, ZZZ.

6591 D. Halperin and Micha Sharir. Almost tight upper bounds for the single cell and zone problems in three dimensions. *Discrete Comput. Geom.*, 14:385–410, 1995. [hs-atubs-95] *Succeeds:* hs-atubs-94.

6592 D. Halperin and Micha Sharir. Arrangements and their applications in robotics: Recent developments. In K. Goldberg, D. Halperin, J.-C. Latombe, and R. Wilson, editors, *Algorithmic Foundations of Robotics*, pages 495–511. A. K. Peters, Wellesley, MA, 1995. [hs-atarr-95]

6593 D. Halperin and Micha Sharir. Corrigendum: On disjoint concave chains in arrangements of (pseudo) lines. *Inform. Process. Lett.*, 51:53–56, 1994. [hs-cdcca-94] *Keywords:* polygonal chains, tight bounds, combinatorial complexity, line arrangements. *Succeeds:* hs-dccap-91.

6594 D. Halperin and M. Sharir. Improved combinatorial bounds and efficient techniques for certain motion planning problems with three degrees of freedom. Technical Report 176/90, Eskenasy Inst. Comput. Sci., Tel-Aviv Univ., Tel-Aviv, Israel, 1990. [hs-icbet-90t]

6595 D. Halperin and M. Sharir. Improved combinatorial bounds and efficient techniques for certain motion planning problems with three degrees of freedom. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 98–101, 1990. [hs-icbet-90] *Precedes:* hs-icbet-92. *Cites:* ao-ampps-87, as-tsbac-90, cegsw-ccbac-90, hos-empls-88, hs-icbet-90t, ZZZ.

6596 D. Halperin and Micha Sharir. Improved combinatorial bounds and efficient techniques for certain motion planning problems with three degrees of freedom. *Comput. Geom. Theory Appl.*, 1(5):269–303, 1992. [hs-icbet-92] *Keywords:* robotics, motion planning, arrangements, configuration space. *Succeeds:* hs-icbet-90.

6597 D. Halperin and Micha Sharir. Near-quadratic bounds for the motion planning problem for a polygon in a polygonal environment. manuscript, 1993. [hs-nqbmp-93t] *Precedes:* hs-nqbmp-93, hs-nqapm-96.

6598 D. Halperin and Micha Sharir. Near-quadratic bounds for the motion planning problem for a polygon in a polygonal environment. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 382–391, 1993. [hs-nqbmp-93] *Succeeds:* hs-nqbmp-93t.

6599 D. Halperin and Micha Sharir. New bounds for lower envelopes in three dimensions, with applications to visibility in terrains. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 11–18, 1993. [hs-nblet-93] *Cites:* ass-sulbl-89, bhok-sanvp-92, cegs-sessr-89, cegs-lscaa-89, cegsw-ccbac-90, cs-arscg-89, cs-vppt-89, h-ampac-92, hs-nqbmp-93, hs-ndssg-86, ps-ueplf-89, p-lmps3-93, ss-tddsp-90, s-ksacs-91, s-atubl-93, sa-dsstg-95, ZZZ.

6600 D. Halperin and Micha Sharir. New bounds for lower envelopes in three dimensions, with applications to visibility in terrains. *Discrete Comput. Geom.*, 12:313–326, 1994. [hs-nblet-94] *Succeeds:* hs-nblet-93.

6601 D. Halperin and Micha Sharir. On disjoint concave chains in arrangements of (pseudo) lines. *Inform. Process. Lett.*, 40(4):189–192, 1991. [hs-dccap-91] *Keywords:* polygonal chains, tight bounds, combinatorial complexity, line arrangements. *Precedes:* hs-cdcca-94.

6602 D. Halperin and M. Sharir. On the complexity of a single cell in an arrangement of surfaces in 3 dimensions. in preparation. [hs-cscas]

6603 Dan Halperin, Micha Sharir, and Ken Goldberg. The 2-center problem with obstacles. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 80–90, 2000. [hsg-tcpo-00]

6604 D. Halperin and C. Shelton. A perturbation scheme for spherical arrangements with application to molecular modeling. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 183–192, 1997. [hs-pssaa-97] *Cites:* bmb-pmmca-94, c-amsc-83, c-msr-96, e-acg-87, em-sstcd-90, fhklmsv-gmfl-96, fklmsvy-rrpid-97, f-riga-96i, fv-sayee-96, g-imap-95, gy-frcg-86, gs-pmgsc-85, ho-smhsr-94, h-gsm-89, h-pargc-89, m-ms-90, m-vigau-88a, ps-cgi-85, sos-frcms-95, s-rafpg-96, s-fprgo-89, si-tdpga-89, vbw-csms-94, yd-ecp-95, ZZZ.

6605 Dan Halperin and Christian R. Shelton. A perturbation scheme for spherical arrangements with application to molecular modeling. *Comput. Geom. Theory Appl.*, 10:273–287, 1998. [hs-pssaa-98] *Succeeds:* hs-pssaa-97.

6606 D. Halperin and R. H. Wilson. Assembly partitioning along simple paths: the case of multiple translations. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1585–1592, 1995. [hw-apasp-95] *Keywords:* robotics, assembly planning, separability, arrangements.

6607 D. Halperin and R. H. Wilson. Assembly partitioning along simple paths: the case of multiple translations. *Advanced Robotics*, 11:127–145, 1997. [hw-apasp-97]

6608 D. Halperin and C.-K. Yap. Combinatorial complexity of translating a box in polyhedral 3-space. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 29–37, 1993. [hy-cctbp-93] *Cites:* as-car-92, ck-hcmpc-90, gss-gmppt-89, h-ampac-92, hs-ndssg-86, ko-amltd-87, klps-ujrcf-86, ks-empac-90, l-rmp-91, ls-ncfcc-87, ls-pptmc-87, s-eappt-87, s-ampr-89, y-amp-87, ZZZ.

6609 D. Halperin and C.-K. Yap. Combinatorial complexity of translating a box in polyhedral 3-space. *Comput. Geom. Theory Appl.*, 9:181–196, 1998. [hy-cctbp-98]

D. Halperin. See also [156, 335, 773–775, 842, 1705–1713, 2141, 2862, 3422, 5265, 5325, 5326, 6018, 6389–6392, 6666, 10553, 12462–12464].

6610 S. Halperin and U. Zwick. An optimal randomized logarithmic time connectivity algorithm for the erew pram. In *Proc. ACM Sympos. Parallel Algorithms Architect.*, pages 1–10, 1994. [hz-orltc-94]

M. Halstead. See also [7115].

6611 J. H. Halton. On the efficiency of certain quasirandom sequences of points in evaluating multidimensional integrals. *Numer. Math.*, 2:84–90, 1960. [h-ecqsp-60]

6612 J. H. Halton and R. Terada. A fast algorithm for the Euclidean traveling salesman problem, optimal with probability one. *SIAM J. Comput.*, 11:28–46, 1982. [ht-faets-82]

6613 J. H. Halton and R. Terada. An almost surely optimal algorithm for the Euclidean traveling salesman problem. Report 335, Dept. Comput. Sci., Univ. Wisconsin, Madison, WI, 1978. [ht-asoae-78]

J. H. Halton. See also [1543].

6614 Horst W. Hamacher. Geometric methods in location analysis. In *Abstracts 13th European Workshop Comput. Geom.*, page 16. Universität Würzburg, 1997. [h-gmla-97] *Cites:* ZZZ.

6615 Horst W. Hamacher. *Mathematische Lösungsverfahren für planare Standortprobleme.* Verlag Vieweg, Wiesbaden, 1995. [h-mlps-95]

H. W. Hamacher. See also [2593].

6616 B. Hamann. A data reduction scheme for triangulated surfaces. *Comput. Aided Geom. Design*, 11:197–214, 1994. [h-drsts-94]

B. Hamann. See also [5937].

6617 S. Hambrusch and F. Dehne. Determining maximum k-width connectivity on meshes. In *Proc. IEEE Internat. Parallel Process. Sympos.*, 1992. [hd-dmkwc-92]

6618 S. Hambrusch and F. Dehne. Determining maximum k-width-connectivity on meshes. *Comput. Geom. Theory Appl.*, ??:91–105, 1993. [hd-dmkwc-94]

6619 S. Hambrusch and H.-Y. Tu. A framework for 1-D compaction with forbidden region avoidance. *Comput. Geom. Theory Appl.*, 1(4):203–226, 1992. [ht-f1dcf-92] *Keywords:* analysis of algorithms, compaction, forbidden regions, visibility graphs, VLSI layouts.

S. Hambrusch. See also [1040].

6620 Susanne E. Hambrusch and Hung-Yi Tony Tu. New algorithms for minimizing the longest wire length during circuit compaction. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 446–455. Springer-Verlag, 1993. [ht-namlw-93]

S. E. Hambrusch. See also [715, 1041, 3904, 3905, 5544].

W. Hamel. See also [7614].

Y. Hamidoune. See also [4471].

6621 W. R. Hamilton. *Elements of Quaternions.* Chelsea Publishing Cl., N. Y., 1969. [h-eq-69]

6622 G. Hamlin and C. W. Gear. Raster-scan hidden surface algorithm techniques. *Comput. Graph.*, 11(2):206–213, 1977. Proc. SIGGRAPH '77. [hg-rshsa-77]

6623 M. Hammar and Bengt J. Nilsson. Concerning the time bounds of existing shortest watchman route algorithms. In *Proc. 11th International Symposium on Fundamentals of Computation Theory*, volume 1279 of *Lecture Notes Comput. Sci.*, pages 210–221. Springer-Verlag, 1997. [hn-ctbes-97] *Comments:* LU-CS-TR:97-186, LUNDFD6/(NFCS-3119)/1-18/1997. *Annote:* An error was discovered in the earlier papers on watchman routes: It turns out that the "adjustment" algorithm that modifies a route in order to achieve the reflection property at essential cuts may in fact take an exponential number of iterations. However, the new adjustment algorithm given here reestablishes the previous claims.

6624 Mikael Hammar, Bengt J. Nilsson, and Sven Schuierer. Parallel searching on m rays. In *Proc. 16th Sympos. Theoret. Aspects Comput. Sci.*, volume 1563 of *Lecture Notes Comput. Sci.*, pages 132–142. Springer-Verlag, 1999. [hns-psmr-99] *Succeeds:* ikl-ocsws-98.

6625 M. Hammar, B. J. Nilsson, and S. Schuierer. Parallel searching on m rays. *Comput. Geom. Theory Appl.*, 18:125–139, 2001. [hns-psmr-01]

J. Hammer. See also [4990].

6626 P. C. Hammer. Extended topology: Domain finiteness. *Indagationes Mathematicae*, 25:200–212, 1963. [h-etdf-63]

6627 P. C. Hammer. Problem 2. In *Proc. Sympos. Pure Math. vol VII*, pages 498–499. Amer. Math. Soc., 1963. [h-p2-63]

P. L. Hammer. See also [2281, 2282].

6628 R. Hammer, M. Hocks, U. Kulisch, and D. Ratz. *C++ Toolbox for Verified Computing.* Springer, 1995. [hhkr-ctvc-95]

J. M. Hammersley. See also [1543].

6629 S. Hammond and R. Schreiber. Solving unstructured grid problems on massively parallel computers. Technical Report 90.22, Research Institute for Advanced Computer Science, 1990. [hs-sugpm-90]

6630 F. R. Hampel, E. M. Ronchetti, P. J. Rousseeuw, and W. A. Stahel. *Robust Statistics: The Approach Based on Influence Functions.* John Wiley & Sons, New York, 1986. [hrrs-rsabi-86]

C. Y. Han. See also [3236].

J. Han. See also [10120].

6631 Kyung-Ah Han and Sung-Hyun Myaeng. Image organization and retrieval with automatically constructed feature vectors. In Hans-Peter Frei, Donna Harman, Peter Schäuble, and Ross Wilkinson, editors, *Proc. 16th Annu. Internat. ACM SIGIR Conf. Research and Develop. in Inform. Retrieval*, pages 157–165, New York, August 1996. ACM Press. [hm-iorac-96]

6632 T. Han and K. Kobayashi. *Mathematical Information and Code.* Iwanami Publisher, Japan, 1994. In Japanese. [hk-mic-94]

X. Han. See also [2642].

Y. Han. See also [3064–3067].

6633 M. Hanan. On Steiner's problem with rectilinear distance. *SIAM J. Appl. Math.*, 14:255–265, 1966. [h-sprd-66]

H. Hanani. See also [1178].

6634 H. Hancock. *Elliptic Integrals.* Dover Publications, New York, NY, 1917. [h-ei-17]

6635 Thomas R. Hancock. Learning decision trees on the uniform distribution. In *Proc. 6th ACM Conf. Comput. Learning Theory*, page ??, July 1993. [h-ldtud-93]

D. Handke. See also [2393].

6636 G. Y. Handler and P. B. Mirchandani. *Location of networks: Theory and algorithms.* MIT Press, Cambridge, MA, 1979. [hm-lnta-79]

6637 C. C. Handley. Efficient planar convex hull algorithm. *Image Vision Comput.*, 3:29–35, 1985. [h-epcha-85]

M. Handy. See also [6171, 6172].

K. Hanes. See also [1770].

V. N. Hanh. See also [2578].

6638 Sabine Hanke, Thomas Ottmann, and Sven Schuierer. The edge-flipping distance of triangulations. In *Abstracts 12th European Workshop Comput. Geom.*, pages 15–18. Universität Münster, 1996. [hos-efdt-96]

Iddo Hanniel. See also [5326].

6639 P. Hanrahan. A homogeneous geometry calculator. Technical Memo 3D-7, Comput. Graph. Lab., New York Inst. Tech., New York, NY, 1984. [h-hgc-84]

6640 P. Hanrahan. A survey of ray-surface intersection algorithms. In A. Glassner, editor, *An introduction to ray tracing.* Academic Press, 1989. [h-srsia-89]

6641 P. Hanrahan. Creating volume models from edge-vertex graphs. *Comput. Graph.*, 16(3):77–84, 1982. Proc. SIGGRAPH '82. [h-cvmev-82]

6642 P. Hanrahan. *Topological Shape Models.* PhD thesis, University of Wisconsin, Madison, WI, 1985. [h-tsm-85] *Keywords:* doctoral thesis.

6643 P. Hanrahan, D. Salzman, and L. Aupperle. A rapid hierarchical radiosity algorithm. *Comput. Graph.*, 25(4):197–206, 1991. Proc. SIGGRAPH '91. [hsa-rhra-91]

P. Hanrahan. See also [3736, 5975, 6760, 9331, 10757, 11798, 12855].

6644 A. Hansen and F. Arbab. An algorithm for generating NC tool paths for arbitrarily shaped pockets with islands. *ACM Trans. Graph.*, 11(2):152–182, April 1992. [ha-agntp-92]

6645 A. B. Hansen. *Tool Positioning and Path Generation Algorithms for Computer-Aided Manufacturing.* PhD thesis, CS Dept., U. of Southern California, Los Angeles, CA 90089, USA, 1989. [h-tppga-89] *Keywords:* doctoral thesis.

6646 A. B. Hansen and F. Arbab. An algorithm for generating NC tool paths for arbitrarily shaped pockets with islands. Technical Report CS 88-51, CS Dept., U. of Southern California, Los Angeles, CA 90089, USA, 1989. [ha-agntp-89]

6647 A. J. Hansen and P. L. Levin. On conforming Delaunay mesh generation. *Adv. Eng. Softw.*, 14(2):129–135, 1992. [hl-cdmg-92]

B. J. Hansen. See also [12254].

D. L. Hansen. See also [12277]

M. Hansen. See also [290].

6648 M. D. Hansen. Approximation algorithms for geometric embeddings in the plane with applications to parallel processing problems. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 604–609, 1989. [h-aagep-89]

6649 P. Hansen. Bicriteria path problems. In *Multiple Criteria Decision Making: Theory and Applications*, volume 177 of *Lecture Notes in Economics and Mathematical Systems*, pages 109–127. Springer, Heidelberg, 1980. [h-bpp-80]

6650 P. Hansen and B. Jaumard. Maximum sum of splits clustering. Technical Report, RUTCOR, Ruters University, New Brunswick, New Jersey, March 1988. [hj-mssc-88]

6651 P. Hansen, D. Peeters, and J. F. Thisse. Some localization theorems for a constrained Weber problem. *Journal of Regional Science*, 21:103–115, 1981. [hpt-sltcw-81]

P. Hansen. See also [3079, 13242].

6652 Dianne Hansford. The neutral case for the min-max triangulation. *Comput. Aided Geom. Design*, 7:431–438, 1990. [h-ncmmt-90] *Annote:* Constructs contour for the minimize maximum angle criterion.

W. Hansmann. See also [9841].

6653 Andrew J. Hanson. Geometry for N-dimensional graphics. In Paul Heckbert, editor, *Graphics Gems IV*, pages 149–170. Academic Press, Boston, MA, 1994. [h-gndg-94] *Keywords:* geometry, hyperplane, determinant, Levi-Civita, volume. *Annote:* A tutorial on n-dimensional geometry. Hanson generalizes a number of familiar concepts, such as plane equations, clipping, volume, and rotation, to n-D.

E. Hanson. See also [12546, 12916].

6654 E. N. Hanson. The interval skip list: a data structure for finding all intervals that overlap a point. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 153–164. Springer-Verlag, 1991. [h-islds-91] *Keywords:* data structuring.

K. Hanson. See also [9112].

L. V. Hao. See also [9317].

6655 Sariel Har-Peled. An output sensitive algorithm for discrete convex hulls. *Comput. Geom. Theory Appl.*, 10:125–138, 1998. [h-osadc-98]

6656 S. Har-Peled. Approximate shortest paths and geodesic diameters on convex polytopes in three dimensions. *Discrete Comput. Geom.*, ??(??):to appear, ?? [h-aspgd-??a] *Succeeds:* h-aspgd-97i.

6657 S. Har-Peled. Approximate shortest paths and geodesic diameters on convex polytopes in three dimensions. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 359–365, 1997. [h-aspgd-97i] *Precedes:* h-aspgd-??a. *Cites:* aaos-supa-97, ahsv-aspcp-96, ch-spp-96, c-aaspm-87, cr-nlbtr-87, csy-aesp3-94, dk-ladsc-85, dk-dsppu-90, h-caspm-97, hs-pmasp-95, mmp-dgp-87, p-aspmt-85, p-egcs-73, rs-seubf-94, s-spacp-87, ss-spps-86, va-aspp-96, ZZZ.

6658 Sariel Har-Peled. Constructing approximate shortest path maps in three dimensions. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 383–391, 1998. [h-caspm-98] *Keywords:* shortest paths, approximation algorithms, polyhedral obstacles.

6659 S. Har-Peled. Constructing approximate shortest path maps in three dimensions. *SIAM J. Comput.*, 28:1182–1197, 1999. [h-caspm-99] *Succeeds:* h-caspm-98.

6660 S. Har-Peled. Constructing approximate shortest paths maps in three dimensions. Manuscript, ??, 1997. [h-caspm-97]

6661 S. Har-Peled. Constructing cuttings in theory and practice. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 327–334, 1998. [h-cctp-98] *Keywords:* cuttings.

6662 S. Har-Peled. Constructing planar cuttings in theory and practice. *SIAM J. Comput.*, 29:2016–2039, 2000. [h-cpctp-00]

6663 S. Har-Peled. Taking a walk in a planar arrangement. In *Proc. 40th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 100–110, 1999. [h-twpa-99]

6664 S. Har-Peled. Taking a walk in a planar arrangement. *SIAM J. Comput.*, 30:1341–1367, 2000. [h-twpa-00]

6665 S. Har-Peled. The complexity of many cells in the overlay of many arrangements. M.S. thesis, Dept. Computer Science, Tel Aviv University, Tel Aviv, Israel, 1995. [h-cmco-95] *Keywords:* master thesis.

6666 Sariel Har-Peled, Timothy M. Chan, Boris Aronov, Dan Halperin, and Jack Snoeyink. The complexity of a single face of a Minkowski sum. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 91–96, 1995. [hcahs-csfms-95]

6667 S. Har-Peled and P. Indyk. When crossings count: Approximating the minimum spanning tree. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, 2000. 166–175. [hi-wccam-00]

6668 S. Har-Peled and M. Sharir. Online point location in planar arrangements and its applications. *Discrete Comput. Geom.*, 26:19–40, 2001. [hs-oplpa-01]

6669 Sariel Har-Peled, Micha Sharir, and Kasturi R. Varadarajan. Approximate shortest paths on a convex polytope in three dimensions. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 329–338, 1996. [hsv-aspcp-96] *Cites:* a-lbvsc-63, b-acspp-85, bs-spbtc-88, bv-nclp-92, cr-nlbtr-87, ch-spp-90, c-aaspm-87, dk-ladsc-85, e-acg-87, hs-pmasp-95, mmp-dgp-87, p-aspmt-85, p-egcs-73, ps-cgi-85, rs-seubf-94, s-spacp-87, ss-spps-86, ZZZ.

Sariel Har-Peled. See also [137, 179, 182–184, 687, 1412, 4803].

6670 Y. Hara, A. Keller, P. Rathmann, and G. Wiederhold. Implementing hypertext database relationships through aggregations and exceptions. Technical Report STAN-CS-91-1381, Stanford University, 1981. [hkrw-ihdrt-81] *Keywords:* graph drawing.

J. Haralambides. See also [5372–5374].

6671 R. M. Haralick and L. G. Shapiro. Decomposition of polygonal shapes by clustering. In *Proc. IEEE Internat. Conf. Pattern Recogn. Image Process.*, pages 183–190, 1977. [hs-dpsc-77]

R. M. Haralick. See also [5886, 12038].

6672 F. Harary. *Graph Theory*. Addison-Wesley, Reading, Mass., 1969. [h-gt-69] *Keywords:* graph drawing. *Precedes:* h-gt-72.

6673 F. Harary. *Graph Theory*. Addison-Wesley, Reading, MA, 1972. [h-gt-72] *Succeeds:* h-gt-69.

6674 F. Haray and W. T. Tutte. On the order of the group of a planar map. *J. Combin.Theory*, 1:394–395, 1966. [ht-ogpm-66]

6675 H. Harborth. Konvexe Fünfecke in ebenen Punktmengen. *Elem. Math.*, 33:116–118, 1979. [h-kfiep-78] *Cites:* ar-clecs-85.

6676 H. Harborth. Solution to problem 664A. *Elemente der Mathematik*, 29:14–15, 1974. [h-sp664-74] *Keywords:* combinatorial geometry, proximity.

6677 H. Harborth and I. Mengersen. Edges without crossings in drawings of complete graphs. *J. Combin. Theory Ser. B*, 17(3):229–311, 1974. [hm-ewcdc-74] *Keywords:* graph drawing.

6678 R. H. Hardin and N. J. A. Sloane. A new approach to the construction of optimal designs. *J. Statistical Planning and Inference*, 37:339–369, 1993. Also DIMACS Technical Report 93-47, August 1993. [hs-nacod-93]

R. H. Hardin. See also [3513].

J. C. Hardwick. See also [2077, 2081].

6679 G. Hardy, J. E. Littlewood, and G. Pólya. *Inequalities*. Cambridge University Press, 2nd edition, 1952. [hlp-i-52] *Precedes:* hlp-i-64.

6680 G. Hardy, J. E. Littlewood, and G. Pólya. *Inequalities*. Cambridge University Press, 1st edition, 1967. [hlp-i-64] *Succeeds:* hlp-i-52.

6681 G. Hardy and E. Wright. *The Theory of Numbers*. Oxford University Press, London, England, 4th edition, 1965. [hw-tn-65]

6682 G. H. Hardy and E. M. Wright. *An Introduction to the Theory of Numbers*. Oxford University Press, New York, 1968. [hw-itn-68] *Precedes:* hw-itn-79.

6683 G. H. Hardy and E. M. Wright. *An Introduction to the Theory of Numbers*. Oxford Science Publications, 1979. [hw-itn-79] *Succeeds:* hw-itn-68.

D. E. G. Hare. See also [3545].

6684 W. R. Hare and J. W. Kenelly. Characterizations of radon partitions. *Pacific J. Math.*, 36:159–164, 1971. [hk-crp-71]

6685 D. Harel. A linear time algorithm for the lowest common ancestors problem. In *Proc. 21st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 308–319, 1980. [h-ltalc-80] *Precedes:* ht-fafnc-84.

6686 D. Harel. Effective transformations on infinite, with applications to high undecidability, dominoes and fairness. *J. ACM*, 33:224–248, 1986. [h-etiah-86]

6687 D. Harel. On visual formalisms. *Commun. ACM*, 31(5):514–530, 1988. [h-vf-88] *Keywords:* graph drawing.

6688 D. Harel and M. Sardas. Randomized graph drawing with heavy-duty preprocessing. *J. Visual Lang. Comput.*, 6(3):233–253, 1995. (special issue on Graph Visualization, edited by I. F. Cruz and P. Eades). [hs-rgdhd-95] *Keywords:* graph drawing, physical simulation, planarization.

6689 D. Harel and R. E. Tarjan. Fast algorithms for finding nearest common ancestors. *SIAM J. Comput.*, 13(2):338–355, 1984. [ht-fafnc-84] *Succeeds:* h-ltalc-80.

D. Harel. See also [399, 3814, 3815].

John Harer. See also [1810, 4709].

6690 V. Harinarayan, A. Rajaraman, and J. D. Ullman. Implementing data cubes efficiently. In *Proc. 13th IEEE Internat. Conf. Data Eng.*, pages 208–219, 1997. [hru-idce-96]

V. Harinarayan. See also [6452].

G. Haring. See also [4710].

J. Harper. See also [6255].

6691 L. H. Harper, T. H. Payne, J. E. Savage, and E. Strauss. Sorting $x + y$ in $o(n^2)$ comparisons. *Commun. ACM*, 18(6):347–349, 1975. [hpss-sxoc-75]

L. Harrington. See also [10624].

6692 B. Harris. A fast algorithm for finding the convex hull of a set of points in the plane. Internal Report, School Public Urban Policy, Univ. Pennsylvania, Philadelphia, PA, 1978. [h-fafch-78]

6693 J. Harris. *Algebraic Geometry (A First Course)*. Springer-Verlag, Berlin, Germany, 1992. [h-agfc-92]

P. M. Harris. See also [3574].

David Hart. See also [4961].

G. W. Hart. See also [3961, 3962].

6694 John C. Hart. Distance to an ellipsoid. In Paul Heckbert, editor, *Graphics Gems IV*, pages 113–119. Academic Press, Boston, MA, 1994. [h-de-94] *Keywords:* ray tracing, ellipse. *Annote:* Gives the formulas necessary to find the distance from a point to an ellipsoid, or from a point to an ellipse. These formulas can be useful for geometric modeling or for ray tracing.

6695 J. M. Hart. Optimal two dimensional range queries using binary range lists. Report 76-81, Dept. Comput. Sci., Univ. Kentucky, Lexington, KY, 1981. [h-otdrq-81]

6696 J. M. Hart. Permutation inversions and multidimensional cumulative distribution functions. *Inform. Process. Lett.*, 14:218–222, 1982. [h-pimcd-82]

6697 P. E. Hart. The condensed nearest neighbor rule. *IEEE Trans. Inform. Theory*, ??:515–516, 1968. [h-cnnr-68]

6698 P. E. Hart, N. J. Nilsson, and B. Raphael. A formal basis for the heuristic determination of minimum cost paths. *IEEE Trans. Syst. Sci. Cybern.*, SCC-4(2):100–107, 1968. [hnr-fbhdm-68]

P. E. Hart. See also [3570, 4472, 4473].

6699 S. Hart and Micha Sharir. Nonlinearity of Davenport-Schinzel sequences and of generalized path compression schemes. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 313–319, 1984. [hs-ndssg-84] *Precedes:* hs-ndssg-86.

6700 S. Hart and Micha Sharir. Nonlinearity of Davenport-Schinzel sequences and of generalized path compression schemes. *Combinatorica*, 6:151–177, 1986. [hs-ndssg-86] *Keywords:* Davenport-Schinzel sequences. *Succeeds:* hs-ndssg-84.

6701 A. C. Harter. *Three-dimensional integrated circuit layout*. Cambridge University Press, New York, NY, 1991. [h-tdicl-91]

6702 J. A. Hartigan. *Clustering Algorithms*. John Wiley & Sons, New York, 1975. [h-ca-75]

I. Hartman. See also [4740].

M. Hartman. See also [3520].

W. E. Hartnett. See also [2649].

6703 R. Hartshorne. *Algebraic Geometry*, volume 52 of *Graduate texts in Mathematics*. Springer-Verlag, New York, 1977. [h-ag-77]

6704 D. Hartvigsen. Recognizing Voronoi diagrams with linear programming. *ORSA J. Comput.*, 4(4):369–374, 1992. [h-rvdlp-92] *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

6705 M. Hasan, D. Vista, and A. Mendelzon. Visual Web surfing with HY+. In *Proc. CASCON'95*, 1995. Available from http://www.db.toronto.edu:8020/. [hvm-vwsh-95] *URL:* http://www.db.toronto.edu:8020/. *Keywords:* graph drawing, system.

M. Z. Hasan. See also [3510].

N. Hasan. See also [4711].

M. Hasegawa. See also [12795].

6706 Susumu Hasegawa, Hiroshi Imai, Mary Inaba, Naoki Katoh, and Jun Nakano. Efficient algorithms for variance-based k-clustering. In *Proc. First Pacific Conf. Computer Graphics Appl., Seoul, Korea, vol. 1*, volume 1, pages 75–89. World Scientific Publishing Co., 1993. [hiikn-eavbk-93] *Keywords:* clustering, proximity, computer graphics, Voronoi diagram, kth order Voronoi diagram, d-dimensional.

6707 S. Hasegawa, H. Imai, and M. Ishiguro. ε-approximations of k-label spaces. In *Proc. 4th Internat. Workshop in Algorithmic Learning Theory*, volume 744 of *Lecture Notes in Artificial Intelligence*, pages 288–299, 1993. [hii-eakls-93]

S. Hasegawa. See also [450, 7374].

T. Hasegawa. See also [9241].

6708 A. Hasham and J.-R. Sack. A note on lower bounds for min-max heaps. In *Proc. 24th Allerton Conf. Commun. Control Comput.*, pages 306–307, 1986. [hs-nlbmm-86]

6709 S. M. Hashemi and I. Rival. Upward drawings to fit surfaces. In *Proc. Workshop on Orders, Algorithms and Applications*, volume 831 of *Lecture Notes Comput. Sci.*, pages 53–58. Springer-Verlag, 1994. [hr-udfs-94] *Keywords:* graph drawing, 3D, upward.

B. G. Haskell. See also [10106].

6710 Joel Hass, Jack Snoeyink, and William P. Thurston. Using train tracks to show that a trivial knot may require exponential-size spanning disks. In *Abstracts 15th European Workshop Comput. Geom.*, pages 59–61. INRIA Sophia-Antipolis, 1999. [hst-uttst-99]

J. Hass. See also [1810].

A. Hassenklover. See also [3906–3908].

A.-L. Hassenklover. See also [3909].

6711 R. Hassin and N. Megiddo. An optimal algorithm for finding all the jumps of a monotone step-function. *J. Algorithms*, 6:265–274, 1985. [hm-oafaj-85] *Keywords:* design of algorithms, binary search, worst-case analysis, prune-and-search, points, lines, two-dimensional.

6712 R. Hassin and N. Megiddo. Approximation algorithms for hitting objects by straight lines. Technical Report, Tel Aviv Univ., Tel Aviv, Israel, May 1988. [hm-aahos-88]

6713 R. Hassin and N. Megiddo. Approximation algorithms for hitting objects by straight lines. *Discrete Appl. Math.*, 30:29–42, 1991. [hm-aahos-91] *Keywords:* NP-Completeness, stabbing, approximation.

6714 R. Hassin and S. Rubinstein. An approximation algorithm for the maximum traveling salesman problem. Manuscript, submitted, Tel Aviv University, Tel Aviv, Israel, 1997. [hr-aamts-97] *Annote:* Finds and fixes result of S.R. Kosaraju, J.K. Park, C. Stein.

R. Hassin. See also [776–778, 1612].

J. Hastad. See also [1540, 1541].

6715 T. Hastie and R. Tibshirani. Discriminant adaptive nearest neighbor classification. *IEEE Trans. Pattern Anal. Mach. Intell.*, 18:607–616, 1996. [ht-dannc-96]

T. Hastie. See also [8103].

6716 S. Haswgawa. A study on ε-net and ε-approximation. Master's thesis, Dept. Inform. Sci., Univ. Tokyo, Tokyo, Japan, 1993. [h-senea-93] *Keywords:* master thesis.

6717 Allan Hatcher. *Algebraic Topology*. Cambridge University Press, 2001. [h-at-01] *URL:* http://www.math.cornell.edu/~hatcher/.

K. Hauck. See also [4434, 7525, 7526].

V. Hauk. See also [79].

Peter Haunold. See also [5458].

6718 F. Hausdorff. *Mengenlehre*. De-Gruyter, Berlin, Germany, 3rd edition, 1935. [h-m-35]

6719 J. Hauser and C. Taylor, editors. *Numerical Grid Generation in Computational Fluid Dynamics*, Swansea, UK, 1986. Pineridge Press. [ht-nggcf-86]

J. Hauser. See also [11490].

6720 Alejo Hausner and David P. Dobkin. Making geometry visible: An introduction to the animation of geometric algorithms. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, chapter 8, pages 389–423. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [hd-mgvia-00] *Keywords:* algorithm animation, visualization. *Annote:* Chapter 8 of su-hcg-00.

6721 M. Hausner. *A Vector Space Approach to Geometry*. Prentice Hall, 1965. [h-vsag-65]

6722 D. Haussler. Sphere packing numbers for subsets of the Boolean n-cube with bounded Vapnik-Chervonenkis dimension. Tech. Report UCSC-CRL-91-41, University of California at Santa Cruz, 1991. [h-spnsb-91] *Keywords:* Vapnik-Chervonenkis dimension, range spaces. *Comments:* related to spanning trees with small crossing number.

6723 D. Haussler and Emo Welzl. Epsilon-nets and simplex range queries. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 61–71, 1986. [hw-ensrq-86] *Precedes:* hw-ensrq-87. *Cites:* cgl-pgd-83, cgl-pgd-83, c-papop-85, c-pps4d-85, de-opstt-84, dey-3spa-84, d-cltem-78, ew-hrsls-86, eh-dsptt-84, g-cp-67, vc-ucrfe-71, wd-ssvcc-81, w-pr-82, y-3spia-83, yy-gaddg-85, ZZZ.

6724 D. Haussler and Emo Welzl. Epsilon-nets and simplex range queries. *Discrete Comput. Geom.*, 2:127–151, 1987. [hw-ensrq-87] *Keywords:* combinatorial geometry, probabilistic geometry, probability theory, reporting, counting, half spaces, simplices, d-dimensional. *Succeeds:* hw-ensrq-86.

D. Haussler. See also [538, 1525, 2113, 2114, 4712].

T. Havel. See also [3614].

T. F. Havel. See also [3594, 3615].

6725 W. Haverdings. Use of the BRL-CAD package in the construction of a geometric model of the General Dynamics F-16A Air Combat Fighter for vulnerability assessments. In *Proc. BRL-CAD Symposium '89*, pages 170–193, Aberdeen Proving Ground, MD, 1989. American Defense Preparadness Assoc. [h-ubcpc-89]

M. Hawrylycz. See also [291].

K. Hayase. See also [10285].

K. Hayashi. See also [10029].

Barry Hayes. See also [1791, 1821].

D. R. Haynor. See also [11708].

6726 R. Hayward. A note on the circle containment problem. *Discrete Comput. Geom.*, 4:263–264, 1989. [h-nccp-89]

6727 R. Hayward, D. Rappaport, and R. Wenger. Some extremal results on circles containing points. *Discrete Comput. Geom.*, 4:253–258, 1989. [hrw-sercc-89]

6728 R. B. Hayward. A lower bound for the optimal crossing-free Hamiltonian cycle problem. *Discrete Comput. Geom.*, 2:327–343, 1987. [h-lbocf-87]

6729 R. B. Hayward. Weakly triangulated graphs. *J. Combin. Theory Ser. B*, 39:200–209, 1985. [h-wtg-85]

6730 R. B. Hayward, C. Hoang, and F. Maffrey. Optimizing weakly triangulated graphs. Manuscript, ??, 1987. [hhm-owtg-87]

6731 R. B. Hayward and P. Kearney. Investigating NeST graphs. Technical Report TR-CS-04-93, U. Lethbridge, 1993. [hk-ing-93]

6732 R. B. Hayward and P. Kearney. Tolerance-free NeST representations. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 275–280, 1994. [hk-tfnr-94] *Cites:* bc-tpg-84, bd-nstg-93, bilf-putg-91, g-igsec-74, g-agtpg-80, gm-gigt-82, gmt-tg-84, gls-papg, h-ag-57, h-wtg-85, hk-ing-93, k-nr-, mrt-ttg-88, r-ig-69, t-cbmal-83, bm-gta-76, ZZZ.

6733 V. Hayward, S. Aubry, A. Foisy, and Y. Ghallab. Efficient collision prediction among many moving objects. *Internat. J. Robot. Res.*, 14(2):129–143, 1995. [hafg-ecpmm-95]

6734 C. Hazelwood. *A Divide and Conquer Approach to D-dimensional Triangulations.* PhD thesis, Department of Computer Science, University of Texas at Austin, 1988. [h-dcadd-88] *Keywords:* doctoral thesis. *Annote:* Contains Pascal code for algorithms.

6735 C. Hazlewood. Approximating constrained tetrahedrizations. *Comput. Aided Geom. Design*, 10(1):67–87, June 1993. [h-act-93]

Q. He. See also [6357].

6736 T. He and A. Kaufman. Collision detection for volumetric models. In *Proc. IEEE Visualization*, page ??, 1997. [hk-cdvm-97]

6737 Weiqing He and Kim Marriott. Constrained graph layout. In Stephen North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 217–232. Springer-Verlag, 1997. [hm-cgl-97] *Keywords:* graph drawing, constraints.

6738 Xin He. An efficient parallel algorithm for finding minimum weight matching for points on a convex polygon. *Inform. Process. Lett.*, 37(2):111–116, 1991. [h-epafm-91]

6739 X. He. On finding the rectangular duals of planar triangulated graphs. Technical Report 90-24, Department of Computer Science, University of Buffalo, 1990. [h-frdpt-90] *Keywords:* graph drawing.

6740 Xin He and Ming-Yang Kao. Parallel construction of canonical ordering and convex drawing of triconnected planar graphs. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 303–312. Springer-Verlag, 1993. [hk-pccoc-93]

6741 X. He and M.-Y. Kao. Regular edge labelings and drawings of planar graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 96–103. Springer-Verlag, 1995. [hk-reldp-95] *Keywords:* graph drawing, planar, straight-line, visibility, survey.

X. He. See also [5681,7746,7747,7760].

6742 Patrick Healy. An $O(n)$-time rectangle placement algorithm. In *Abstracts 10th European Workshop Comput. Geom.*, pages 33–37. Universidad de Cantabria, Santander, 1994. [h-otrpa-94]

6743 D. Hearn and M. P. Baker. *Computer Graphics.* Prentice Hall, 1986. [hb-cg-86]

D. Hearn. See also [4887,4888].

D. W. Hearn. See also [4889].

6744 M. A. Hearst and J. O. Pedersen. Reexamining the cluster hypothesis: Scatter/gather on retrieval results. In Hans-Peter Frei, Donna Harman, Peter Schäuble, and Ross Wilkinson, editors, *Proc. 16th Annu. Internat. ACM SIGIR Conf. Research and Develop. in Inform. Retrieval*, pages 76–84, New York, August 1996. ACM Press. [hp-rchsg-96]

6745 D. Heath and S. Kasif. The complexity of finding minimal Voronoi covers with application to machine learning. *Comput. Geom. Theory Appl.*, 3:289–305, 1993. [hk-cfmvc-93]

D. Heath. See also [11553].

6746 L. Heath. Embedding planar graphs in seven pages. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 74–83, 1984. [h-epgsp-84]

6747 L. Heath and S. Pemmaraju. New results for the minimum weight triangulation problem. Technical Report 92-30, Dept. Comput. Sci., Virginia Politechnic Inst. and State Univ., 1992. [hp-nrmwt-92]

6748 L. Heath and S. Pemmaraju. New results for the minimum weight triangulation problem. *Algorithmica*, 12:533–552, 1994. [hp-nrmwt-94]

6749 L. S. Heath, P. K. Paripati, and J. W. Roach. Polyhedra: faces are better than vertices. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 191–199, 1990. [hpr-pfabv-90] *Precedes:* hpr-rpfab-93. *Cites:* gt-tgt-87, g-cp-67, h-cvmev-82, m-ism-88, mw-fowf-80, p-prr-89, r-rrstm-80, rwr-sdi3d-86, rpw-csbsd-87, w-ebdss-85, ZZZ.

6750 L. S. Heath, P. K. Paripati, and J. W. Roach. Representing polyhedra: faces are better than vertices. *Comput. Geom. Theory Appl.*, 3:327–351, 1993. [hpr-rpfab-93] *Succeeds:* hpr-pfabv-90.

S. Heath. See also [11554].

K. Heaton. See also [11318].

M. Hebert. See also [5149].

F. Hecht. See also [2284, 2748, 5852, 5853].

M. S. Hecht. See also [5553, 5554].

6751 P. Heckbert. Color image quantization for frame buffer display. Master's thesis, Department of Mathematics, Massachusetts Institute of Technology, 1980. Bachelor's Thesis. [h-ciqfb-80] *Keywords:* master thesis.

6752 P. Heckbert. Color image quantization frame buffer display. *ACM Trans. Comput. Graph.*, 16(3):297–304, 1982. [h-ciqfb-82]

6753 Paul Heckbert. Discontinuity meshing for radiosity. In *3. Eurographics Workshop on Rendering*, pages 203–215, May 1992. [h-dmr-92]

6754 Paul Heckbert, editor. *Graphics Gems IV.* Academic Press, Boston, MA, 1994. comes with either MAC or DOS floppy. [h-gg4-94] *Keywords:* computer graphics, image processing. *Comments:* C code from books in Gems series available in subdirectories of ftp://princeton.edu/pub/Graphics/GraphicsGems.

Paul Heckbert. See also [5975].

6755 Paul S. Heckbert. A minimal ray tracer. In Paul Heckbert, editor, *Graphics Gems IV*, pages 375–381. Academic Press, Boston, MA, 1994. [h-mrt-94] *Keywords:* ray tracing, obfuscation. *Annote:* Answers the question: how short can a ray tracer be? Contains C code.

6756 Paul S. Heckbert. Bilinear Coons patch image warping. In Paul Heckbert, editor, *Graphics Gems IV*, pages 438–446. Academic Press, Boston, MA, 1994. [h-bcpiw-94] *Keywords:* morph, resampling. *Annote:* Presents a fast technique to warp an image according to four boundary curves. This can be used to correct distortions in images, or to introduce them, for special effects purposes. Contains C code.

6757 P. S. Heckbert. Radiosity in flatland. In *Eurographics 92*, pages 181–192, September 1992. [h-rf-92]

6758 P. S. Heckbert. *Simulating Global Illumination Using Adaptive Meshing.* PhD thesis, University of California, Berkeley, CA, January 1991. [h-sgiua-91] *Keywords:* doctoral thesis.

6759 P. S. Heckbert and M. Garland. Fast polygonal approximation of terrains and height fields. Report CMU-CS-95-181, Carnegie Mellon University, 1995. [hg-fpath-95] *Keywords:* surface approximation, mesh simplification, decimiation, terrains.

6760 P. S. Heckbert and P. Hanrahan. Beam tracing polygonal objects. *Comput. Graph.*, 18(3):119–127, 1984. Proc. SIGGRAPH '84. [hh-btpo-84]

P. S. Heckbert. See also [2339, 5798].

H.-D. Hecker. See also [329–333].

6761 R. Heckmann and T. Lengauer. Computing upper and lower bounds on textile nesting problems. In *Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 392–405. Springer-Verlag, 1996. [hl-culbt-96]

6762 S. Heep and H.-P. Kriegel. Effiziente sekundärspeichergeeignete Randdarstellung polygonaler Objekte und ihre algorithmische Bearbeitung. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 11. Universität Siegen, 1990. [hk-esrpo-90]

P. Heffernan. See also [3751–3754, 13048].

6763 P. J. Heffernan. An optimal algorithm for the two-guard problem. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 348–358, 1993. [h-oatgp-93] *Precedes:* h-oatgp-96. *Cites:* at-oadvp-81, c-tsplt-91a, cn-owr-86, c-ctpg-75, et-gpprl-89, f-spcwt-78, ghlst-ltavs-87, h-ltawm-90, ik-tgp-91, ll-ccagp-86, lp-esppr-84, lc-scvps-90, mw-omcpo-90i, o-agta-87, s-vpp-89, ZZZ.

6764 P. J. Heffernan. An optimal algorithm for the two-guard problem. *Internat. J. Comput. Geom. Appl.*, 6:15–44, 1996. [h-oatgp-96] *Succeeds:* h-oatgp-93.

6765 Paul J. Heffernan. Generalized approximate algorithms for point set congruence. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 373–384. Springer-Verlag, 1993. [h-gaaps-93]

6766 P. J. Heffernan. Linear-time algorithms for weakly-monotone polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 236–239, 1990. [h-ltawm-90] *Cites:* c-tsplt-90t, et-gpprl-89, gjpt-tsp-78, hm-svpap-90, kkt-ptots-90i, lp-oafkp-79, ps-tspm-81, t-ocspt-88, ZZZ.

6767 P. J. Heffernan. The translation square map and approximate congruence. *Inform. Process. Lett.*, 39:153–159, 1991. [h-tsmac-91]

6768 P. J. Heffernan. *Topics in computational geometry: point matching and polygonal visibility.* Ph.D. thesis, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, 1991. [h-tcgpm-91] *Keywords:* doctoral thesis.

6769 P. J. Heffernan and Joseph S. B. Mitchell. An optimal algorithm for computing visibility in the plane. Technical Report, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, 1990. [hm-oacvp-90] *Keywords:* visibility. *Precedes:* hm-oacvp-91.

6770 P. J. Heffernan and Joseph S. B. Mitchell. An optimal algorithm for computing visibility in the plane. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 437–448. Springer-Verlag, 1991. [hm-oacvp-91] *Keywords:* visibility, lower envelopes, polygons with holes. *Succeeds:* hm-oacvp-90. *Precedes:* hm-oacvp-95.

6771 P. J. Heffernan and Joseph S. B. Mitchell. An optimal algorithm for computing visibility in the plane. *SIAM J. Comput.*, 24(1):184–201, 1995. [hm-oacvp-95] *Keywords:* visibility, lower envelopes, polygons with holes. *Succeeds:* hm-oacvp-91.

6772 P. J. Heffernan and Joseph S. B. Mitchell. Structured visibility profiles with applications to problems in simple polygons. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 53–62, 1990. [hm-svpap-90] *Cites:* acm-mpoap-89, at-oadvp-81, bt-ladts-86, c-ept-90, cg-vippg-89, e-hdpa-85, ea-lacvp-81, fhs-cmsp-89, gjpt-tsp-78, g-cvpcs-86, gy-fchsp-83, ghlst-ltavs-87, js-clvpa-87, k-osps-83, kkt-ptots-90i, l-vsp-83, ll-cvpe-84, lp-esppr-84, ma-lafch-79, m-olcch-87, ps-rgpcr-86, ps-tspm-81, s-ltaml-86, tv-otats-88, t-ltass-86a, t-stsps-89, t-spsts-85, t-mss-85, ZZZ.

6773 P. J. Heffernan and S. Schirra. Approximate decision algorithms for point set congruence. Report MPI-I-91-110, Max-Planck-Institut Inform., Saarbrücken, Germany, 1991. [hs-adaps-91] *Precedes:* hs-adaps-92.

6774 P. J. Heffernan and S. Schirra. Approximate decision algorithms for point set congruence. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 93–101, 1992. [hs-adaps-92] *Succeeds:* hs-adaps-91. *Precedes:* hs-adaps-94. *Cites:* amww-cssgo-88, akmsw-mpnrc-91, amo-nf-90, amz-apmp-89, b-mbimu-84, b-azede-90, fm-cpgcs-91, gt-namfp-88, gtt-nfa-90, h-tsmac-91, hk-cmhdp-90, hks-uevsi-91, isi-mgftc-89, i-acsdp-90, krt-fdmfa-92, ls-ocmgc-91i, s-udbde-88, s-aaac-90, s-pma-90, ZZZ.

6775 P. J. Heffernan and S. Schirra. Approximate decision algorithms for point set congruence. *Comput. Geom. Theory Appl.*, 4:137–156, 1994. [hs-adaps-94] *Succeeds:* hs-adaps-92.

P. J. Heffernan. See also [3755–3757].

6776 L. Heffter. Über das Problem der Nachbargebiete. *Math. Ann.*, 38:477–508, 1981. [h-udpdn-81]

6777 A. Hegedüs. Algorithms for covering polygons by rectangles. *Comput. Aided Design*, 14, 1982. [h-acpr-82]

Friedhelm Meyer auf der Heide. See also [6280].

6778 W. Heiden, M. Schlenkrich, and J. Brickmann. Triangulation algorithms for the representation of molecular surface properties. *J. Comput. Aided Mol. Des.*, 4:255–269, 1990. [hsb-tarms-90]

6779 W. Heidrich, P. Slusallek, and H.-P. Seidel. Using C++ class libraries from an interpreted language. In *Technology of Object-Oriented Languages and Systems*, pages 397–408, 1994. [hss-uccli-94]

6780 E. Heighway. A mesh generator for automatically subdividing irregular polygons into quadrilaterals. *IEEE Trans. Magn.*, 19(6):2535–2538, 1983. [h-mgasi-83]

6781 E. A. Heighway and C. S. Biddlecombe. Two dimensional automatic triangular mesh generation for the finite element electromagnetic package PE2D. *IEEE Trans. Magn.*, MAG-18:594–598, 1982. [hb-tdatm-82] *Annote:* "Poorness" measure "fractional difference of area of element and equilateral triangle of same perimeter". Nodes are moved to fix this.

6782 Laura Heinrich-Litan. Time-space tradeoffs for exact L_∞ nearest neighbor search in high dimensions. In *Abstracts 17th European Workshop Comput. Geom.*, pages 93–96. Freie Universität Berlin, 2001. [h-tstel-01]

M. Heinrichs. See also [12903].

6783 J. Heintz, T. Reico, and M.-F. Roy. Algorithms in real algebraic geometry and applications to computational geometry. In J. E. Goodman, R. Pollack, and W. Steiger, editors, *Discrete and Computational Geometry: Papers from the DIMACS Special Year*, pages 137–163. American Mathematical Society, Association for Computing Machinery, Providence, RI, 1991. [hrr-araga-91]

6784 J. Heintz, M.-F. Roy, and P. Solernó. Description of the connected components of a semialgebraic set in single exponential time. *Discrete Comput. Geom.*, 11:121–140, 1994. [hrs-dccss-94]

6785 J. Heintz, M.-F. Roy, and P. Solernó. On the complexity of semialgebraic sets. In *Proc. IFIP San Francisco*, pages 293–298, 1989. [hrs-ocss-89]

6786 J. Heintz, M.-F. Roy, and P. Solernó. Single exponential path finding in semialgebraic sets II: The general case. In C. Bajaj, editor, *Algebraic Geometry and its Applications*, pages 467–481. Springer-Verlag, New York, 1993. [hrs-sepfs-93]

J. Heintz. See also [2675, 2677].

6787 G. Heinzinger and B. Paden. Bounds on robot dynamics. In *Proc. IEEE Internat. Conf. Robot. Autom.*, May 1989. [hp-brd-89]

G. Heinzinger. See also [7447, 7448].

6788 J. Heistermann and T. Lengauer. Efficient automatic part nesting on irregular and inhomogeneous surfaces. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 251–259, 1993. [hl-eapni-93] *Keywords:* optimization, CAD, packing.

6789 Martin Held. A fast incremental algorithm for computing the Voronoi diagram of a planar shape. In *Communicating with Virtual Worlds*, pages 318–329, Lausanne, Switzerland, June 1993. Springer-Verlag. [h-fiacv-93]

6790 Martin Held. A geometry-based investigation of the tool path generation for zigzag pocket machining. *Visual Comput.*, 7(5–6):296–308, September 1991. [h-gbitp-91]

6791 Martin Held. Efficient and reliable triangulation of polygons. In *Proc. Comput. Graphics Internat. 1998*, pages 633–643, June 1998. [h-ertp-98]

6792 Martin Held. ERIT – A collection of efficient and reliable intersection tests. Technical Report, University at Stony Brook, 1996. [h-eceri-96] *Annote:* Submitted for publication.

6793 Martin Held. FIST: Fast industrial-strength triangulation of polygons. Technical report, University at Stony Brook, 1998. [h-ffist-98] *Comments:* Submitted for publication.

6794 Martin Held. Geopocket – A sophisticated computational geometry solution of geometrical and technological problems arising from pocket machining. In F. Kimura and A. Rolstadås, editors, *Proc. Computer Applications in Production and Engineering*, pages 283–293. North-Holland, October 1989. [h-gscgs-89]

6795 Martin Held. Incremental generation of Voronoi diagrams of planar shapes. In *Abstracts 9th European Workshop Comput. Geom.*, pages 70–73. FernUniversität Hagen, 1993. [h-igvdp-93]

6796 Martin Held. On computing Voronoi diagrams of convex polyhedra by means of wavefront propagation. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 128–133, 1994. [h-cvdcp-94] *Cites:* a-am3sa-91, c-edt-92, gp-acfsm1-92, gykd-cdma3-91, h-fiacv-93, h-hcsco-90t, l-matps-82, m-rcvdp-93, ns-blss-91, obs-stcav-92, p-nmasp-78, p-masp-77, ps-cgi-90, ZZZ.

6797 Martin Held. *On the Computational Geometry of Pocket Machining*, volume 500 of *Lecture Notes Comput. Sci.* Springer-Verlag, June 1991. [h-cgpm-91] *ISBN:* 3-540-54103-9.

6798 M. Held. Voronoi diagrams and offset curves of curvilinear polygons. *Comput. Aided Design*, 30(4):287–300, April 1998. [h-vdocc-98]

6799 M. Held. Vroni: An engineering approach to the reliable and efficient computation of Voronoi diagrams of points and line segments. *Comput. Geom. Theory Appl.*, 18:95–123, 2001. [h-veare-01]

6800 Martin Held. Zigpocket – on the computational geometry of zigzag pocket machining. In T. S. Chua and T. L. Kunii, editors, *Proc. CG International '90*, pages 281–296. Springer-Verlag, June 1990. [h-zcgzp-90]

6801 M. Held, J. Klosowski, and Joseph S. B. Mitchell. Real-time collision detection for motion simulation within complex environments. In *Proc. ACM SIGGRAPH'96 Visual Proceedings*, page 151, 1996. [hkm-rtcdm-96] *Precedes:* khmsz-ecdubv-98.

6802 Martin Held, James T. Klosowski, and Joseph S. B. Mitchell. Collision detection for fly-throughs in virtual environments. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V13–V14, 1996. [hkm-cdftv-96] *Precedes:* hkm-ecdmv-95. *Cites:* clmp-ecdie-94, gsf-scdp-94, hkm-ecdmv-95, hkm-scgbb-95, hs-parss-93, h-cdiga-95, lm-fidgm-95, mms-qsrs-94, ZZZ.

6803 Martin Held, James T. Klosowski, and Joseph S. B. Mitchell. Evaluation of collision detection methods for virtual reality fly-throughs. Technical report, Department of Applied Mathematics, SUNY Stony Brook, NY, 1994. [hkm-ecdmv-94] *Keywords:* mesh generation, stabbing number, BSP, R-star trees, R-tree. *Precedes:* hkm-ecdmv-95.

6804 Martin Held, James T. Klosowski, and Joseph S. B. Mitchell. Evaluation of collision detection methods for virtual reality fly-throughs. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 205–210, 1995. [hkm-ecdmv-95] *Keywords:* mesh generation, stabbing number, BSP, R-star trees, R-tree. *Succeeds:* hkm-ecdmv-94.

6805 Martin Held, J. T. Klosowski, and Joseph S. B. Mitchell. Speed comparison of generalized bounding boxes. ??, 1995. [hkm-scgbb-95]

6806 Martin Held, G. Lukács, and L. Andor. Pocket machining based on contour-parallel tool paths generated by means of proximity maps. *Comput. Aided Design*, 26(3):189–203, March 1994. [hla-pmbcp-94]

Martin Held. See also [763, 764, 779–787, 1072, 8199, 13724].

6807 T. Helgason et al. On shortest k-edge connected Steiner networks with rectilinear distance. In Ding-Zhu Du and Panos M. Pardalos, editors, *Minmax and Applications*, Nonconvex Optimization and Applications. 1995. [h??-skcsn-95] *Keywords:* optimization, Steiner tree, L_1 metrics.

P. Hell. See also [6235].

6808 M. Heller. Triangulation algorithms for adaptive terrain modeling. In *Proc. 4th Internat. Sympos. Spatial Data Handling*, pages 163–174, 1990. [h-taatm-90]

6809 J. H. Hellerstein, E. Koustsoupias, and C. H. Papadimtriou. On the analysis of indexing schemes. In *Proc. Annu. ACM Sympos. Principles Database Syst.*, pages 249–256, 1997. [hkp-oais-97]

M. Hellwich. See also [5846].

6810 E. Helly. Über Mengen konvexer Körper mit gemeinschaftlichen Punkten. *Jahresbericht Deutsch. Math. Verein.*, 32:175–176, 1923. [h-umkkm-23]

6811 E. Helly. Über Systeme von abgeschlossenen Mengen mit gemeinschaftlichen Punkten. *Monaths. Math. und Physik*, 37:281–302, 1930. [h-usvam-30]

R. Helm. See also [5730, 10679].

C. S. Helvig. See also [1506].

6812 Armin Hemmerling. *Labyrinth Problems: Labyrinth-Searching Abilities of Automata*. B. G. Teubner, Leipzig, 1989. [h-lp-89]

6813 Armin Hemmerling. Navigation without perception of coordinates and distances. Technical Report TR-93-018, International Computer Science Institute, Berkeley, California, 1993. [h-nwpcd-93] *Precedes:* h-nwpcd-94.

6814 Armin Hemmerling. Navigation without perception of coordinates and distances. *Mathematical Logic Quarterly*, 40:237–260, 1994. [h-nwpcd-94] *Succeeds:* h-nwpcd-93.

6815 M. R. Henderson. *Extraction of feature information from three dimensional CAD data*. PhD thesis, Purdue Univ., West Lafayette, IN, 1984. [h-efitd-84] *Keywords:* doctoral thesis.

6816 T. C. Henderson and E. Triendl. The k-d tree representation of edge descriptions. In *Proc. 6th IEEE Internat. Conf. Pattern Recogn.*, pages 806–809, 1982. [ht-kdtre-82]

M. D. Hendy. See also [5429].

6817 M. Henig. The shortest path problem with two objective functions. *European J. Oper. Res.*, 25:281–291, 1985. [h-sppto-85] *Keywords:* dynamic programming, networks, multiattribute utility.

6818 M. Henk, J. Richter-Gebert, and G. M. Ziegler. Basic properties of convex polytopes. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 13, pages 243–270. CRC Press LLC, Boca Raton, FL, 1997. [hrgz-bpcp-97]

6819 M. Henle. *A Combinatorial Introduction to Topology*. W. H. Freeman, San Francisco, CA, 1979. [h-cit-79]

6820 L. Henneberg. *Die graphische Statik der starren Systeme*. Leipzig, 1911. [h-gsss-11]

6821 Andreas Henrich. Die Unterstützung von Nicht-Standardanfragen in geometrischen Datenbanksystemen durch räumliche Zugriffsstrukturen. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 12. Universität Siegen, 1990. [h-unsgd-90]

6822 A. Henrich. Improving the performance of multi-dimensional access structures based on kd-trees. In *Proc. 12th IEEE Intl. Conf. on Data Engineering*, pages 68–74, 1996. [h-ipmda-96]

6823 A. Henrich, H.-W. Six, and P. Widmayer. The LSD tree: Spatial access to multidimensional point and non-point objects. In *Proc. 15th VLDB Conference*, pages 45–53, 1989. [hsw-ltsam-89]

6824 P. Henrici. *Applied and computational complex analysis*. John Wiley & Sons, New York, NY, 1977. [h-acca-77]

M. Henrion. See also [1214].

R. H. Henry. See also [9546].

6825 T. R. Henry and S. E. Hudson. Viewing large graphs. Technical Report 90-13, Department of Computer Science, University of Arizona, 1990. [hh-vlg-90] *Keywords:* graph drawing.

A. Hensel. See also [13234].

6826 K. Hensel. *Theorie der algebraischen Zahlen*. B. G. Teubner, Leipzig, 1908. [h-tdaz-08]

M. Henzinger. See also [169].

M. R. Henzinger. See also [463].

6827 A. Heppes. Beweis einer Vermutung von A. Vázsonyi. *Acta Math. Acad. Sci. Hungar.*, 7:463–466, 1956. [h-bevv-56]

6828 A. Heppes. Filling a domain by discs. *Periodica Mathematica Hungarica*, 8:363–371, 1964. [h-fdd-64]

6829 A. Heppes. Solid circle-packings in the Euclidean plane. *Discrete Comput. Geom.*, 7:29–43, 1992. [h-scpep-92]

A. Heppes. See also [5176].

6830 M. J. Herbert, C. B. Jones, and D. S. Tudhope. Three-dimensional reconstruction of geoscientific objects from serial sections. *Visual Comput.*, 11(7):343–359, 1995. [hjt-tdrgo-95]

6831 D. Herbison-Evans. How to merge hidden arcs and then not draw them. *Computers and Graphics*, 5:79–81, 1980. [h-hmhat-80]

D. Herbison-Evans. See also [10817].

M. Herlihy. See also [996, 4518].

6832 G. T. Herman. *Image Reconstruction from Projections: the Fundamentals of Computerized Tomography*. Academic Press, New York, 1980. [h-irpfc-80]

6833 G. T. Herman. The special issue on computerized tomography. In *Proc. IEEE*, volume 71, pages 291–292, 1983. [h-sict-83]

G. T. Herman. See also [893, 6202].

G. T. Hermann. See also [610].

6834 R. Hermann and C. Martin. *Interdisciplinary Mathematics*, volume 13. Math. Sci. Press, 1977. [hm-im-77]

6835 F. Hermeline. Triangulation automatique d'un polyèdre en dimension N. *RAIRO-Mathematical Modelling And Numerical Analysis-Modelisation Mathematique Et Analyse Numerique*, 16(3):211–242, 1982. [h-tadpe-82] *Annote:* Incremental algorithm for NDVD.

F. Hermeline. See also [3128, 5854].

G. Hernandes. See also [34–36].

Antonio Hernandez. See also [5226].

6836 A. Hernández Barrera. Finding an $o(n^2 \log n)$ algorithm is sometimes hard. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 289–294. Carleton University Press, Ottawa, Canada, 1996. [b-foais-96]

6837 Antonio Hernández-Barrera, Subhas Chandra Nandy, and Tetsuo Asano. The Minkowski sum of a convex polyhedron and a polyhedral terrain. In *Abstracts 15th European Workshop Comput. Geom.*, pages 135–136. INRIA Sophia-Antipolis, 1999. [hna-mscpp-99]

G. Hernandez. See also [29, 30, 37].

6838 Gregorio Hernández-Peñalver. Controlling guards. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 387–392, 1994. [h-cg-94] *Succeeds:* h-cg-94c. *Cites:* c-ctpg-75, lhl-mcgpk-93, o-agta-87, o-gnfmg-83, s-rrag-92, s-hpp-89, ZZZ.

6839 Gregorio Hernández-Peñalver. Controlling guards. In *Abstracts 10th European Workshop Comput. Geom.*, pages 68–71. Universidad de Cantabria, Santander, 1994. [h-cg-94c] *Precedes:* h-cg-94.

6840 C. Hernando, F. Hurtado, A. Marquez, M. Mora, and M. Noy. Geometric tree graphs. In *Abstracts 13th European Workshop Comput. Geom.*, pages 28–29. Universität Würzburg, 1997. [hhmmn-gtg-97]

C. Hernando. See also [5748].

6841 Maria del Carmen Hernando, Ferran Hurtado, and Marc Noy. Graphs of non-crossing matchings. In *Abstracts 15th European Workshop Comput. Geom.*, pages 97–99. INRIA Sophia-Antipolis, 1999. [hhn-gncm-99]

6842 J. Hershberger. A faster algorithm for the two-center decision problem. *Inform. Process. Lett.*, 47:23–29, 1993. [h-fatcd-93]

6843 J. Hershberger. A new data structure for shortest path queries in a simple polygon. *Inform. Process. Lett.*, 38:231–235, 1991. [h-ndssp-91]

6844 J. Hershberger. An optimal visibility graph algorithm for triangulated simple polygons. *Algorithmica*, 4:141–155, 1989. [h-ovgat-89] *Succeeds:* h-fvgsp-87.

6845 J. Hershberger. Compliant motion in a simple polygon. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 397–398, 1993. [h-cmsp-93] *Keywords:* video review. *Cites:* b-zsaa-91, bh-csaa-92, fhs-cmsp-89, ZZZ.

6846 J. Hershberger. Finding the upper envelope of n line segments in $O(n \log n)$ time. *Inform. Process. Lett.*, 33:169–174, 1989. [h-fuenl-89]

6847 J. Hershberger. Finding the visibility graph of a simple polygon in time proportional to its size. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 11–20, 1987. [h-fvgsp-87] *Precedes:* h-ovgat-89. *Cites:* aaghi-vdp-86, b-prcv-75, cg-vippg-85, ci-tsc-84, gjpt-tsp-78, ghlst-ltavs-86, gmpr-nrll-77, gs-pmgsc-85, hm-ftsp-83, hm-ndsrs-82, tv-otats-86, a-jschc-87, ZZZ.

6848 J. Hershberger. Minimizing the sum of diameters efficiently. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 62–65, 1991. [h-msde-91] *Precedes:* h-msde-92. *Cites:* agss-ltacv-89, abky-cabmm-88, ds-dcmdf-89, e-acg-87, egs-oplms-86, gt-ltasc-85, gj-cigtn-79, hs-ftp-89, j-nccog-82, k-osps-83, ms-cscgl-84, ms-ppgmm-91, ps-cgi-85, rw-gc-89, s-wcaso-90, ZZZ.

6849 J. Hershberger. Minimizing the sum of diameters efficiently. *Comput. Geom. Theory Appl.*, 2(2):111–118, 1992. [h-msde-92] *Succeeds:* h-msde-91.

6850 J. Hershberger. Optimal parallel algorithms for triangulated simple polygons. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 33–42, 1992. [h-opats-92] *Precedes:* h-opats-95. *Cites:* acg-cdctd-89, acw-opavs-91, ag-pasft-86, at-oadvp-81, bt-ladts-86, cgmrs-namlp-90, c-tpca-82, c-tsplt-91a, cegghss-rspug-91, cg-vippg-89, cg-fc1ds-86, cct-rpatd-91, c-pms-88, cv-acdto-88, dk-fdpi-82, gsg-pmvsp-90, g-pcief-91, gh-ospqs-89, ghlst-ltavs-87, ghs-citds-91, h-ndssp-91, hs-cmlpg-91, krs-ppp-85, lp-esppr-84, ps-rgpcr-85, ps-cgi-85, rr-ostrp-89, sv-flcas-88, s-sfira-90, sv-fmmsp-81, s-cgfns-89, tv-opatc-89, tv-epba-85, ZZZ.

6851 J. Hershberger. Optimal parallel algorithms for triangulated simple polygons. *Internat. J. Comput. Geom. Appl.*, 5:145–170, 1995. [h-opats-95] *Keywords:* parallel algorithms, simple polygons, shortest paths, shortest path queries, shortest path trees, ray shooting, relative convex hull. *Succeeds:* h-opats-92.

6852 J. Hershberger. Upper envelope onion peeling. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 368–379. Springer-Verlag, 1990. [h-ueop-90] *Precedes:* h-ueop-92.

6853 J. Hershberger. Upper envelope onion peeling. *Comput. Geom. Theory Appl.*, 2(2):93–110, 1992. [h-ueop-92] *Succeeds:* h-ueop-90.

6854 J. Hershberger and Leonidas J. Guibas. An $O(n^2)$ shortest path algorithm for a non-rotating convex body. *J. Algorithms*, 9:18–46, 1988. [hg-ospan-88]

6855 J. Hershberger, M. Rauch, and Subhash Suri. Fully dynamic 2-edge-connectivity in planar graphs. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 233–244. Springer-Verlag, 1992. [hrs-fd2ec-92]

6856 J. Hershberger and J. Snoeyink. An efficient solution to the zookeeper's problem. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 104–109, 1994. [hs-eszp-94] *Cites:* cn-ozkr-89, gh-ospqs-89, h-ndssp-91, hs-cmlpg-91, ZZZ.

6857 J. Hershberger and J. Snoeyink. An $O(n \log n)$ implementation of the Douglas-Peucker algorithm for line simplification. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 383–384, 1994. [hs-oidpa-94] *Keywords:* video review. *Cites:* b-tcl-85, dghs-eafcr-93, dp-arnpr-73, hs-sudpl-92, m-samml-86, m-alg-87, m-olcch-87, r-ippap-, r-qcsaa-90, w-algau-85, ZZZ.

6858 J. Hershberger and J. Snoeyink. Around and around: computing the shortest loop. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 157–161, 1991. [hs-aacsl-91] *Cites:* hs-cmphc-90, bt-ladts-86, c-tpca-82, ceersstu-akp-91, ghlst-ltavs-87, lp-esppr-84, t-stsps-89, t-mss-85, ZZZ.

6859 J. Hershberger and J. Snoeyink. Computing minimum length paths of a given homotopy class. Technical Report RUU-CS-90-37, Utrecht University, Department of Computer Science, December 1990. [hs-cmphc-90] *Precedes:* hs-cmlpg-91, hs-cmlpg-94.

6860 J. Hershberger and J. Snoeyink. Computing minimum length paths of a given homotopy class. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 331–342. Springer-Verlag, 1991. [hs-cmlpg-91] *Keywords:* path planning, topology. *Succeeds:* hs-cmphc-90.

6861 J. Hershberger and J. Snoeyink. Computing minimum length paths of a given homotopy class. *Comput. Geom. Theory Appl.*, 4:63–98, 1994. [hs-cmlpg-94] *Succeeds:* hs-cmphc-90.

6862 J. Hershberger and J. Snoeyink. Convex polygons made from few lines and convex decompositions of polyhedra. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 376–387. Springer-Verlag, 1992. [hs-cpmfl-92]

6863 J. Hershberger and J. Snoeyink. Speeding up the Douglas-Peucker line simplification algorithm. In *Proc. 5th Internat. Sympos. Spatial Data Handling*, pages 134–143, 1992. [hs-sudpl-92]

6864 J. Hershberger and Subhash Suri. A pedestrian approach to ray shooting: Shoot a ray, take a walk. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 54–63, January 1993. [hs-parss-93] *Precedes:* hs-parss-95.

6865 J. Hershberger and Subhash Suri. A pedestrian approach to ray shooting: Shoot a ray, take a walk. *J. Algorithms*, 18:403–431, 1995. [hs-parss-95] *Keywords:* mesh generation, triangulation, stabbing number. *Succeeds:* hs-parss-93. *Annote:* Special issue of selected papers from the 4th Symposium on Discrete Algorithms.

6866 John Hershberger and Subhash Suri. An optimal algorithm for Euclidean shortest paths in the plane. *SIAM J. Comput.*, ??:To appear, ?? [hs-oaesp-??] *Succeeds:* hs-oaesp-95,hs-ecesp-93.

6867 John Hershberger and Subhash Suri. An optimal algorithm for Euclidean shortest paths in the plane. Manuscript, Washington University, 1995. [hs-oaesp-95] *Succeeds:* hs-ecesp-93.

6868 John Hershberger and Subhash Suri. An optimal algorithm for Euclidean shortest paths in the plane. *SIAM J. Comput.*, 28(6):2215–2256, 1999. [hs-oaesp-99]

6869 J. Hershberger and Subhash Suri. Applications of a semi-dynamic convex hull algorithm. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 380–392. Springer-Verlag, 1990. [hs-asdch-90]

6870 J. Hershberger and S. Suri. Applications of a semi-dynamic convex hull algorithm. *BIT*, 32:249–267, 1992. [hs-asdch-92]

6871 J. Hershberger and S. Suri. Efficient breakout routing in printed circuit boards. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 460–462, 1997. [hs-ebrpc-97] *Cites:* cc-eafdp-97, clr-ia-90, dks-rrbs-91, m-slwrc-90, rbk-earvw-90, t-dsna-83, yd-slfrr-95, ydd-iprap-96, ZZZ.

6872 John Hershberger and Subhash Suri. Efficient computation of Euclidean shortest paths in the plane. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 508–517, 1993. [hs-ecesp-93] *Precedes:* hs-oaesp-95.

6873 John Hershberger and Subhash Suri. Finding a shortest diagonal of a simple polygon in linear time. *Comput. Geom. Theory Appl.*, 7:149–160, 1997. [hs-fsdsp-97]

6874 J. Hershberger and Subhash Suri. Finding tailored partitions. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 255–265, 1989. [hs-ftp-89] *Precedes:* hs-ftp-91. *Cites:* abky-cabmm-88, a-dp-86, c-clps-85, j-nccog-82, ms-cscgl-84, ms-ppgmm-91, ol-mcp-81, ph-chfsp-77, ps-cgi-85, yb-cf-61, ZZZ.

6875 J. Hershberger and Subhash Suri. Finding tailored partitions. *J. Algorithms*, 12:431–463, 1991. [hs-ftp-91] *Succeeds:* hs-ftp-89.

6876 J. Hershberger and Subhash Suri. Matrix searching with the shortest path metric. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 485–494, 1993. [hs-msspm-93]

6877 J. Hershberger and Subhash Suri. Matrix searching with the shortest path metric. *SIAM J. Comput.*, 26(6):1612–1634, December 1997. [hs-msspm-97] *Succeeds:* hs-msspm-93.

6878 John Hershberger and Subhash Suri. Morphing binary trees. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 396–404, 1995. [hs-mbt-95] *Keywords:* shape morphing, rotation distance, tree morphing.

6879 J. Hershberger and Subhash Suri. Offline maintenance of planar configurations. *J. Algorithms*, 21:453–475, 1996. [hs-olmpc-96] *Keywords:* dynamic convex hull. *Succeeds:* hs-ompc-91.

6880 J. Hershberger and Subhash Suri. Offline maintenance of planar configurations. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 32–41, 1991. [hs-ompc-91] *Keywords:* dynamic convex hull. *Annote:* $O(\log n)$ amortized time per operation.

6881 John Hershberger and Subhash Suri. Practical methods for approximating shortest paths on a convex polytope in $\Re^3$. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 447–456, 1995. [hs-pmasp-95] *Keywords:* geodesic paths, shortest paths, approximation algorithm. *Precedes:* hs-pmasp-98.

6882 John Hershberger and Subhash Suri. Practical methods for approximating shortest paths on a convex polytope in $\Re^3$. *Comput. Geom. Theory Appl.*, 10(1):31–46, 1998. [hs-pmasp-98] *Succeeds:* hs-pmasp-95.

6883 John Hershberger and Subhash Suri. Shortest path problems. Technical Report, Washington University, 1996. [hs-spp-96]

J. Hershberger. See also [155, 180, 939, 940, 968, 1482, 1813, 2518, 2961, 2962, 2966, 4264, 4265, 4290, 4291, 4693–4696, 5608–5611, 6135, 6375–6377, 6393–6400, 12336, 12337, 12742].

6884 J. E. Hershberger. *Efficient algorithms for shortest path and visibility problems.* Ph.D. thesis, Dept. Comput. Sci., Stanford Univ., Stanford, CA, 1987. Report STAN-CS-87-1163. [h-easpv-87] *Keywords:* doctoral thesis.

6885 J. E. Hershberger and J. S. Snoeyink. Erased arrangements of lines and convex decompositions of polyhedra. *Comput. Geom. Theory Appl.*, 9:129–143, 1998. [hs-ealcd-98]

J. E. Hershberger. See also [2970, 6401, 6402].

6886 Susan Hert. Connected area partitioning. In *Abstracts 17th European Workshop Comput. Geom.*, pages 35–38. Freie Universität Berlin, 2001. [h-cap-01]

6887 Susan Hert, Michael Hoffmann, Lutz Kettner, Sylvain Pion, and Michael Seel. An adaptable and extensible geometry kernel. In *Proc. Workshop on Algorithm Engineering*, volume 2141 of *Lecture Notes Comput. Sci.*, pages 79–90. Springer-Verlag, 2001. [hhkps-aegk-01]

6888 S. Hert and V. Lumelsky. Deforming curves in the plane for tethered-robot motion planning. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 125–130. Carleton University Press, Ottawa, Canada, 1996. [hl-dcptr-96]

6889 S. Hert and V. Lumelsky. Planar curve routing for tethered-robot motion planning. *Internat. J. Comput. Geom. Appl.*, 7:225–252, 1997. [hl-pcrtr-97]

6890 S. Hert and V. Lumelsky. Polygon area decomposition for multiple-robot workspace division. *Internat. J. Comput. Geom. Appl.*, 8:437–466, 1998. [hl-padmr-98]

6891 E. Hertel. Einige algorithmische Probleme in Polyeder- und Konvexgeometrie. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 13. Universität Siegen, 1990. [h-eappk-90]

6892 S. Hertel. An almost trivial convex hull algorithm for a presorted point set in the plane. Report A83/08, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1983. [h-atcha-83]

6893 S. Hertel. Sweep-Algorithmen für Polygone und Polyeder. Report ??, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1984. [h-safpu-84]

6894 S. Hertel, M. Mäntylä, K. Mehlhorn, and J. Nievergelt. Space sweep solves intersection of convex polyhedra. *Acta Inform.*, 21:501–519, 1984. [hmmn-sssic-84]

6895 S. Hertel and K. Mehlhorn. Fast triangulation of simple polygons. In *Proc. 4th Internat. Conf. Found. Comput. Theory*, volume 158 of *Lecture Notes Comput. Sci.*, pages 207–218. Springer-Verlag, 1983. [hm-ftsp-83] *Precedes:* hm-ftprs-85.

6896 S. Hertel and K. Mehlhorn. Fast triangulation of the plane with respect to simple polygons. *Inform. Control*, 64:52–76, 1985. [hm-ftprs-85] *Succeeds:* hm-ftsp-83.

6897 P. Hertling. Topologische komplexitätsgrade von funktionen mit endlichem bild. Report 152, Fernuniversität, Hagen, 1993. [h-tkfeb-93]

6898 P. Hertling and K. Weihrauch. Levels of degeneracy and exact lower complexity bounds for geometric algorithms. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 237–242, 1994. [hw-ldelc-94] *Cites:* a-ca-80, bb-ca-85, bss-tccrn-89, g-dcrcf-57, gy-frcg-86, gss-egbra-89, h-tkfeb-93, hhk-tirgc-88, k-ctrf-91, m-vigau-88a, pr-cap-88, ps-cgi-85, sh-gip-76, s-ta-87, s-aefsm-87, w-c-87, wk-uacra-84, y-stgd-90, h-pargc-89, td-cm-88, v-cdsmt-92, ZZZ.

6899 J. Hertz, A. Krogh, and R. G. Palmer. *Introduction to the Theory of Neural Computation*. Addison-Wesley, New York, 1991. [hkp-itnc-91]

J. C. Herv'e. See also [11991].

6900 B. Von Herzen and A. H. Barr. Accurate triangulations of deformed, intersecting surfaces. *Comput. Graph.*, 21(4):103–110, July 1987. [hb-atdis-87]

6901 F. Herzog and B. M. Steward. Patterns of visible and nonvisible lattice points. *Amer. Math. Monthly*, 78:487–496, 1971. [hs-pvnlp-71]

F. Herzog. See also [12502].

C. Hess. See also [5417].

L. Hesselink. See also [10225].

6902 D. Hestenes and G. Sobczyk. *Clifford algebra to geometric calculus: A unified language for mathematics and physics*. D. Reidel Publishing Co., Dodrecht, 1984. [hs-cagcu-84]

6903 M. R. Hestens. *Calculus of Variations and Optimal Control Theory*. John Wiley & Sons, New York, NY, 1966. [h-cvoct-66]

6904 G. Hetyai. On the Stanley ring of a cubical complex. *Discrete Comput. Geom.*, 14:305–330, 1995. [h-srcc-95]

V. P. Heuring. See also [10861].

6905 H. Heusinger. Balancierung von Voronoi-Bäumen. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [h-bvb-89]

6906 H. Heusinger and H. Noltemeier. On separable and rectangular clusterings. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 25–42. Springer-Verlag, 1988. [hn-src-88] *Annote:* 4th Intern. Workshop Comput. Geom.

6907 H. Heusinger and H. Noltemeier. On separable clusterings. *J. Algorithms*, 10:212–227, 1989. [hn-sc-89]

D. E. Hewgill. See also [3393, 3394].

T. Hickey. See also [3411].

A. Hicks. See also [1810].

J. Higgins. See also [2671].

6908 P. T. Highnam. An optimal algorithm for finding the mirror symmetries of a planar point set. Report ??, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1983. [h-oafms-83]

6909 P. T. Highnam. Optimal algorithms for finding the symmetries of a planar point set. Report ??, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1985. [h-oafsp-85]

6910 P. T. Highnam. Optimal algorithms for finding the symmetries of a planar point set. *Inform. Process. Lett.*, 22:219–222, 1986. [h-oafsp-86]

6911 P. T. Highnam. The ears of a polygon. *Inform. Process. Lett.*, 15(5):196–198, 1982. [h-ep-82] *Keywords:* two-dimensional, triangles, reporting, counting, triangulation, polygons.

6912 W. L. Hightower, J. F. Prins, and J. H. Reif. Implementation of randomized sorting on large parallel machines. In *Proc. 4th ACM Sympos. Parallel Algorithms Architect.*, pages 158–167, 1992. [hpr-irslp-92]

6913 D. Hilbert. *Foundations of Geometry (Grundlagen der Geometrie)*. Open Court, 1971. Tr. by Leo Unger. [h-fggdg-71]

6914 D. Hilbert and S. Cohn-Vossen. *Geometry and the Imagination*. Chelsea Publishing Company, New York, NY, 1952. [hc-gi-52]

D. Hilbert. See also [4710].

6915 R. Hilbert. Construction and display of three-dimensional polygon-histograms. *Comput. Graph.*, 15(3):230–241, 1981. Proc. SIGGRAPH '81. [h-cdtdp-81]

6916 J. Hilden. Testing the relative position of several points on a circle. *BIT*, 12:182–187, 1972. [h-trpsp-72]

A. Hill. See also [5976].

6917 F. S. Hill Jr. The pleasures of "perp dot" products. In Paul Heckbert, editor, *Graphics Gems IV*, pages 138–148. Academic Press, Boston, MA, 1994. [h-ppdp-94] *Keywords:* geometry, fillet, perp-dot product, projection. *Annote:* A tutorial on the "perp dot product," which is the dot product, in 2D, of one vector and the vector perpendicular to another.

6918 M. D. Hill. An examination of the bounds of the number of edges and faces of a simple polyhedron (rough draft). Manuscript, ??, 1981. [h-ebnef-81]

6919 M. D. Hill. Tetrahedral decomposition of polyhedra. Manuscript, ??, Ann Arbor, MI, 1981. [h-tdp-81]

6920 Steve Hill. Tri-linear interpolation. In Paul Heckbert, editor, *Graphics Gems IV*, pages 521–525. Academic Press, Boston, MA, 1994. [h-tli-94] *Keywords:* trilinear interpolation, bilinear interpolation, reconstruction. *Annote:* Gives optimized code for performing linear interpolation in a 3D grid. Trilinear interpolation is useful for volume rendering, and its 2D variant, bilinear interpolation, is a very common operation in image processing. Contains C code.

6921 T. W. Hill, Jr. On determining when a graph is the skeleton of an abstract polytope. Research Memorandum 72-4, School of Industrial Engineering, Purdue University, West Lafayette, IN, 1972. [h-dwgsa-72]

R. C. Hillyard. See also [2387].

6922 Peter Hilton, Derek Holton, and Jean Pedersen. *Mathematical Reflections: In a Room with Many Mirrors*. Springer-Verlag, New York, 1997. [hhp-mr-97]

6923 M. Himsolt. Comparing and evaluating layout algorithms within graphed. Manuscript, Fakultat fur Mathematik und Informatik, Univ. Passau, 1994. [h-celag-94] *URL:* ftp://ftp.uni-passau.de/pub/local/graphed/papers/LayoutEvaluation.ps.Z%.

6924 M. Himsolt. Comparing and evaluating layout algorithms within GraphEd. *J. Visual Lang. Comput.*, 6(3):255–273, 1995. (special issue on Graph Visualization, edited by I. F. Cruz and P. Eades). [h-celag-95] *Keywords:* graph drawing, experiments.

6925 M. Himsolt. Gml: Graph modelling language. Manuscript, Universität Passau, Innstraße 33, 94030 Passau, Germany, 1996. Available at http://www.uni-passau.de/~himsolt/Graphlet/GML. [h-ggml-96] *URL:* http://www.uni-passau.de/~himsolt/Graphlet/GML. *Keywords:* graph drawing.

6926 M. Himsolt. GraphEd: a graphical platform for the implementation of graph algorithms. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 182–193. Springer-Verlag, 1995. [h-ggpig-95] *Keywords:* graph drawing, system, grammar.

6927 M. Himsolt. Graphed: An interactive graph editor. In *Proc. 6th Sympos. Theoret. Aspects Comput. Sci.*, volume 349 of *Lecture Notes Comput. Sci.*, pages 532–533. Springer-Verlag, 1989. [h-gige-89] *Keywords:* graph drawing. *Comments:* Software in ftp://ftp.uni-passau.de/pub/local/graphed.

M. Himsolt. See also [2392, 9086].

S. Y. S hin. See also [3259].

6928 A. L. Hinde and R. E. Miles. Monte-Carlo estimates of the distributions of the random polygons of the Voronoi tesselation with respect to a Poisson process. *Journal of Statistics and Computer Simulation*, 10:205–223, 1980. [hm-mcedr-80] *Annote:* Measurements of various statistics of two million independent Voronoi polygons. Circumcircle algorithm used to generate (one polygon).

J. Hinds. See also [1553].

6929 André Hinkenjann, Markus Kukuk, and Heinrich Müller. Answering line segment intersection queries based on sample answers. In *Abstracts 12th European Workshop Comput. Geom.*, pages 65–68. Universität Münster, 1996. [hkm-alsiq-96]

6930 Klaus Hinrichs. Overlaying simply connected planar subdivision in linear time. In *Abstracts 11th European Workshop Comput. Geom.*, page 31. Universität Linz, 1995. [h-oscps-95]

6931 K. Hinrichs and J. Nievergelt. The grid file: a data structure designed to support proximity queries on spatial objects. In M. Nagl and J. Perl, editors, *Proc. 9th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 100–113, Linz, Austria, 1983. Trauner Verlag. [hn-gfdsd-83]

6932 K. Hinrichs, J. Nievergelt, and P. Schorn. A sweep algorithm and its implementation: The all-nearest-neighbors problem revisited. In J. van Leeuwen, editor, *Proc. 14th Internat. Workshop Graph-Theoret. Concepts Comput.*, volume 344 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1989. [hns-saiia-89]

6933 K. Hinrichs, J. Nievergelt, and P. Schorn. A sweep algorithm for the all-nearest-neighbours problem. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 43–54. Springer-Verlag, 1988. [hns-saann-88] *Keywords:* proximity, points, two-dimensional, plane-sweep. *Annote:* 4th Intern. Workshop Comput. Geom.

6934 K. Hinrichs, J. Nievergelt, and P. Schorn. An all-round sweep algorithm for 2-dimensional nearest-neighbors problems. *Acta Inform.*, 29(4):383–394, 1992. [hns-arsa2-92]

6935 K. Hinrichs, J. Nievergelt, and P. Schorn. An all-round sweep algorithm for 2-dimensional nearest-neighbour problems. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 343–346, 1990. [hns-arsa2-90] *Cites:* f-savd-87, hns-saiia-89, v-oaann-89, ZZZ.

6936 K. Hinrichs, J. Nievergelt, and P. Schorn. Plane-sweep solves the closest pair problem elegantly. *Inform. Process. Lett.*, 26:255–261, 1988. [hns-psscp-88]

K. Hinrichs. See also [1463–1467, 2450, 4329, 4341, 4342, 5260, 6218–6225, 13281–13283].

6937 Klaus H. Hinrichs, editor. *Abstracts 12th European Workshop Comput. Geom.*, volume 7/96-I. Universität Münster, 1996. [h-ewcg-96]

6938 Klaus H. Hinrichs, editor. *Abstracts 6th Intern. Workshop Comput. Geom.*, volume 90-01 of *Informatik-Berichte*. Universität Siegen, 1990. [h-iwcg-90]

6939 K. H. Hinrichs. *The grid file system: Implementation and case studies of applications*. PhD thesis, Dept. Information Science, ETH, Zürich, 1985. [h-gfsic-85] *Keywords:* doctoral thesis. *Comments:* Diss. ETH 7734.

Klaus H. Hinrichs. See also [5261, 10141, 13127].

6940 H. Hinterberger. Using graphical information from a grid file's directory to visualize patterns in Cartesian product spaces. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 1–14. Springer-Verlag, 1988. [h-ugigf-88] *Annote:* 4th Intern. Workshop Comput. Geom.

H. Hinterberger. See also [10142, 10143].

6941 Christoph Hipke, Christian Icking, Rolf Klein, and Elmar Langetepe. How to find a point on a line within a fixed distance. Technical Report 220, Department of Computer Science, FernUniversität Hagen, Germany, 1997. [hikl-hfplf-97] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr220.pdf. *Precedes:* hikl-hfplf-99. *Cites:* bcr-sp-93, brs-nugt-97, ik-csas-95, kp-caasu-93, krt-sueor-96, k-ag-97, ls-pinos-97, ZZZ.

6942 Christoph Hipke, Christian Icking, Rolf Klein, and Elmar Langetepe. How to find a point on a line within a fixed distance. *Discrete Appl. Math.*, 93:67–73, 1999. [hikl-hfplf-99] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr220.pdf. *Succeeds:* hikl-hfplf-97. *Cites:* bcr-sp-93, brs-nugt-97, ik-csas-95, kp-caasu-93, krt-sueor-96, k-ag-97, ls-pinos-97, ZZZ.

Christoph A. Hipke. See also [3785, 10429].

J. R. Hipp. See also [2061].

6943 T. Hiraguchi. On the dimension of partially ordered sets. In *Scientific Report 1*, pages 77–94. Kanzawa University, 1951. [h-dpos-51]

6944 T. Hirata, J. Matoušek, X.-H. Tan, and T. Tokuyama. Complexity of projected images of convex subdivisions. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 121–126, 1992. [hmtt-cpics-92] *Precedes:* hmtt-cpics-94. *Cites:* abe-ap1sp-91, ce-oails-88, c-sssl-86, dl-msp-76, e-acg-87, s-nvapo-91, s-chdch-86, s-lpchm-90, thi-splia-90, ZZZ.

6945 T. Hirata, J. Matoušek, X.-H. Tan, and T. Tokuyama. Complexity of projected images of convex subdivisions. *Comput. Geom. Theory Appl.*, 4:293–308, 1994. [hmtt-cpics-94] *Succeeds:* hmtt-cpics-92.

T. Hirata. See also [945, 12785–12792].

6946 S. Hirose and O. Kunieda. Generalized standard foot trajectory for a quadruped walking vehicle. *Internat. J. Robot. Res.*, 10(1), February 1991. [hk-gsftq-91]

6947 S. Hirose, M. Nose, H. Kikuchi, and Y. Umetani. Adaptive gait control of a quadruped walking vehicle. In *Proc. Internat. Sympos. Robot. Res.*, pages 253–277. MIT Press, 1984. [hnku-agcqw-84]

6948 Tetsuya Hiroshima and Kokichi Sugihara. Polynomial-time algorithm for recognizing Delaunay graphs. Technical Report METR 94-15, Department of Mathematical Engineering and Information Physics, University of Tokyo, September 1994. [hs-ptard-94]

Tetsuya Hiroshima. See also [12617].

B. E. Hirsch. See also [12103].

M. Hirsch. See also [1387].

M. D. Hirsch. See also [1391, 2643].

6949 M. W. Hirsch. *Differential Topology*. Springer-Verlag, New York, NY, 1976. [h-dt-76]

D. Hirschberg. See also [8494].

6950 D. S. Hirschberg. On the complexity of searching a set of vectors. *SIAM J. Comput.*, 9:126–129, 1980. [h-cssv-80]

6951 D. S. Hirschberg and L. L. Larmore. The traveler's problem. *J. Algorithms*, 13:148–160, 1992. [hl-tp-92]

6952 D. S. Hirschberg and D. J. Volper. Improved update/query. *Inform. Process. Lett.*, 24:307–310, 1987. [hv-iuq-87]

D. S. Hirschberg. See also [2821].

H. Hirukawa. See also [6389, 6390].

6953 N. Hitschfeld. Algorithms and data structures for handling a fully flexible refinement approach in mesh generation. In *Proc. 4th International Meshing Roundtable*, pages 265–276, Albuquerque, NM, 1995. Sandia National Laboratories. [h-adshf-95]

6954 Nancy Hitschfeld and Rodrigo Farias. 1-irregular element tessellation in mixed element meshes for the control volume discretization method. In *Proc. 5th International Meshing Roundtable*, pages 195–204, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [hf-1ietm-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

6955 Nancy Hitschfeld and Wolfgang Fichtner. Mixed element trees: A generalization of modified octrees for the generation of 3-D Delaunay meshes. In *Abstracts 8th European Workshop Comput. Geom.*, pages 85–87. Utrecht University, 1992. [hf-metgm-92]

6956 Hisamoto Hiyoshi and Hiroshi Sekigawa. Deciding the sign using floating-point arithmetic. In *Abstracts 14th European Workshop Comput. Geom.*, pages 89–91. Universitat Polytènica de Catalunya, Barcelona, 1998. [hs-dsufp-98]

6957 Hisamoto Hiyoshi and Kokichi Sugihara. Voronoi-based interpolation with higher continuity. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 242–250, 2000. [hs-vbihc-00]

6958 G. R. Hjaltason and H. Samet. Ranking in spatial databases. In M. J. Egenhofer and J. R. Herring, editors, *Advances in Spatial Databases - Fourth International Symposium*, number 951 in Lecture Notes Comput. Sci., pages 83–95, August 1995. [hs-rsd-95]

6959 Petr Hliněný. Touching graphs of unit balls. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 350–358. Springer-Verlag, 1997. [h-tgub-97] *Keywords:* graph drawing.

6960 C. Ho and C. K. Yap. Polynomial remainder sequences and theory of subresultants. Technical Report 319, Courant Inst. Math. Sci., New York Univ., New York, NY, 1987. Robotics Report No. 119. [hy-prsts-87]

6961 C.-T. Ho, R. Agrawal, N. Megiddo, and R. Srikant. Range queries in OLAP data cubes. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 73–88, 1997. [hams-rqodc-97]

6962 C.-T. Ho, J. Bruck, and R. Agrawal. Partial-sum queries in OLAP data cubes using covering codes. In *Proc. Annu. ACM Sympos. Principles Database Syst.*, pages 228–237, 1997. [hba-psqod-97]

6963 C.-W. Ho. Decomposition of a polygon into triangles. *Math. Gazette*, 60:132–134, 1976. [h-dpt-76] *Keywords:* decomposition, polygon triangulation, elementary geometry. *Cites:* l-tsfpp-11. *Annote:* A short correct proof of decomposability.

6964 J. M. Ho, M. T. Ko, T. H. Ma, and T. Y. Sung. Algorithms for rectilinear optimal multicast tree problem. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 106–115. Springer-Verlag, 1992. [hkms-aromt-92]

6965 J.-M. Ho, D. T. Lee, C.-H. Chang, and C. K. Wong. Bounded-diameter minimum spanning trees and related problems. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 276–282, 1989. [hlcw-bdmst-89] *Precedes:* hlcw-mdstr-91. *Cites:* ct-fmst-76, d-ltatt-84, egs-oplms-86, gj-cigtn-79, gkln-dvd-83, k-osps-83, l-fnvda-80, m-ltalp-83, p-nappl-81, p-scnsg-57, sh-cpp-75, ZZZ.

6966 J.-M. Ho, D. T. Lee, C.-H. Chang, and C. K. Wong. Minimum diameter spanning trees and related problems. *SIAM J. Comput.*, 20:987–997, 1991. [hlcw-mdstr-91] *Keywords:* design of algorithms, geometric graphs, two-dimensional, minimum spanning trees, Steiner trees, NP-completeness. *Succeeds:* hlcw-bdmst-89.

6967 J.-M. Ho, G. Vijayan, and C. K. Wong. New algorithms for the rectilinear Steiner tree problem. *IEEE Trans. Comput. Aided Design*, 9:185–193, 1990. [hvw-narst-90]

6968 K. Ho-Le. Finite element mesh generation methods: A review and classification. *Comput. Aided Design*, 20(1):27–38, January 1988. [h-femgm-88] *Keywords:* finite element mesh generation methods, Delaunay triangulation, mesh topology, Voronoi diagram. *Annote:* Good survey paper. *Abstract:* An attempt is made to provide a clear overall picture of the finite element mesh generation field. A scheme for classifying mesh generation methods is proposed, whereby seven major mesh generation approaches are identified. The basis for classification is the temporal order in which nodes and elements are created. The published mesh generation methods are reviewed. Only four approaches are found to have fully automatic mesh generation methods. These approaches are compared on the criteria of element types and shapes, mesh density control, and time efficiency. (Author abstract) 73 refs.

C. Hoang. See also [5078, 6730].

C. T. Hoang. See also [5079].

D. Hoang. See also [992].

6969 J. Hobby. Practical segment intersection with finite precision output. Technical Report 93/2-27, Bell Laboratories, 1993. [h-psifp-93]

6970 J. Hobby. Practical segment intersection with finite precision output. Manuscript, 1994. [h-psifp-94]

6971 J. D. Hobby. Polygonal approximations that minimize the number of inflections. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 93–102, 1993. [h-patmn-93]

6972 J. D. Hobby. Practical segment intersection with finite precision output. *Comput. Geom. Theory Appl.*, 13(4):199–214, October 1999. [h-psifp-99]

6973 J. D. Hobby. Rasterizing curves of constant width. *J. ACM*, 36:209–229, 1989. [h-rccw-89]

6974 J. D. Hobby. Smooth, easy to compute interpolating splines. *Discrete Comput. Geom.*, 1:123–140, 1986. [h-secis-86]

F. C. Hobroyd. See also [1578].

6975 Dorit Hochbaum, editor. *Approximation Problems for NP-Complete Problems*. PWS Publishing Company, Boston, MA, 1997. [h-apncp-97]

6976 D. S. Hochbaum. Approximation algorithms of the set covering and vertex cover problems. *SIAM J. Comput.*, 11(3):555–556, 1982. [h-aascv-82]

6977 Dorit S. Hochbaum. Efficient bounds for the stable set, vertex cover and set packing problems. *Discrete Appl. Math.*, 6:243–254, 1983. [h-ebssv-83]

6978 D. S. Hochbaum and W. Maas. Approximation schemes for covering and packing problems in image processing and VLSI. *J. ACM*, 32:130–136, 1985. [hm-ascpp-85]

6979 D. S. Hochbaum and W. Maass. Approximation algorithms for covering and packing problems in robotics. Report ??, Univ. California Berkeley, Berkeley, CA, 1984. [hm-aacpp-84]

6980 D. S. Hochbaum and W. Maass. Fast approximation algorithms for a nonconvex covering problem. *J. Algorithms*, 8:305–323, 1987. [hm-faanc-87]

6981 D. S. Hochbaum and D. Shmoys. A best possible heuristic for the *k*-center problem. *Math. Oper. Res.*, 10:180–184, 1985. [hs-bphkc-85]

6982 D. S. Hochbaum and D. Shmoys. A unified approach to approximation algorithms for bottleneck problems. *J. ACM*, 33:533–550, 1986. [hs-uaaab-86]

Dorit S. Hochbaum. See also [5793].

6983 R. J. Hocken, J. Raja, and U. Babu. Sampling issues in coordinate metrology. *Manufacturing Review*, 6(4):282–294, 1993. [hrb-sicm-93]

6984 J. G. Hocking and G. S. Young. *Topology*. Addison-Wesley, Reading, MA, 1961. [hy-t-61]

M. Hocks. See also [6628].

6985 L. Hodes. Sphere graphs. Report ??, National Cancer Inst., Bethseda, MD, 1985. [h-sg-85]

6986 L. Hodes. The logical complexity of geometric properties in the plane. In *Proc. 1st Annu. ACM Sympos. Theory Comput.*, pages 249–254, 1969. [h-lcgpp-69] *Precedes:* h-lcgpp-70.

6987 L. Hodes. The logical complexity of geometric properties in the plane. *J. ACM*, 17:339–347, 1970. [h-lcgpp-70] *Succeeds:* h-lcgpp-69.

6988 W. V. D. Hodge and D. Pedoe. *Methods of algebraic geometry*. Cambridge University Press, 1952. [hp-mag-52]

K. Hodges. See also [501, 502].

N. Hodges. See also [500].

6989 J. K. Hodgins, W. L. Wooten, D. C. Brogan, and J. F. O'Brien. Animating human atheletics. *Comput. Graph.*, ??:71–78, 1995. Proc. SIGGRAPH. [hwbo-aha-95]

J. K. Hodgins. See also [10963].

G. W. Hodgman. See also [12676].

6990 C. D. Hodgson and I. Rivin. A characterization of compact convex polyhedra in hyperbolic 3-space. *Inventiones Mathematicae*, 111(1):77–111, January 1993. [hr-cccph-93]

6991 C. D. Hodgson, I. Rivin, and W. D. Smith. A characterization of convex hyperbolic polyhedra and of convex polyhedra inscribed in the sphere. *Bull. (New Series) of the AMS*, 27(2):246–251, 1992. [hrs-cchpc-92] *Keywords:* graph drawing, convex, 3D. *Annote:* Erratum in 28(1):213, 1993.

6992 C. D. Hodgson, I. Rivin, and W. D. Smith. Erratum (A characterization of convex hyperbolic polyhedra and of convex polyhedra inscribed in the sphere). *Bull. Amer. Math. Soc. (New Series)*, 28(1):213, 1993. [hrs-ecchpcpis-93]

6993 E. Hoel and H. Samet. Algorithms for data-parallel spatial operations. Computer Science Department CAR-TR-704, University of Maryland, February 1994. [hs-adpso-94]

6994 E. Hoel and H. Samet. Data-parallel spatial join algorithms. In *Proc. 23rd Internat. Conf. Parallel Process.*, pages 227–234, August 1994. [hs-dpsja-94]

6995 E. Hoel and H. Samet. Performance of data-parallel spatial operations. In J. Bocca, M. Jarke, and C. Zaniolo, editors, *vldb94*, pages 156–167, September 1994. [hs-pdpso-94]

6996 E. G. Hoel and H. Samet. A qualitative comparison study of data structures for large line segment databases. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 205–214, 1992. [hs-qcsds-92]

6997 E. G. Hoel and H. Samet. Benchmarking spatial join operations with spatial output. In U. Dayal, P. M. D. Gray, and S. Nishio, editors, *Proceedings of the Twenty First International Conference on Very Large Data Bases*, pages 606–618, September 1995. [hs-bsjos-95]

6998 E. G. Hoel and H. Samet. Data-parallel primitives for spatial operations. In *Proc. 24th Internat. Conf. Parallel Process.*, volume 3, pages 184–191, August 1995. [hs-dppso-icpr-95]

6999 E. G. Hoel and H. Samet. Data-parallel primitives for spatial operations using pm quadtrees. In V. Cantoni, L. Lombardi, M. Mosconi, M. Savini, and A. Setti, editors, *Proceedings of Computer Architectures for Machine Perception '95*, pages 266–273, September 1995. [hs-dppso-camp-95]

7000 E. G. Hoel and H. Samet. Data-parallel r-tree algorithms. In *Proc. 22nd Internat. Conf. Parallel Process.*, pages 47–50, August 1993. [hs-dprta-93]

7001 E. G. Hoel and H. Samet. Efficient processing of spatial queries in line segment databases. In O. Günther and H. J. Schek, editors, *Proc. 2nd Sympos. Advances in Spatial Databases*, pages 237–256. Springer-Verlag, Berlin, Germany, 1991. [hs-epsql-91] *Comments:* also Lecture Notes in Computer Science 525.

7002 Werner Hoelbling, Werner Kuhn, and Andrew U. Frank. Discrete simplicial complexes. In *Abstracts 12th European Workshop Comput. Geom.*, page 69. Universität Münster, 1996. [hkf-dsc-96]

D. Hoey. See also [12025, 12026].

7003 Kenneth E. Hoff III, Tim Culver, John Keyser, Ming Lin, and Dinesh Manocha. Fast computation of generalized Voronoi diagrams using graphics hardware. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 375–376, 2000. [hcklm-fcgvd-00] *Keywords:* video review.

K. Hoff. See also [7192, 13874].

W. Hoff. See also [351].

K.-U. Höffgen. See also [5279, 5280].

7004 A. J. Hoffman. Binding constraints and Helly numbers. *Ann. New York Acad. Sci.*, 319:284–288, 1979. [h-bchn-79]

7005 A. J. Hoffman and C. W. Lee. On the cone of nonnegative circuits. *Discrete Comput. Geom.*, 1:229–239, 1986. [hl-cnc-86]

7006 C. Hoffman and J. Hopcroft. The geometry of projective blending surfaces. *Artif. Intell.*, 37:357–376, 1988. [hh-gpbs-88]

C. M. Hoffman. See also [1289].

7007 E. G. Hoffman. *Modular Fixturing*. Manufacturing Technology Press, Lake Geneva, Wisconsin, 1987. [h-mf-87]

Frank Hoffman. See also [6532].

7008 C. Hoffmann. A dimensionality paradigm for surface interrogations. *Comput. Aided Geom. Design*, 7(6):517–532, 1990. [h-dpsi-90]

7009 C. Hoffmann. *Geometric and Solid Modeling*. Morgan-Kaufmann, San Mateo, CA, 1989. [h-gsm-89]

7010 C. Hoffmann and J. Hopcroft. Automatic surface generation in computer aided design. *Visual Comput.*, 1(2):92–100, 1985. [hh-asgca-85a]

7011 C. Hoffmann and J. Hopcroft. Geometric ambiguities in boundary representation. Technical Report 86-725, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1986. [hh-gabr-86]

C. Hoffmann. See also [2344, 2832, 4513, 5640].

7012 C. M. Hoffmann. Algebraic curves. Technical Report CSD-TR-675, Computer Science Department, Purdue University, 1985. [h-ac-85]

7013 C. M. Hoffmann. Computer vision, descriptive geometry, and classical mechanics. Technical Report CSD-TR-91-073, Purdue University, CS Dept., West Lafayette, IN 47907, USA, October 1991. [h-cvdgc-91] *Keywords:* skeleton, Voronoi diagram, offsetting.

7014 C. M. Hoffmann. Geometric approaches to mesh generation. Technical Report CSD-TR-93-053, CS Dept., Purdue U., West Lafayette, IN 48907, USA, August 1993. [h-gamg-93]

7015 C. M. Hoffmann. How solid is solid modeling? In M. C. Lina and D. Manocha, editors, *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, volume 1148 of *Lecture Notes Comput. Sci.*, pages 1–8. Springer-Verlag, 1996. [h-hsism-96]

7016 C. M. Hoffmann. How to construct the skeleton of CSG objects. Technical Report CSD-TR-1014, CS Dept., Purdue Univ., West Lafayette, IN 47907, USA, September 1990. [h-hcsco-90t] *Precedes:* h-hcsco-90.

7017 C. M. Hoffmann. How to construct the skeleton of CSG objects. In *Proc. 4th IMA Conf. on The Mathematics of Surfaces*, page ??, Bath, UK, 1990. Oxford University Press. [h-hcsco-90] *Succeeds:* h-hcsco-90t.

7018 C. M. Hoffmann. On semantics of generative geometry representations. In *Proc. 19th ASME Design Automation Conference*, pages 411–420, 1993. [h-sggr-93]

7019 C. M. Hoffmann. Solid modeling. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 47, pages 863–880. CRC Press LLC, Boca Raton, FL, 1997. [h-sm-97]

7020 C. M. Hoffmann. The problem of accuracy and robustness in geometric computation. Report CSD-TR-771, Dept. Comput. Sci., Purdue Univ., West Lafayette, IN, 1988. [h-pargc-88]

7021 C. M. Hoffmann. The problems of accuracy and robustness in geometric computation. *IEEE Computer*, 22(3):31–41, March 1989. [h-pargc-89] *Keywords:* numerical precision, stability, robustness.

7022 C. M. Hoffmann and J. E. Hopcroft. Automatic surface generation in computer aided design. Technical Report 85-661, Cornell University, Computer Science Department, 1985. [hh-asgca-85t]

7023 C. M. Hoffmann and J. E. Hopcroft. Quadratic blending surfaces. Technical Report 85-647, Cornell University, Computer Science Department, 1985. [hh-qbs-85]

7024 C. M. Hoffmann and J. E. Hopcroft. Quadratic blending surfaces. *Comput. Aided Design*, 18(6):301–306, 1986. [hh-qbs-86]

7025 C. M. Hoffmann and J. E. Hopcroft. The potential method for blending surfaces and corners. Technical Report 85-699, Cornell University, Computer Science Department, 1985. [hh-pmbsc-85]

7026 C. M. Hoffmann, J. E. Hopcroft, and M. S. Karasick. Towards implementing robust geometric computations. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 106–117, 1988. [hhk-tirgc-88] *Cites:* d-cugr-86, eos-calha-86, gl-mc-83, gy-frcg-86, hhk-rsops-87, k-rmrs-89, l-ccsda-85, m-vigau-86i, otu-nsga-87, s-aefsm-87t, s-fprgo-87, ZZZ.

7027 C. M. Hoffmann, J. E. Hopcroft, and M. T. Karasick. Robust set operations on polyhedral solids. Technical Report 87-875, Cornell University, Computer Science Department, Ithaca, New York, October 1987. [hhk-rsops-87]

7028 C. M. Hoffmann, J. E. Hopcroft, and M. T. Karasick. Robust set operations on polyhedral solids. *IEEE Comput. Graph. Appl.*, 9(6):50–59, November 1989. [hhk-rsops-89] *Keywords:* numerical precision, stability, robustness.

7029 C. M. Hoffmann and J. R. Rossignac. A road map to solid modeling. *IEEE Trans. Visualizat. Comput. Graph.*, 2(1):3–10, March 1996. [hr-rmsm-96]

7030 C. M. Hoffmann and G. Vaněček. Fundamental techniques for geometric and solid modeling. *Control and Dynamic Systems*, 48:101–165, 1991. [hv-ftgsm-91] *Keywords:* skeleton, Voronoi diagram, offsetting.

7031 C. M. Hoffmann and P. J. Vermeer. A spatial constraint problem. In *Computational Kinematics Workshop*, September 1995. [hv-scp-95]

7032 C. M. Hoffmann and P. J. Vermeer. Eliminating extraneous solutions in curve and surface operations. *Internat. J. Comput. Geom. Appl.*, 1:47–66 and 345, 1991. [hv-eescs-91] *Keywords:* geometric modeling, faithful problem formulation, offsets, blends, equidistance surfaces, extraneous solutions. *Precedes:* hv-eeesc-91.

7033 C. M. Hoffmann and P. J. Vermeer. Erratum — eliminating extraneous solutions in curve and surface operations. *Internat. J. Comput. Geom. Appl.*, 1:345, 1991. [hv-eeesc-91] *Succeeds:* hv-eescs-91.

7034 Christoph M. Hoffmann and Pamela J. Vermeer. Geometric constraint solving in $\Re^2$ and $\Re^3$. In Ding-Zhu Du and Frank Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 266–298. World Scientific, Singapore, 2nd edition, 1995. [hv-gcsr2-95] *Keywords:* survey paper.

C. M. Hoffmann. See also [1262, 2712, 3085, 3291, 4514, 5641].

7035 Frank Hoffmann. On the rectilinear art gallery problem. In *Proc. 17th Internat. Colloq. Automata Lang. Program.*, volume 443 of *Lecture Notes Comput. Sci.*, pages 717–728. Springer-Verlag, 1990. [h-ragp-90]

7036 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. A competitive strategy for learning a polygon. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 166–174, 1997. [hikk-cslp-97] *Succeeds:* hikk-ecslp-96.

7037 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. An efficient competitive strategy for learning a polygon. Technical Report B 96–01, Freie Universität Berlin, Fachbereich Mathematik, 1996. [hikk-ecslp-96] *Precedes:* hikk-cslp-97.

7038 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. An efficient competitive strategy for learning a polygon. In *Abstracts 12th European Workshop Comput. Geom.*, pages 107–108. Universität Münster, 1996. [hikk-ecslp-96c]

7039 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. Moving an angle around a region. Manuscript, FernUniversität Hagen, Hagen, Germany, 1997. [hikk-maar-97] *Precedes:* hikk-maar-98.

7040 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. Moving an angle around a region. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 71–82. Springer-Verlag, 1998. [hikk-maar-98] *Succeeds:* hikk-maar-97.

7041 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. The polygon exploration problem. *SIAM J. Comput.*, 31:577–600, 2001. [hikk-pep-01] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/hikk-pep-01.pdf. *Cites:* aaiklr-gsac-98p, aks-eueo-99, afm-aalmm-97, b-olsn-98, brs-nugt-97, cj-cswps-95, cjn-fswrs-93, co-rpwdu-00, cn-wrsp-91, bghosst-rgdu-95, dkp-hlue-91, dkp-hlue1-98, fw-ola-98, hn-ctbes-97, hikk-cslp-97, hikk-maar-98, hikk-pepns-98, ik-skpcs-95, ikl-ocsws-99, ikm-hlac-93, m-gspno-00, n-wrlv-90, rksi-rnut-93, r-cic-94, su-hcg-00, st-aelup-85, th-cswrd-93, thi-ciacs-99, ZZZ.

7042 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. The polygon exploration problem: A new strategy and a new analysis technique. In *Robotics: The Algorithmic Perspective, Proc. 3rd Workshop Algorithmic Found. Robot.*, pages 211–222. A. K. Peters, 1998. [hikk-pepns-98] *Comments:* Utilizes result in [7040].

7043 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. The polygon exploration problem I: A competitive strategy. Technical Report 241, Department of Computer Science, FernUniversität Hagen, Germany, 1998. [hikk-pep1c-98] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr241.pdf.

7044 Frank Hoffmann, Christian Icking, Rolf Klein, and Klaus Kriegel. The polygon exploration problem II: The angle hull. Technical Report 245, Department of Computer Science, FernUniversität Hagen, Germany, 1998. [hikk-pep2a-98] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr245.pdf.

7045 F. Hoffmann, M. Kaufmann, and K. Kriegel. The art gallery theorem for polygons with holes. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 39–48, 1991. [hkk-agtph-91]

7046 Frank Hoffmann and Klaus Kriegel. A graph coloring result and its consequences for some guarding problems. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 78–87. Springer-Verlag, 1993. [hk-gcric-93]

7047 Frank Hoffmann and Klaus Kriegel. Dominating polygons by many colors. In *Abstracts 9th European Workshop Comput. Geom.* FernUniversität Hagen, 1993. [hk-dpmc-93]

7048 F. Hoffmann and K. Kriegel. Embedding rectilinear graphs in linear time. *Inform. Process. Lett.*, 29:75–79, 1988. [hk-ertlt-88]

7049 Frank Hoffmann, Klaus Kriegel, and Carola Wenk. A geometric approach to protein identification in 2D electrophoretic gel images. In *Abstracts 15th European Workshop Comput. Geom.*, pages 173–174. INRIA Sophia-Antipolis, 1999. [hkw-gapi2-99]

7050 Frank Hoffmann, Klaus Kriegel, and Carola Wenk. New algorithmic tools for comparing 2D patterns of protein spots. In *Abstracts 14th European Workshop Comput. Geom.*, pages 93–95. Universitat Politècnica de Catalunya, Barcelona, 1998. [hkw-natc2-98]

F. Hoffmann. See also [1104–1106, 4804, 6533–6535].

7051 K. Hoffmann and K. Mehlhorn. Intersecting a line and a simple polygon. *Bull. EATCS*, 22:120–121, February 1984. [hm-ilsp-84]

7052 K. Hoffmann, K. Mehlhorn, P. Rosenstiehl, and R. E. Tarjan. Sorting Jordan sequences in linear time. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 196–203, 1985. [hmrt-sjslt-85] *Precedes:* hmrt-sjslt-86. *Cites:* bt-dadsr-80, e-pp-83, f-hgiit-76, hm-ilsp-84, hm-ndsrs-82, ms-hbt-81, m-ss-84, r-ppdti-84, t-acc-85, ZZZ.

7053 K. Hoffmann, K. Mehlhorn, P. Rosenstiehl, and R. E. Tarjan. Sorting Jordan sequences in linear time using level-linked search trees. *Inform. Control*, 68:170–184, 1986. [hmrt-sjslt-86] *Succeeds:* hmrt-sjslt-85.

7054 Michael Hoffmann. Covering polygons with few rectangles. In *Abstracts 17th European Workshop Comput. Geom.*, pages 39–42. Freie Universität Berlin, 2001. [h-cpfr-01]

Michael Hoffmann. See also [6887].

Ulrich Hoffmann. See also [589].

7055 Georg R. Hofmann. Who invented ray tracing? *Visual Comput.*, 6(3):120–4, June 1990. [h-wirt-90]

T. Hofmeister. See also [1871].

P. G. Hogan. See also [13919].

7056 B. van Hohenbalken. Finding faces of polytopes by simplicial decomposition, Part I: vertices and edges. Report 24, Dept. Econom., Univ. Alberta, Edmonton, AB, 1975. [h-ffpsd1-75]

7057 B. van Hohenbalken. Finding faces of polytopes by simplicial decomposition, Part II: higher-dimensional faces. Report 25, Dept. Econom., Univ. Alberta, Edmonton, AB, 1975. [h-ffpsd2-75]

7058 B. van Hohenbalken. Finding simplicial subdivisions of polytopes. *Math. Program.*, 21:233–234, 1981. [h-fssp-81]

7059 B. van Hohenbalken. Least distance methods for the scheme of polytopes. *Math. Program.*, 15:1–11, 1978. [h-ldmsp-78]

7060 Michael Hohmeyer and Wayne Christopher. Fully-automated object-based generation of hexahedral meshes. In *Proc. 4th International Meshing Roundtable*, pages 129–139, Albuquerque, NM, 1995. Sandia National Laboratories. [hc-faobg-95]

7061 M. E. Hohmeyer. A surface intersection algorithm based on loop detection. *Internat. J. Comput. Geom. Appl.*, 1(4):473–490, 1991. [h-siabl-91] *Keywords:* surface, curve, intersection, computer aided design CAD, closed loops, linear programming.

7062 D. H. Hoitsma and M. Roche. The determination of the critical points on a bicubic patch relative to a plane. Report ??, Fairchild Republic, and Lundy Systems, 1984. [hr-dcpbc-84]

Jim Hollan. See also [10004].

A. T. Holle. See also [3100].

J. Hollerbach. See also [11525].

7063 J. M. Hollerbach. Dynamic scaling of manipulator trajectories. Technical Report A. I. Lab Memo 700, Massachusetts Inst. Tech., Cambridge, MA, 1983. [h-dsmt-83t]

7064 J. M. Hollerbach. Dynamic scaling of manipulator trajectories. In *Proc. ACC*, pages 752–756. American Automatic Control Council, June 1983. [h-dsmt-83]

J. M. Hollerbach. See also [11526].

7065 David Holmes. Generalized method of decomposing solid geometry into hexahedron finite elements. In *Proc. 4th International Meshing Roundtable*, pages 141–152, Albuquerque, NM, 1995. Sandia National Laboratories. [h-gmdsg-95]

7066 D. Graham Holmes and Scott H. Lamson. Adaptive triangular meshes for compressible flow solutions. In J. Häuser and C. Taylor, editors, *Numerical Grid Generation in Computational Fluid Dynamics*, pages 413–424, Swansea, England, 1986. Pineridge Press. [hl-atmcf-86] *Annote:* Insertion algorithm for CDT for mesh for fluid dynamics FEM. Laplacian smoothing of mesh. Adaptive refinement by splitting triangles into four pieces along edge mid points.

Derek Holton. See also [6922].

7067 L. S. Homem de Mello and A. C. Sanderson. A correct and complete algorithm for the generation of mechanical assembly sequences. *IEEE Trans. Robot. Autom.*, 7:228–240, 1991. [hs-ccagm-91]

7068 L. S. Homem de Mello and A. C. Sanderson. Automatic generation of mechanical assembly sequences. Technical Report, Robotics Institute, Carnegie Mellon University, December 1988. [hs-agmas-88]

M. Homma. See also [9097].

7069 M. C. Hon, R. Janardan, J. Schwerdt, and M. Smid. Computing optimal hatching directions in layered manufacturing. In *Proceedings International Conference on Computational Science*, volume 2073 of *Lecture Notes Comput. Sci.*, pages 683–692. Springer-Verlag, 2001. [hjss-cohdl-01]

R. W. Hon. See also [1643].

7070 H. Honda. Description of cellular patterns by Dirichlet domains: The two-dimensional case. *Journal of Theoretical Biology*, 72:523–543, 1978. [h-dcpdd-78] *Annote:* VD as model of cell patterns. Tries to find centres to create pattern. $O(n^2)$ algorithm to build VD.

7071 J. Hong and H. J. Wolfson. An improved model-based matching method using footprints. In *Proc. 9th IEEE Internat. Conf. Pattern Recogn.*, pages 72–28, 1988. [hw-imbmm-88]

J. Hong. See also [6357, 10780].

7072 J. H. Hong, A. E. Chiou, and P. Yeh. Image amplification by two-wave mixing in photorefractive crystals. *Appl. Optics*, 29(20):3026–3029, 1990. [hcy-iatwm-90]

7073 J. W. Hong, K. Mehlhorn, and A. L. Rosenberg. Cost trade-offs in graph embedding with applications. *J. ACM*, 30:709–728, 1983. [hmr-ctoge-83]

7074 M. Hong, T. W. Sederberg, K. S. Klimaszewski, and K. Kaneda. Triangulation of branching contours using area minimization. *Internat. J. Comput. Geom. Appl.*, 8:389–406, 1998. [hskk-tbcua-98]

7075 M. C. Hong, R. Janardan, J. Schwerdt, and M. Smid. Minimizing the total projection of a set of vectors, with applications to layered manufacturing. Report 4, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 2001. [hjss-mtpsv-01]

M. C. Hong. See also [11901].

7076 S.-H. Hong, P. Eades, and S.-H. Lee. Drawing series parallel digraphs symmetrically. *Comput. Geom. Theory Appl.*, 17:165–188, 2000. [hel-dspds-00]

S. J. Hong. See also [10883].

7077 T. H. Hong and M. Schneier. Describing a robot's workspace using a sequence of views from a moving camera. *IEEE Trans. Pattern Anal. Mach. Intell.*, 7:721–726, 1985. [hs-drwsv-85]

T. H. Hong. See also [13703].

7078 R. Honsberger. *Mathematical Gems I.* Number 1 in The Dolciani Mathematical Expositions. Math. Soc. of America, 1973. [h-mg-73] *Precedes:* h-mg-76,h-mg-85.

7079 R. Honsberger. *Mathematical Gems II.* Number 2 in The Dolciani Mathematical Expositions. Math. Soc. of America, 1976. [h-mg-76] *Succeeds:* h-mg-73. *Precedes:* h-mg-85.

7080 R. Honsberger. *Mathematical Gems III.* Number 9 in The Dolciani Mathematical Expositions. Math. Soc. of America, 1985. [h-mg-85] *Succeeds:* h-mg-73, h-mg-76.

7081 R. Honsberger. Semi-regular lattice polygons. *Two Year College Math. J.*, 13:36–44, 1982. [h-srlp-82]

7082 S. J. Hood, R. C. Rosenberg, D. H. Withers, and T. Zhou. An algorithm for automatic identification of *R*-fields in bond graphs. *IBM J. Res. Develop.*, 31:382–390, 1987. [hrwz-aairf-87]

Tim Van Hook. See also [4381].

G. Hooper. See also [13421].

R. Hoover. See also [555].

7083 J. Hopcroft and P. Kahn. A paradigm for robust geometric algorithms. Technical Report TR-89-1044, Cornell University, October 1989. [hk-prga-89]

7084 J. Hopcroft and R. M. Karp. An $n^(5/2)$ algorithm for maximum matchings in bipartite graphs. *SIAM J. Comput.*, 2(4):225–231, 1973. [hk-nammb-73]

7085 J. Hopcroft and D. Kraft. The challenge of robotics for computer science. In J. Schwartz and C. Yap, editors, *Advances in Robotics: Algorithms and Geometric Aspects of Robotics*, volume 1, pages 7–42. ??, 1985. [hk-crcs-85i]

7086 J. Hopcroft and R. E. Tarjan. Dividing a graph into triconnected components. *SIAM J. Comput.*, 2(3):135–158, 1973. [ht-dgtc-73]

7087 J. Hopcroft and R. E. Tarjan. Efficient planarity testing. *J. ACM*, 21(4):549–568, 1974. [ht-ept-74] *Keywords:* graph drawing. *Precedes:* d-nhtpa-76.

7088 J. Hopcroft and G. Wilfong. Motion of objects in contact. *Internat. J. Robot. Res.*, 4(4), 1986. [hw-moc-86]

J. Hopcroft. See also [5683, 7006, 7010, 7011].

7089 J. E. Hopcroft and D. P. Huttenlocher. *Geometric invariance on computer vision*, chapter 18, pages 354–374. MIT Press, 1992. [hh-gicv-92]

7090 J. E. Hopcroft and D. P. Huttenlocher. On planar point matching under affine transformation. Technical Report TR 89-986, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, April 1989. [hh-ppmat-89]

7091 J. E. Hopcroft and D. P. Huttenlocher. Point matching under affine transformation. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 14, 1989. [hh-pmat-89]

7092 J. E. Hopcroft, D. A. Joseph, and S. H. Whitesides. Movement problems for 2-dimensional linkages. *SIAM J. Comput.*, 13:610–629, 1984. [hjw-mp2dl-84]

7093 J. E. Hopcroft, D. A. Joseph, and S. H. Whitesides. On the movement of robot arms in 2-dimensional bounded regions. Technical Report TR 82-486, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1982. [hjw-mra2d-82] *Precedes:* hjw-mra2d-85.

7094 J. E. Hopcroft, D. A. Joseph, and S. H. Whitesides. On the movement of robot arms in 2-dimensional bounded regions. *SIAM J. Comput.*, 14:315–333, 1985. [hjw-mra2d-85] *Succeeds:* hjw-mra2d-82.

7095 J. E. Hopcroft and P. J. Kahn. A paradigm for robust geometric algorithms. *Algorithmica*, 7(4):339–380, 1992. [hk-prga-92]

7096 J. E. Hopcroft and D. B. Krafft. The challenge of robotics for computer science. Technical Report ??, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1985. [hk-crcs-85]

7097 J. E. Hopcroft, J. T. Schwartz, and Micha Sharir. Efficient detection of intersections among spheres. *Internat. J. Robot. Res.*, 2(4):77–80, 1983. [hss-edis-83a] *Keywords:* intersection, detection, spheres, three-dimensional. *Succeeds:* hss-edis-83t.

7098 J. E. Hopcroft, J. T. Schwartz, and Micha Sharir. Efficient detections of intersections among spheres. Report 59, Dept. Comput. Sci., New York Univ., New York, NY, 1983. [hss-edis-83t] *Precedes:* hss-edis-83a.

7099 J. E. Hopcroft, J. T. Schwartz, and Micha Sharir. On the complexity of motion planning for multiple independent objects: P-space hardness of the "Warehouseman's Problem". *Internat. J. Robot. Res.*, 3(4):76–88, 1984. [hss-cmpmi-84] *Keywords:* motion planning, lower bounds.

7100 J. E. Hopcroft, J. T. Schwartz, and Micha Sharir. *Planning, Geometry, and Complexity of Robot Motion.* Ablex Publishing, Norwood, NJ, 1987. [hss-pgcrm-87]

7101 J. E. Hopcroft and J. D. Ullman. *Introduction to Automata Theory, Languages, and Computation.* Addison-Wesley, 1979. [hu-iatlc-79]

7102 J. E. Hopcroft and G. T. Wilfong. On the motion of objects in contact. Technical Report 84-602, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, May 1984. [hw-moc-84]

7103 J. E. Hopcroft and G. T. Wilfong. Reducing multiple object motion planning to graph searching. Technical Report 84-616, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, July 1984. [hw-rmomp-84]

7104 J. E. Hopcroft and G. T. Wilfong. Reducing multiple object motion planning to graph searching. *SIAM J. Comput.*, 15:768–785, 1986. [hw-rmomp-86]

J. E. Hopcroft. See also [342, 343, 1262, 1289, 2276, 5415, 7022–7028].

7105 A. K. Hope. A planar graph drawing program. *Softw. – Pract. Exp.*, 1:83–91, 1971. [h-pgdp-71] *Keywords:* graph drawing.

7106 R. Hope and M. Katchalski. Separating plane convex sets. *Math. Scand.*, 66:44–46, 1990. [hk-spcs-90]

7107 H. Hopf. Über Zusammenhänge zwischen Topologie und Metrik im Rahmen der elementaren Geometrie. *Mathematisch-Physikalische Semester Berichte*, 3:16–29, 1953. [h-uzztu-53]

7108 H. Hopf and E. Pannwitz. Aufgabe No. 167. *Jahresbericht Deutsch. Math. Verein*, 43:114, 1934. [hp-an1-34]

H. Hopf. See also [497].

7109 J. Hopfield. Neurons with graded response have collective computational properties like those of two-state neurons. *Proc. Nat. Acad. Sci. USA*, 81:2554–2558, 1984. [h-ngrhc-84]

7110 J. Hopfield and D. Tank. Computing with neural circuits: a model. *Science*, 233:624–633, 1986. [ht-cncm-86]

7111 J. Hopfield and D. Tank. "neural" computation of decisions in optimization problems. *Biological Cybernetics*, 52:141–152, 1985. [ht-ncdop-85]

J. Hopfield. See also [12807].

7112 T. Hopp. Computational metrology. *Manufacturing Review*, 6(4):295–304, 1993. [h-cm-93]

T. H. Hopp. See also [5214].

7113 H. Hoppe. Progressive meshes. In *Proc. SIGGRAPH '96*, pages 99–108, 1996. [h-pm-96]

7114 Hugues Hoppe. View-dependent refinement of progressive meshes. In *Proc. SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, pages 189–198. ACM SIGGRAPH, ACM Press, August 1997. [h-vdrpm-97]

7115 H. Hoppe, T. DeRose, T. Duchamp, M. Halstead, H. Jin, J. McDonald, J. Schweitzer, and W. Stuetzle. Piecewise smooth surface reconstruction. In *Proc. SIGGRAPH 94*, pages 295–302, 1994. [hddhjmss-pssr-94]

7116 H. Hoppe, T. DeRose, T. Duchamp, J. McDonald, and W. Stuetzle. Mesh optimization. In *Proc. SIGGRAPH '93*, pages 19–26, 1993. [hddms-mo-93]

7117 H. Hoppe, T. DeRose, T. Duchamp, J. McDonald, and W. Stuetzle. Surface reconstruction from unorganized points. *Comput. Graphics*, 26(2):71–78, 1992. Proc. SIGGRAPH '92. [hddms-srup-92]

Hugues Hoppe. See also [10842].

7118 K. Hormann and A. Agathos. The point in polygon problem for arbitrary polygons. *Comput. Geom. Theory Appl.*, 20:131–144, 2001. [ha-pppap-01]

7119 A. Horn and F. A. Valentine. Some properties of l-sets in the plane. *Duke Mathematics Journal*, 16:131–140, 1949. [hv-splsp-49]

7120 B. K. P. Horn. Extended Gaussian images. In *Proc. IEEE*, pages 1671–1586, December 1984. [h-egi-84]

7121 B. K. P. Horn. *Robot Vision.* MIT Press, Cambridge, MA, 1986. [h-rv-86]

B. K. P. Horn. See also [7338].

W. Horn. See also [12831].

7122 W. P. Horn and D. L. Taylor. A theorem to determine the spatial containment of a point in a planar polyhedron. *Comput. Graph. Image Process.*, 45:106–116, 1989. [ht-tdscp-89] *Keywords:* point location, polyhedron, winged-edge.

S. W. Hornick. See also [9665].

7123 E. Horowitz and S. Sahni. *Fundamentals of Data Structures.* Computer Science Press, Potomac, Maryland, 1983. [hs-fds-83] *Keywords:* graph drawing.

7124 E. Horowitz, S. Sahni, and S. Anderson-Freed. *Fundamentals of Data Structures in C.* Computer Science Press, New York, 1993. [hsa-fdsc-93]

7125 E. Horowitz, S. Sahni, and D. Metha. *Fundamentals of Data Structures in C++.* Computer Science Press, 1995. [hsm-fdsc-95]

E. Horowitz. See also [3484].

7126 R. N. Horspool. Constructing the Voronoi diagram in the plane. Report SOCS 79.12, School Comput. Sci., McGill Univ., Montreal, PQ, July 1979. [h-cvdp-79]

J. Horton. See also [1164].

7127 J. D. Horton. Sets with no empty convex 7-gons. *Canad. Math. Bull.*, 26:482–484, 1983. [h-snec7-83]

Joseph D. Horton. See also [8462].

7128 T. Horvath et al. Ray coherence between a sphere and a convex polyhedron. *Comput. Graph. Forum*, 11(2):163–172, June 1992. [ho-rcbsc-92]

R. M. Hosabettu. See also [9925].

7129 J. Hoschek and W. Dankwort. *Parametric and Variational Design.* B. G. Teubner, 1994. [hd-pvd-94]

7130 J. Hoschek and D. Lasser. *Computer Aided Geometric Design.* A.K. Peters, 1993. [hl-cagd-93]

7131 M. Hoshi and T. Yuba. A counter example to a monotonicity property of k-d trees. *Inform. Process. Lett.*, 15(4):169–173, 1982. [hy-cempk-82]

R. Hoshino. See also [4628, 4629].

J. A. Hoskins. See also [7999].

W. D. Hoskins. See also [7999].

7132 K. Hosono and M. Urabe. On the number of disjoint convex quadrilaterals for a given point set in the plane. *Comput. Geom. Theory Appl.*, 20:97–104, 2001. [hu-ndcqg-01]

Serkan Hoşten. See also [8948].

7133 L. B. Hostetler. A comparison of three hidden line removal algorithms. Report TR–89–02, Department of Computer Science, Johns Hopkins University, 1989. [h-cthlra-89]

G. H. Hostetter. See also [7407].

7134 Hottel and Sarofim. *Radioactive Transfer.* McGraw-Hill, New York, NY, 1967. [hs-rt-67]

7135 G. R. Hottel, S. T. Tuohy, P. G. Alourdas, and N. M. Patrikalakis. Praxiteles: A geometric modeling and interrogation system. In *Proc. Marine Computers '91*, page CC4, 1991. [htap-pgmis-91]

G. R. Hottel. See also [553, 10657].

7136 G. Hotz and J. Sellen. On algebraic computation trees and Betti numbers. Manuscript, ??, 1993. [hs-actbn-93]

G. Hotz. See also [1560, 1561, 2775, 4622, 6311].

A. A. Hough. See also [3651].

7137 M. Houle and A. Maciel. Finding the widest empty corridor through a set of points. In *Snapshots of computational and discrete geometry*, pages 201–213. Dept. of Computer Science, McGill University, Montreal, Canada, 1988. Technical Report SOCS-88.11. [hm-fwecs-88]

M. Houle. See also [4845].

7138 M. E. Houle. Algorithms for weak and wide separation of sets. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 25, 1989. [h-awwss-89a] *Precedes:* h-awwss-89b.

7139 M. E. Houle. Algorithms for weak and wide separation of sets. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 61–68, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [h-awwss-89b] *Keywords:* linear separation, red-blue separation, spherical separation. *Succeeds:* h-awwss-89a.

7140 M. E. Houle. Theorems on the existence of separating surfaces. *Discrete Comput. Geom.*, 6:49–56, 1991. [h-tess-91]

7141 M. E. Houle, H. Imai, K. Imai, and J.-M. Robert. Weighted orthogonal linear L_∞-approximation and applications. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 183–191. Springer-Verlag, 1989. [hiir-wolla-89]

7142 M. E. Houle, H. Imai, K. Imai, J.-M. Robert, and P. Yam amoto. Orthogonal weighted linear L_1 and L_∞ approximation and applications. *Discrete Appl. Math.*, 43(3):217–232, June 1993. [hiiry-owllla-93] *Succeeds:* hiiry-owlll-90.

7143 M. E. Houle, H. Imai, K. Imai, J.-M. Robert, and P. Yamamoto. Orthogonal weighted linear L_1 and L_∞ approximation and applications. Manuscript, 1990. [hiiry-owlll-90] *Precedes:* hiiry-owllla-93.

7144 M. E. Houle and G. T. Toussaint. Computing the width of a set. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 1–7, 1985. [ht-cws-85] *Precedes:* ht-cws-88. *Cites:* t-mss-84, s-cg-78, b-gtfga-80, ks-upcha-82t, mt-uchap-84, ma-lafch-79, l-fchsp-80, gs-ncg-82, k-osps-81, ph-chfsp-77, ik-spc-75, ii-cgmpa-85, kd-pamm-82, t-sgprc-83, t-apctd-, ZZZ.

7145 M. E. Houle and G. T. Toussaint. Computing the width of a set. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-10(5):761–765, 1988. [ht-cws-88] *Keywords:* two-dimensional, three-dimensional, rotating calipers, antipodal pairs, line fitting, plane fitting, approximation. *Succeeds:* ht-cws-85. *Annote:* $O(n \log n + I)$ time, where I is the number of antipodal pairs: vertex-edge pairs in two dimensions ($I = O(n)$); edge-edge pairs and $O(n)$ vertex-face pairs in three dimensions ($I = O(n^2)$).

Michael E. Houle. See also [969, 1165, 1166, 2310, 2315, 2316, 4576, 5184, 5185].

G. T. Houlsby. See also [12275].

B. H. Houston. See also [7808].

7146 Piet Houthuys. Box sort, a multidimensional binary sorting method for rectangular boxes, used for quick range searching. *Visual Comput.*, 3(4):236–249, December 1987. [h-bsmbs-87] *Keywords:* multidimensional sorting, range searching, set operations on polygons.

7147 W. E. Howden. The sofa problem. *Comput. J.*, 11:299–301, 1968. [h-sp-68]

7148 A. E. Howe. *Estimating regions and clustering spatial data: analysis and implementation of methods using the Voronoi diagram.* Ph.D. thesis, Brown Univ., Providence, RI, 1978. [h-ercsd-78] *Keywords:* doctoral thesis.

R. Howe. See also [1379].

J. R. Howell. See also [12197].

7149 C. T. Howie and E. H. Blake. The mesh propagation algorithm for isosurface construction. *Comput. Graph. Forum*, 13:65–74, 1994. [hb-mpaic-94]

L. M. Hrechanyk. See also [12270].

7150 W.-Y. Hsiang. On the development of quantitative geometry from Pythagoras to Grassman. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*, pages 1–21. World Scientific, Singapore, 1992. [h-dqgpg-92] *Keywords:* survey paper. *Precedes:* h-dqgpg-95.

7151 Wu-Yi Hsiang. On the development of quantitative geometry from Pythagoras to Grassmann. In Ding-Zhu Du and Frank Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 1–21. World Scientific, Singapore, 2nd edition, 1995. [h-dqgpg-95] *Keywords:* survey paper. *Succeeds:* h-dqgpg-92.

D. K. Hsiao. See also [2048].

M. Hsieh. See also [3089].

7152 David Hsu, Lydia E. Kavraki, Jean-Claude Latombe, Rajeev Motwani, and Stephen Sorkin. On finding narrow passages with probabilistic roadmap planners. In *Proc. 3rd Workshop Algorithmic Found. Robot.*, Wellesley, MA, 1998. A. K. Peters. To appear. [hklms-fnppr-98]

David Hsu. See also [590].

7153 F. R. Hsu, R. C. Chang, and R. C. T. Lee. Parallel algorithms for computing the closest visible vertex pair between two polygons. *Internat. J. Comput. Geom. Appl.*, 2(2):135–162, 1992. [hcl-paccv-92] *Keywords:* parallel algorithm, visibility.

7154 W.-J. Hsu, C.-C. Wang, and K.-T. Huang. Convex polygon retrieval. Report ??, IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1985. [hwh-cpr-85]

7155 W. L. Hsu and G. L. Nemhauser. Easy and hard bottleneck location problems. *Discrete Appl. Math.*, 1:209–215, 1979. [hn-ehblp-79]

W.-L. Hsu. See also [5687, 5688, 10007].

7156 M. Y. Hsueh and D. O. Pederson. Computer-aided layout of lsi circuit building-blocks. In *Proc. IEEE Int. Symp. on Circuits and Systems*, 1979. [hp-callc-79]

7157 C.-Y. Hu. *Towards Robust Interval Solid Modeling of Curved Objects.* Ph.D. thesis, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1995. [h-trism-95] *Keywords:* doctoral thesis.

7158 C.-Y. Hu, N. M. Patrikalakis, and X. Ye. Robust interval solid modeling, Part I: representations. *CAD*, 28:807–818, 1996. [hpy-rismp1-96]

7159 C.-Y. Hu, N. M. Patrikalakis, and X. Ye. Robust interval solid modeling, Part II: boundary evaluation. *CAD*, 28:819–830, 1996. [hpy-rismp2-96]

C.-Y. Hu. See also [10662, 10665].

7160 Limin Hu. A novel topology control for multihop packet radio networks. In *Proceedings of the 10th Annual Joint Conference of the IEEE and Communications Societies, IEEE INFOCOM '91*, pages 1084–1093, IEEE Service Center, Piscataway, NJ, USA (IEEE cat n 91CH2979-3), 1991. IEEE. [h-ntcmp-91] *Keywords:* packet radio networks, topology control algorithms, data links. *Abstract:* A novel, distributed topology-control algorithm has been developed for each node in a packet radio network (PRN) to control its transmitting power and logical neighbors in order to construct a reliable, high-throughput topology. The algorithm first constructs a planar triangulation from locations of all nodes as a starting topology. Then, the minimum angles of all triangles in the planar triangulation are maximized by means of edge switching to improve connectivity and throughput. The resulting Delaunay triangulation can be determined locally at each node. The topology is modified by negotiating among neighbors to satisfy a design requirement on the nodal degree parameter. Simulations show that (1) the final topology is degree-bounded, (2) it has a rather regular and uniform structure, and (3) its throughput and reliability are greater than that of a number of alternative topologies. 25 Refs.

Q. Hu. See also [12098].

7161 T. C. Hu. *Integer programming and network flows.* Addison-Wesley, Reading, MA, 1969. [h-ipnf-69]

7162 T. C. Hu, Andrew B. Kahng, and Gabriel Robins. Optimal robust path planning in general environments. Manuscript, 1992. [hkr-orppg-92] *Precedes:* hkr-orppg-93.

7163 T. C. Hu, Andrew B. Kahng, and Gabriel Robins. Optimal robust path planning in general environments. *IEEE Trans. Robot. Autom.*, 9(6):775–784, December 1993. [hkr-orppg-93] *Succeeds:* hkr-orppg-92. *Abstract:* We address robust path planning for a mobile agent in a general environment by finding minimum cost source-destination paths having prescribed widths. The main result is a new approach that optimally solves the robust path planning problem using an efficient network flow formulation. Our algorithm represents a significant departure from conventional shortest-path or graph search based methods; it not only handles environments with solid polygonal obstacles, but also generalizes to arbitrary cost maps that may arise in modeling incomplete or uncertain knowledge of the environment. Simple extensions allow us to address higher dimensional problem instances and minimum-surface computations; the latter is a result of independent interest. We use an efficient implementation to exhibit optimal path-planning solutions for a variety of test problems. The paper concludes with open issues and directions for future work. Addresses: HU TC, UNIV CALIF SAN DIEGO, DEPT COMP SCI & ENGN, LA JOLLA, CA 92093. UNIV CALIF LOS ANGELES, DEPT COMP SCI, LOS ANGELES, CA 90024. UNIV VIRGINIA, DEPT COMP SCI, CHARLOTTESVILLE, VA 22903.

7164 T. C. Hu and M.-T. Shing. An $O(n)$ algorithm to find a near-optimum partition of a convex polygon. *J. Algorithms*, 2:122–138, 1981. [hs-oafno-81]

7165 A. Huang. Optical digital computing at Bell Labs. In *1990 International Topical Meeting on Optical Computing*, 1990. [h-odcbl-90]

7166 Jian Huang, Anil Maheshwari, Doron Nussbaum, and Jörg-Rüdiger Sack. A note on approximations of rectilinear polygons. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 43–48, 1995. [hmns-narp-95]

7167 J. M. Huang, P. Huang, and Y. P. Huang. Interactive computer graphics in topographical simulation. Manuscript, ??, 1985. [hhh-icgts-85]

7168 J. S. Huang and Y. C. Chow. Parallel sorting and data partitioning by sampling. In *Proc. IEEE 7th Int. Computer Software and Applications Conference*, pages 627–631, 1983. [hc-psdps-83]

K.-T. Huang. See also [7154].

7169 M.-D. A. Huang and K. J. Lieberherr. Implications of forbidden structures for extremal algorithmic problems. *Theoret. Comput. Sci.*, 40:195–210, 1985. [hl-ifsea-85]

Mao Lin Huang. See also [4571].

N. Huang. See also [8799, 8800].

7170 N.-F. Huang. The power connecting problem on a radio network. Technical report, Dept. of Comput. Sci., National Tsing Hua Univ., Hsinchu, Taiwan 300, Republic of China, 1991. [h-pcprn-91]

N. F. Huang. See also [2848, 13363].

P. Huang. See also [7167].

Q. Huang. See also [5336].

T. S. Huang. See also [894, 3061–3063, 5126].

W. Huang. See also [397].

7171 Y. Huang, J. Xu, and D. Z. Chen. Geometric permutations of high dimensional spheres. In *Proc. 12th ACM-SIAM Sympos. Discrete Algorithms*, pages 244–245, 2001. [hxc-gphds-01]

Y. Huang. See also [11596].

Y. G. Huang. See also [11590, 11591, 11597].

7172 Yih-Ping Huang. Triangular irregular network generation and topographical modeling. *Computers in Industry*, 12:203–213, 1989. [h-tingt-89] *Annote:* Program for a CT. Three different measures of goodness used in incompatible ways!! Initial triangulation is built by on edges by taking the first point that subtends a sufficiently angle (6 degrees seemed to work well). Then a LOT based on shortest diagonal is produced (but with an additional unspecified rule to avoid really skinny triangles!). Finally a third measure is used to evaluate the triangulation—triangle quality is (area of equilateral tri with same perimeter)/area. Then the triangulation quality is the weighted-by-area average of this (Note that this is a rotten measure—really skinny triangles have low areas). Measured performance is $O(n^{2.5})$. Oh yes, bucketing is used to speed the search in triangle building. God knows how slow it would have been without bucketing. (Like 2 cpu hours for 1500 points!).

Y. P. Huang. See also [7167].

7173 Y. Y. Huang, Z. Cao, and E. l. Hall. Region filling operations for mobile robots using computer graphics. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1607–1614, 1986. [hch-rfomr-86]

7174 Y. Y. Huang, Z. L. Cao, and E. L. Hall. Region filling operations for mobile robots using computer graphics. Report ??, Center Rob. Res., Univ. Cincinnati, Cincinnati, OH, 1985. [hch-rfomr-85]

7175 P. M. Hubbard. Approximating polyhedra with spheres for time-critical collision detection. *ACM Trans. Graph.*, 15(3):179–210, July 1996. [h-apstc-96]

7176 Philip M. Hubbard. Collision detection for interactive graphics applications. *IEEE Trans. Visualization and Computer Graphics*, 1(3):218–230, September 1995. [h-cdiga-95] *Keywords:* collision detection, intersection detection, sphere trees.

7177 Philip M. Hubbard. Improving accuracy in a robust algorithm for three-dimensional Voronoi diagrams. *Journal of Graphics Tools*, 1(1):33–47, 1996. [h-iarat-96] *Annote:* Extends [7379]. *Abstract:* This paper describes extensions to a previous algorithm that robustly builds three-dimensional Voronoi diagrams in the presence of inexact numerical computations. The extensions improve the algorithm's accuracy, making its results more nearly represent the proximity properties of an ideal Voronoi diagram. In empirical tests, these extensions have improved accuracy by more than eight orders of magnitude. Complete pseudocode for the algorithm appears in an appendix of this paper.

7178 P. M. Hubbard. Interactive collision detection. In *Proc. IEEE Symposium on Research Frontiers in Virtual Reality*, pages 24–31, 1993. [h-icd-93]

7179 P. M. Hubbard. Space-time bounds for collision detection. Technical report cs-93-04, Dept. of Computer Science, Brown University, February 1993. [h-stbcd-93]

Philip M. Hubbard. See also [12668].

7180 D. H. Hubel and T. N. Wiesel. Receptive fields and functional architecture of monkey striate cortex. *J. Physiol. (London)*, 195:215–243, 1968. [hw-rffam-68]

7181 D. H. Hubel and T. N. Wiesel. Sequence regularity and geometry of orientation columns in the monkey striate cortex. *J. Comp. Neurol.*, 158:267–293, 1974. [hw-srgoc-74]

Ernst Huber. See also [1458].

7182 F. Huber. Rekursive Aufteilungen der Ebene und des Raumes für Bereichsuchverfahren. Dipl.-Ing. master thesis, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1984. [h-radeu-84] *Keywords:* master thesis. *Comments:* 61 pp.

F. Huber. See also [4713].

7183 P. J. Huber. Robust statistics: a review. *Ann. Math. Statist.*, 43(3):1041–1067, 1972. [h-rsr-72]

P. J. Huber. See also [4379].

7184 Mia Hubert and Peter J. Rousseeuw. The catline for deep regression. Manuscript, Dept. of Mathematics and Computer Science, University of Antwerp, Belgium, 1997. [hr-cdr-97] *Keywords:* breakdown value, heteroscedasticity, influence function, regression depth, robust regression. *Comments:* to appear, Journal of Multivariate Analysis. *Abstract:* Motivated by the notion of regression depth (Rousseeuw and Hubert 1996) we introduce the catline, a new method for simple linear regression. At any bivariate data set $Z_n = \{(x_i, y_i); i = 1, \ldots, n\}$ its regression depth is at least n/3. This lower bound is attained for data lying on a convex or concave curve, whereas for perfectly linear data the catline attains a depth of n. We construct an O(n log n) algorithm for the catline, so it can be computed fast in practice. The catline is Fisher-consistent at any linear model y=bx +a + e in which the error distribution satisfies med(e—x)=0, which encompasses skewed and/or heteroscedastic errors. The breakdown value of the catline is 1/3, and its influence function is bounded. At the bivariate gaussian distribution its asymptotic relative efficiency compared to the L1 line is 79.3% for the slope, and 88.9% for the intercept. The finite-sample efficiencies are in close agreement with these values. This combination of properties makes the catline an attractive fitting method.

Mia Hubert. See also [11435, 11436].

7185 A. Hübler, R. Klette, and K. Vob. Determination of the convex hull of a finite set of planar points within linear time. *Elektron. Informationsverarb. Kybernet.*, 17:121–139, 1981. [hkv-dchfs-81]

A. Hübler. See also [3613].

7186 H. Hubschman and S. W. Zucker. Frame-to-frame coherence and the hidden surface computation: constraints for a convex world. *ACM Trans. Graph.*, 1:129–162, 1982. [hz-ffchs-82]

7187 U. Huckenbeck. Geometrical abstract automata. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 217–231. Springer-Verlag, 1988. [h-gaa-88] *Keywords:* computational model. *Annote:* 4th Intern. Workshop Comput. Geom.

7188 U. Huckenbeck. Geometrische Maschinenmodelle. Report ??, Bayerische Julius-Maximilians-Univ., Würzburg, West Germany, 1986. [h-gm-86]

7189 Ulrich Huckenbeck. Kreisscheiben als Orakel für geometrische Random Access Machines. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 14. Universität Siegen, 1990. [h-kaogr-90]

7190 U. Huckenbeck. Über die Ausdrucksmächtigkeit von Zirkel- und Lineal-Maschinen, die die Gleicheit von Punkten entscheiden können. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [h-uazlm-89]

7191 S. Huddleston and K. Mehlhorn. A new data structure for representing sorted lists. *Acta Inform.*, 17:157–184, 1982. [hm-ndsrs-82]

B. Hudson. See also [6171, 6172].

S. E. Hudson. See also [6825, 9924].

7192 T. Hudson, D. Manocha, J. Cohen, M. Lin, K. Hoff, and H. Zhang. Accelerated occlusion culling using shadow frustra. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 1–10, 1997. [hmclhz-aocus-97] *Cites:* arb-tiriu-90, bcgmt-bhrs3-96, bdeg-vmpv-94, c-oaitd-89, c-hgmvs-76, c-arscg-88, clmp-iciec-95, c-sacg-77, ct-tccv-96, ct-rtocm-97, d-soshs-94, fdfh-cgpp-90, fkn-vsgpt-80, f-riga-96, gbw-ivlgd-90, gcs-ecrag-91, gjk-fpcdb-88, gkm-hzbv-93, glm-othsr-96, g-dirsc-94, hhk-rsops-89, hkm-ecdmv-95, kk-rtcs-86, lc-eaidc-91, lg-pmsfe-95, m-wcohs-87, mn-lpcgc-95, ms-foscp-85, m-eahsr-89, n-isgpt-92, s-lpchm-90, sss-cthsa-74, ts-vpiw-91, yr-vcewc-96, zmhh-vcuho-97t, ZZZ.

Tom Hudson. See also [13874, 13875].

7193 D. L. Huff and G. F. Jenks. A geographic interpretation of the friction of distance in gravity models. *Annals of the Association of American Geographers*, ??, 1968. [hj-gifdg-68]

7194 D. L. Huff and J. M. Lutz. Ireland's urban system. *Economic Geography*, ??, 1979. [hl-ius-79]

D. L. Huff. See also [5728].

7195 D. Huffman. A duality concept for the analysis of polyhedral scenes. *Machine Intelligence*, 8:475–492, 1977. [h-dcaps-77]

7196 D. Huffman. Impossible objects as nonsense sentences. *Machine Intelligence*, 6:295–323, 1971. [h-ions-71]

7197 D. A. Huffman. Curvatures and creases: a primer on paper. *IEEE Trans. Comput.*, C-25:1010–1019, 1976. [h-ccpp-76]

Gary S. Hufford. See also [9689].

7198 A. Hufnagel. *Algorithmic problems in Brunn-Minkowski theory*. PhD thesis, ??, Trier, Germany, 1995. [h-apbmt-95] *Keywords:* doctoral thesis.

A. Hufnagel. See also [4562, 6295, 6296].

John F. Hughes. See also [5355, 5356, 8451, 12668].

L. Huguet. See also [2291].

Hannu Huhdanpaa. See also [1389, 1390].

7199 K. Hui. Geometric aspects of mouldability of parts. *Comput. Aided Design*, 29:107–208, 1997. [h-gamp-97]

7200 K. Hui and S. Tan. Mould design with sweep operations - a heuristic search approach. *Comput. Aided Design*, 24:81–91, 1992. [ht-mdsoh-92]

7201 K. C. Hui. Solid sweeping in image space – application in NC simulation. *Visual Comput.*, 10(6):306–316, 1994. [h-ssisa-94]

7202 K. C. Hui and Y. M. Kan. Data partitioning for parallel solid modeling. *Visual Comput.*, 11(10):526–541, 1995. [hk-dppsm-95]

7203 D. P. Huijsmans and G. H. Jense. Representation of 3*D* objects reconstructed from series of parallel 2*D* slices. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, NATO ASI Series, pages 1031–1038. Springer-Verlag, 1988. [hj-r3dor-88] *ISBN:* 3-540-19506-8.

7204 R. Hull. Acyclic join dependency and data base projections. *J. Comput. Syst. Sci.*, 27:331–349, 1983. [h-ajddb-83]

7205 T. Hull. On the mathematics of flat origamis. *Congr. Numer.*, 100:215–224, 1994. [h-mfo-94]

7206 Christoph Hundack, Petra Mutzel, Igor Pouchkarev, and Stefan Thome. *ArchE*: A graph drawing system for archaeology. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 297–302. Springer-Verlag, 1997. [hmpt-agdsa-97] *Keywords:* graph drawing.

7207 Chao-Kuei Hung and Doug Ierardi. Constructing convex hulls of quadratic surface patches. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 255–260, 1995. [hi-cchqs-95]

7208 C. Y. Hung and B. Parhami. An approximate sign detection method for residue numbers and its applications to RNS division. *Comput. Math. Appl.*, 27(4):23–35, 1994. [hp-asdmr-94]

K. Y. Hung. See also [13846].

Shih-Chuan Hung. See also [6256].

7209 Yung-Chen Hung and Gen-Huey Chen. On the quickest path problem. In *??*, volume 497 of *Lecture Notes Comput. Sci.*, page ?? Springer-Verlag, 1991. [hc-qpp-91]

Norbert Hungerbühler. See also [6571].

7210 C. J. Hunt and C. Greenough. Novel method for the computation of the Delaunay triangulation with a view to efficient use of parallel architectures. Technical Report RAL-86-090, Science and Engineering Research Council, Chilton (England). Rutherford Appleton Lab., October 1986. [hg-nmcdt-86] *Keywords:* foreign technology, Delaunay triangulation, mapping (transformations), mesh generation, ntistfser. *Abstract:* In recent years a multitude of techniques have been presented for generating the Delaunay triangulation of a set of points in the plane. Many of these methods have been extended to connect points in three dimensions with varied success. All of these methods are serial processes. Nodes must be added one by one to an existing Delaunay triangulation. Consequently although these methods may be efficient on a serial machine, they cannot exploit the full potential of highly parallel architectures. In the report the authors discuss an alternative method for computing the Delaunay triangulation of a set of points in the plane. The algorithm is optimal in performance on a serial machine computing the triangulation in order N(log to the base 2)N time for N nodes. In addition it appears that the algorithm will transport to an array processor giving order (log to the base 2)N time for N nodes. The algorithm has potential for extension into higher space dimensions. The research has application for the simulation of semiconductor devices.

7211 H. B. Hunt III, M. V. Marathe, V. Radhakrishnan, S. S. Ravi, D. J. Rosenkrantz, and R. E. Stearns. A unified approach to approximation schemes for NP- and PSPACE-hard problems for geometric graphs. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 424–435, 1995. [hmrrrs-uaasn-95]

H. B. Hunt III. See also [9186–9188].

7212 K. H. Hunt. *Kinematic geometry of mechanisms*. Oxford University Press, New York, 1978. [h-kgm-78]

7213 W. A. Hunt and H. B. Voelcker. An exploratory study of automatic verification of programs for numerically controlled machine tools. Production Automation Project Tech Memo 34, Univ. Rochester, Rochester, NY, January 1982. [hv-esavp-82]

W. A. Hunt. See also [13277].

7214 G. M. Hunter. *Efficient computation and data structures for graphics*. Ph.D. thesis, Dept. Elect. Engrg. Comput. Sci., Princeton Univ., Princeton, NY, 1978. [h-ecdsg-78] *Keywords:* doctoral thesis.

7215 G. M. Hunter and K. Steiglitz. Linear transformations of pictures represented by quad trees. *Comput. Graph. Image Process.*, 10:289–296, 1979. [hs-ltprq-79]

7216 G. M. Hunter and K. Steiglitz. Operations on images using quad trees. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-1:145–153, 1979. [hs-oiuqt-79]

7217 W. Hurewitcz and H. Wallman. *Dimension Theory*. Princeton University Press, 1948. [hw-dt-48]

Ferran Hurtado-Diaz. See also [2317].

7218 F. Hurtado. Looking through a window. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 234–239, 1993. [h-ltw-93] *Cites:* bhot-oaa-93, h-pgv-93, t-stc-88, t-wpop-89, abdeghz-umpca-93, abdeghz-ump2, ZZZ.

7219 F. Hurtado. *Problemas geométricos de visibilidad*. PhD thesis, Univ. Politécnica de Catalunya, January 1993. [h-pgv-93] *Keywords:* doctoral thesis.

7220 Ferran Hurtado, Giuseppe Liotta, and Henk Meijer. Optimal, suboptimal, and robust algorithms for proximity graphs. In *Abstracts 17th European Workshop Comput. Geom.*, pages 117–120. Freie Universität Berlin, 2001. [hlm-osrap-01]

7221 Ferran Hurtado, Mercè Mora, Pedro A. Ramos, and Carlos Seara. Two problems on separability with lines and polygonals. In *Abstracts 15th European Workshop Comput. Geom.*, pages 33–35. INRIA Sophia-Antipolis, 1999. [hmrs-tpslp-99]

7222 F. Hurtado and M. Noy. Counting triangulations of almost-convex polygons. *Ars Combin.*, 45:169–179, 1997. [hn-ctacp-97]

7223 F. Hurtado and M. Noy. Ears of triangulations and Catalan numbers. *Discrete Math.*, 149:319–324, 1996. [hn-etcn-96]

7224 F. Hurtado and M. Noy. Graph of triangulations of a convex polygon and tree of triangulations. *Comput. Geom. Theory Appl.*, 13:179–188, 1999. [hn-gtcpt-99]

7225 F. Hurtado and M. Noy. The graph of triangulations of a convex polygon. Technical Report MA2-IR-94-13, Universitat Politècnica de Catalunya, Spain, 1994. [hn-gtcp-94] *Precedes:* hn-gtcp-95.

7226 F. Hurtado and M. Noy. The graph of triangulations of a convex polygon. In *Abstracts 11th European Workshop Comput. Geom.*, pages 11–12. Universität Linz, 1995. [hn-gtcp-95] *Succeeds:* hn-gtcp-94. *Precedes:* hn-gtcp-96.

7227 F. Hurtado and M. Noy. The graph of triangulations of a convex polygon. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C7–C8, 1996. [hn-gtcp-96] *Succeeds:* hn-gtcp-95. *Cites:* f-nddf-87, hn-gtcp-94, hnu-fet-96, kt-rduf-??, l-atng-89, l-rgbth-88, lrr-rgbth-93, stt-rdthg-86, ZZZ.

7228 F. Hurtado and M. Noy. Triangulations, visibility graph and reflex vertices of a simple polygon. Technical Report MA2-IR-93-2, Dept. Applied Mathematics, U. Politècnica de Catalunya, Spain, February 1993. [hn-tvgrv-93t] *Precedes:* hn-tvgrv-96.

7229 Ferran Hurtado and M. Noy. Triangulations, visibility graph and reflex vertices of a simple polygon. In *Abstracts 9th European Workshop Comput. Geom.*, pages 36–39. FernUniversität Hagen, 1993. [hn-tvgrv-93i]

7230 F. Hurtado and M. Noy. Triangulations, visibility graph and reflex vertices of a simple polygon. *Comput. Geom. Theory Appl.*, 6:355–369, 1996. [hn-tvgrv-96] *Succeeds:* hn-tvgrv-93t, hn-tvgrv-93i.

7231 Ferran Hurtado, Marc Noy, Pedro A. Ramos, and Carlos Seara. Separating objects in the plane with wedges and strips. In *Abstracts 14th European Workshop Comput. Geom.*, pages 97–98. Universitat Polytènica de Catalunya, Barcelona, 1998. [hnrs-sopws-98]

7232 F. Hurtado, M. Noy, and J. Urrutia. Flipping edges in triangulations. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 214–223, 1996. [hnu-fet-96] *Cites:* ahms-htfr-94, b-ras-77, be-mgot-92i, bs-plibp-94, ff-mrnti-91, f-vddt-92, h-ncmmt-90, hn-gtcp-94, hn-tvgrv-96, h-femgm-88, kgv-osa-83, la-satp-87, l-scsi-77, lrr-rgbth-93, ls-sdiuc-94, l-rgbth-88, obs-stcav-92, qs-csfdd-90, s-jttm-87, ss-gbfam-88, s-tc-93, sr-sbuss-95, sntm-amgus-92, stt-rdthg-88, t-nrcgr-86, w-cqsis-92, wp-sst-84, y-cdcrc-75, zt-fem-89, ZZZ.

7233 F. Hurtado, M. Noy, and J. Urrutia. Flipping edges in triangulations. *Discrete Comput. Geom.*, 22(3):333–346, 1999. [hnu-fet-99]

7234 Ferran Hurtado and Joan Trias, editors. *Abstracts 14th European Workshop Comput. Geom.* Universitat Polytènica de Catalunya, Barcelona, 1998. [ht-ewcg-98]

Ferran Hurtado. See also [29–33, 38–42, 361, 368, 380, 381, 575, 788, 1135–1137, 2063, 2318, 2941, 3553, 3555, 3675, 3720, 5080, 5748, 6072, 6358, 6840, 6841].

7235 Ferran Hurtatdo, Marc Noy, and Jorge Urrutia. Flipping edges in triangulations of polygons and point sets. In *Abstracts 12th European Workshop Comput. Geom.*, pages 19–20. Universität Münster, 1996. [hnu-fetpp-96]

7236 A. Hurter, M. Schaeffer, and R. Wendell. Solutions of constrained location problems. *Manage. Sci.*, 22:51–56, 1975. [hsw-sclp-75]

P. Hut. See also [1427].

M. J. Hutchings. See also [2586].

7237 D. Hutchinson, L. Küttner, M. Lanthier, A. Maheshwari, D. Nussbaum, D. Roytenberg, and J.-R. Sack. Parallel neighbourhood modeling. In *Proc. 8th ACM Sympos. Parallel Algorithms Architect.*, pages 204–207, 1996. [hklmnrs-pnm-96]

7238 D. Hutchinson, M. Lanthier, A. Maheshwari, D. Nussbaum, D. Roytenberg, and J.-R. Sack. Parallel neighbourhood modeling. In *Proc. 4th ACM Workshop Adv. Geogr. Inform. Syst.*, pages 25–34, 1996. [hlmnrs-pnm-96]

7239 D. Hutchinson, M. Lanthier, A. Maheshwari, D. Nussbaum, D. Roytenberg, and J.-R. Sack. Parallel neighbourhood modeling. In *Proc. ACM GIS*, pages 26–34, 1997. [hlmnrs-pnm-97] *Annote:* full conference version.

7240 D. Hutchinson, A. Maheshwari, J.-R. Sack, and R. Velicescu. Early experiences in implementing the buffer tree. In *Proc. Workshop on Algorithm Engineering*, pages 92–103, September 1997. [hmsv-eeibt-97] *URL:* http://www.dsi.unive.it/~wae97/proceedings/ONLY_PAPERS/pap10.ps.gz.

7241 David Hutchinson, Anil Maheshwari, and Norbert Zeh. An external memory data structure for shortest path queries. In *Proc. 5th Ann. Internat. Conf. Computing and Combinatorics*, volume 1627 of *Lecture Notes Comput. Sci.*, pages 51–60. Springer-Verlag, 1999. [hmz-emdss-99]

J. Hutchinson. See also [2301].

7242 J. P. Hutchinson, T. Shermer, and A. Vince. On representations of some thickness-two graphs. In F. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 324–332. Springer-Verlag, 1996. [hsv-rsttg-96] *Keywords:* visibility graphs.

7243 J. P. Hutchinson, T. Shermer, and A. Vince. On representations of some thickness-two graphs. *Comput. Geom. Theory Appl.*, 13:161–171, 1999. [hsv-rsttg-99]

J. P. Hutchinson. See also [467, 3860, 5956].

S. Hutchinson. See also [1386].

7244 A. Hutflesz, H.-W. Six, and P. Widmayer. Globally order preserving multidimensional linear hashing. In *Proc. 4th Intl. Conf. on Data Engineering*, pages 572–579, 1988. [hsw-gopml-88]

7245 A. Hutflesz, H.-W. Six, and P. Widmayer. The R-file: An efficient access structure for proximity queries. In *Proc. 6th IEEE Internat. Conf. Data Eng.*, pages 372–379, 1990. [hsw-trfea-90]

7246 A. Hutflesz, H.-W. Six, and P. Widmayer. Twin grid files: a performance evaluation. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 15–24. Springer-Verlag, 1988. [hsw-tgfpe-88] *Annote:* 4th Intern. Workshop Comput. Geom.

7247 A. Hutflesz, H.-W. Six, and P. Widmayer. Twin grid files: Space optimizing access schemes. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 183–190, 1988. [hsw-tgfso-88]

7248 D. P. Huttenlocher. A multi-resolution technique for comparing images using the Hausdorff distance. Technical Report 92-1321, Cornell Univ., Ithaca, NY, 1992. [hr-mrtci-92]

7249 D. P. Huttenlocher. *Three-Dimensional Recognition of Solid Objects from a Two-Dimensional Image*. Ph.D. thesis, Electrical Engineering and Computer Science, Massachusetts Institute of Technology, 1988. Report TR-1045. [h-tdrso-88] *Keywords:* doctoral thesis.

7250 D. P. Huttenlocher and K. Kedem. Computing the minimum Hausdorff distance for point sets under translation. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 340–349, 1990. [hk-cmhdp-90] *Cites:* achkm-ecmcp-90, amww-cssgo-88, a-ltahd-83, cd-vdbcd-85, egs-ueplf-87, hks-echdp-, h-rv-86, k-emasg-39, os-mvm-90, ls-pptmc-87, m-mdscg-84, r-ra-68, s-cidg-79, ZZZ.

7251 D. P. Huttenlocher, K. Kedem, and J. M. Kleinberg. On dynamic Voronoi diagrams and the minimum Hausdorff distance for point sets under Euclidean motion in the plane. Technical Report TR 92-1271, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, March 1992. [hkk-dvdmh-92t] *Precedes:* hkk-dvdmh-92i.

7252 D. P. Huttenlocher, K. Kedem, and J. M. Kleinberg. On dynamic Voronoi diagrams and the minimum Hausdorff distance for point sets under Euclidean motion in the plane. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 110–119, 1992. [hkk-dvdmh-92i] *Succeeds:* hkk-dvdmh-92t. *Cites:* aiit-mlcop-90, ass-sulbl-89, ast-apsgo-92, abb-amps-91, achkm-ecmcp-90, fl-vdmpp-91, gmr-vdmpp-92, gs-pmgsc-85, hs-ndssg-86, hk-cmhdp-90, hks-uevsi-91, m-prsd-87, ZZZ.

7253 D. P. Huttenlocher, K. Kedem, and J. M. Kleinberg. Voronoi diagrams of rigidly moving sets of points. *Inform. Process. Lett.*, 43:217–223, 1992. [hkk-vdrms-92]

7254 D. P. Huttenlocher, K. Kedem, and Micha Sharir. Efficiently computing the Hausdorff distance for point sets under translation. In preparation. [hks-echdp-]

7255 D. P. Huttenlocher, K. Kedem, and Micha Sharir. The upper envelope of Voronoi surfaces and its applications. Technical Report 200/91, Dept. Comput. Sci., Tel-Aviv University, Tel-Aviv, Israel, February 1991. [hks-uevsi-91t] *Precedes:* hks-uevsi-91.

7256 D. P. Huttenlocher, K. Kedem, and Micha Sharir. The upper envelope of Voronoi surfaces and its applications. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 194–203, 1991. [hks-uevsi-91] *Keywords:* Voronoi diagrams, upper envelopes, matching. *Succeeds:* hks-uevsi-91t. *Precedes:* hks-uevsi-93. *Cites:* abb-mrps-, ass-sulbl-89, a-vdsfg-90, cd-vdbcd-85, e-acg-87, egppss-acptc-88, egs-ueplf-89, egs-ccmfa-90, es-vda-86, gss-gmppt-89, h-fuenl-89, h-rv-86, hk-cmhdp-90, hks-uevsi-91t, hs-ndssg-86, ls-ippvd-87, ps-ueplf-89, ps-cgi-85, ss-pmp2g-83, y-oavds-87, ZZZ.

7257 D. P. Huttenlocher, K. Kedem, and Micha Sharir. The upper envelope of Voronoi surfaces and its applications. *Discrete Comput. Geom.*, 9:267–291, 1993. [hks-uevsi-93] *Succeeds:* hks-uevsi-91.

7258 D. P. Huttenlocher, G. A. Klanderman, and W. J. Rucklidge. Comparing images using the Hausdorff distance. *IEEE Trans. Pattern Anal. Mach. Intell.*, 15:850–863, 1993. [hkr-ciuhd-93]

7259 D. P. Huttenlocher and J. M. Kleinberg. Comparing point sets under projection. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 1–7, 1994. [hk-cpsup-94]

7260 D. P. Huttenlocher and S. Ullman. Object recognition using alignment. In *Proc. 1st Internat. Conf. Comput. Vision*, pages 102–111, 1987. [hu-orua-87]

7261 D. P. Huttenlocher and S. Ullman. Recognizing solid objects by alignment. *Internat. J. Comput. Vision*, 5(2):255–274, 1990. [hu-rsoa-90]

7262 D. P. Huttenlocher and S. Ullman. Recognizing solid objects by alignment with an image. Technical Report TR 89-978, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, March 1989. [hu-rsoai-89]

7263 D. P. Huttenlocher and P. Wayener. Finding convex edge groupings in an image. Technical Report TR 90-1116, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, April 1990. [hw-fcegi-90]

D. P. Huttenlocher. See also [760–762, 3157, 3158, 6290, 7089–7091].

T. Hüttner. See also [1471].

7264 M. D. Hutton and A. Lubiw. Upward planar drawing of single source acyclic digraphs. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 203–211, 1991. [hl-updss-91] *Keywords:* graph drawing, planar, upward. *Precedes:* hl-updss-96.

7265 M. D. Hutton and A. Lubiw. Upward planar drawing of single-source acyclic digraphs. *SIAM J. Comput.*, 25(2):291–311, 1996. [hl-updss-96] *Keywords:* graph drawing, planar, upward. *Succeeds:* hl-updss-91.

7266 M. N. Huxley. Exponential sums and lattice points. *Proc. London Math. Soc.*, 60:471–502, 1990. [h-eslp-90]

7267 Cho Hwan-Gue and Alexander Zelikovsky. Spanning closed trail and Hamiltonian cycle in grid graphs. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 342–351. Springer-Verlag, 1995. [hz-scthc-95]

Frank Hwang. See also [4443].

7268 F. D. Hwang and D. S. Richards. Steiner tree problems. *Networks*, 22:55–89, 1992. [hr-stp-92]

7269 F. K. Hwang. An $O(n \log n)$ algorithm for rectilinear minimal spanning tree. *J. ACM*, 26:177–182, 1979. [h-oarms-79]

7270 F. K. Hwang. An $O(n \log n)$ algorithm for suboptimal rectilinear Steiner trees. *IEEE Trans. Circuits Syst.*, CAS-26(1):75–77, 1979. [h-oasrs-79]

7271 F. K. Hwang. On Steiner minimal trees with rectilinear distance. *SIAM J. Appl. Math.*, 30(1):104–114, 1976. [h-smtrd-76]

7272 F. K. Hwang. The rectilinear Steiner problem. *J. Design Autom. Fault-Tolerant Comput.*, 2:303–310, 1978. [h-rsp-78]

7273 F. K. Hwang, D. S. Richards, and P. Winter. *The Steiner Tree Problem*. Elsevier Science, Amsterdam, 1992. [hrw-stp-92]

7274 F. K. Hwang, G. D. Song, G. Y. Ting, and D. Z. Du. A decomposition theorem on Euclidean Steiner minimal trees. *Discrete Comput. Geom.*, 3:367–382, 1988. [hstd-dtesm-88]

7275 F. K. Hwang and Y. C. Yao. Comments on Bern's probabilistic results on rectilinear Steiner trees. *Algorithmica*, 5:591–598, 1990. [hy-cbprr-90]

F. K. Hwang. See also [341, 3300, 4444–4455, 6236].

7276 H. Hwang, R. Chang, and H. Tu. The separability problem in dynamic computational geometry. Unpublished manuscript, 1990. [hct-spdcg-90]

I. K. Hwang. See also [8044].

7277 R. Z. Hwang, R. C. Chang, and R. C. T. Lee. The generalized divide-and-conquer strategy and its applications to some Euclidean NP-hard problems. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 17–24, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [hcl-gdcsa-89] *Keywords:* p-median, p-center, TSP.

7278 R. Z. Hwang, R. C. Chang, and R. C. T. Lee. The generalized searching over separators strategy to solve some NP-Hard problems in subexponential time. *Algorithmica*, 9:398–423, 1993. [hcl-sssss-93]

7279 R. Z. Hwang, R. C. T. Lee, and R. C. Chang. The slab dividing approach to solve the Euclidean p-center problem. *Algorithmica*, 9:1–22, 1993. [hlc-sdase-93]

7280 Y.-H. Hwang, R.-C. Chang, and H.-Y. Tu. Finding all shortest path edge sequences on a convex polyhedron. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 251–266. Springer-Verlag, 1989. [hct-faspe-89]

7281 Y. K. Hwang and N. Ahuja. Gross motion planning – a survey. *ACM Comput. Surv.*, 24(3):219–291, 1992. [ha-gmps-92]

7282 L. Hyafil and R. Rivest. Constructing optimal binary decision trees is np-complete. *Inform. Process. Lett.*, 5:15–17, 1976. [hr-cobdt-76]

R. Hyde. See also [5976].

7283 J. Hynd and P. Eades. The typed graph editing system: TYGES. In *Proc. 3rd Australasian Conf. on Computer Graphics*, pages 15–19, 1985. [he-tgest-85] *Keywords:* graph drawing.

John Iacono. See also [2481].

7284 T. Ibaraki and N. Katoh. On-line computation of transitive closure of graphs. *Inform. Process. Lett.*, 16:95–97, 1983. [ik-olctc-83]

T. Ibaraki. See also [7875, 7876, 9241].

Takayuki Iboh. See also [13735].

7285 K. Ichida and T. Kiyono. Segmentation of plane curves. *Transactions of the Electronics and Communication Engineers of Japan*, 58-D:689–696, 1975. [ik-spc-75]

Y. Ichioka. See also [7430].

7286 Christian Icking. Kürzeste Bewegung von Liniensegmenten. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [i-kbl-89]

7287 Christian Icking. Le balayage appliqué aux opérations ensemblistes et au régionnement. Diploma thesis (DEA), Department of Computer Science, Université Pierre et Marie Curie Paris VI, Paris, France, 1985. [i-baoer-85] *Keywords:* master thesis.

7288 Christian Icking. *Motion and Visibility in Simple Polygons*. PhD thesis, Department of Computer Science, FernUniversität Hagen, 1994. [i-mvsp-94] *Keywords:* doctoral thesis.

7289 Christian Icking, Thomas Kamphans, Rolf Klein, and Elmar Langetepe. Exploring an unknown cellular environment. In *Abstracts 16th European Workshop Comput. Geom.*, pages 140–143. Ben-Gurion University of the Negev, 2000. [ikkl-euce-00] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/ikkl-euce-00.pdf. *Cites:* afm-aalmm-97, a-ptase-96, dkp-hluel-98, e-hpnrg-86, fw-ola-98, gkp-aspgt-95, hikk-pepns-98, ips-hpgg-82, m-gsaps-96, m-spn-97, n-wrlv-92, ul-hcsgg-97, ZZZ.

7290 Christian Icking and Rolf Klein, editors. *Abstracts 9th European Workshop on Computational Geometry*, volume 140 of *Informatik-Berichte*. FernUniversität Hagen, 1993. [ik-ewcg-93]

7291 Christian Icking and Rolf Klein. Competitive strategies for autonomous systems. Technical Report 175, Department of Computer Science, FernUniversität Hagen, Germany, 1995. [ik-csas-95t] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr175.pdf. *Precedes:* ik-csas-95.

7292 Christian Icking and Rolf Klein. Competitive strategies for autonomous systems. In H. Bunke, T. Kanade, and H. Noltemeier, editors, *Modelling and Planning for Sensor Based Intelligent Robot Systems*, pages 23–40. World Scientific, Singapore, 1995. [ik-csas-95] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr175.pdf. *Succeeds:* ik-csas-95t. *Cites:* bcr-sp-93, cg-opapp-92, di-csgs-94, dkp-hluel-93, drw-lrmt-95, gj-cigtn-79, gs-oolaw-95, gmr-rlptd-92, ikl-sac-97, ikm-hlac-93, k-wusbd-92, k-lpmr-94, k-olssp-94, lp-oafkp-79, ls-ghtun-94, osh-kaoa-94, rksi-rnut-93, st-aelup-85, ZZZ.

7293 Christian Icking and Rolf Klein. Path planning under uncertainty. In *Abstracts 8th European Workshop Comput. Geom.*, page 5. Utrecht University, 1992. [ik-ppuu-92]

7294 Christian Icking and Rolf Klein. Searching for the kernel of a polygon: A competitive strategy. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 258–266, 1995. [ik-skpcs-95] *Keywords:* competitive strategy, shortest paths, simple polygon. *Precedes:* ikl-skpcs-97. *Cites:* cg-opapp-92, di-csgs-94, dkp-hlue-91, dkp-hluel-93, drw-lrmt-95, gs-oolaw-95, i-mvsp-94, ikm-hlac-93, k-wusbd-92, k-lpmr-94, k-olssp-94, lp-oafkp-79, ls-ghtun-94, r-cic-94, ZZZ.

7295 Christian Icking and Rolf Klein. Searching for the kernel of a polygon: A competitive strategy. In *Abstracts 11th European Workshop Comput. Geom.*, pages 7–99. Universität Linz, 1995. [ik-skpcs-95c]

7296 Christian Icking and Rolf Klein. The two guards problem. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 166–175, 1991. [ik-tgp-91] *Keywords:* polygon. *Precedes:* ik-tgp-92t. *Cites:* at-oadvp-81, cg-vippg-85, fw-90, gh-ospqs-89, o-agta-87, ZZZ.

7297 Christian Icking and Rolf Klein. The two guards problem. Technical Report 126, Department of Computer Science, FernUniversität Hagen, Germany, 1992. [ik-tgp-92t] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr126.pdf. *Succeeds:* ik-tgp-91. *Precedes:* ik-tgp-92.

7298 Christian Icking and Rolf Klein. The two guards problem. *Internat. J. Comput. Geom. Appl.*, 2(3):257–285, 1992. [ik-tgp-92] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/ik-tgp-92.pdf. *Keywords:* visibility, watchman routes, planar polygons, motion planning. *Succeeds:* ik-tgp-92t.

7299 Christian Icking, Rolf Klein, Peter Köllner, and Lihong Ma. A Java applet for the dynamic visualization of Voronoi diagrams. In *Abstracts 13th European Workshop Comput. Geom.*, pages 46–47. Universität Würzburg, 1997. [ikkm-jadvv-97]

7300 Christian Icking, Rolf Klein, and Elmar Langetepe. An optimal competitive strategy for walking in streets. Technical Report 233, Department of Computer Science, FernUniversität Hagen, Germany, 1998. [ikl-ocsws-98] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr233.pdf. *Precedes:* ikl-ocsws-99.

7301 Christian Icking, Rolf Klein, and Elmar Langetepe. An optimal competitive strategy for walking in streets. In *Proc. 16th Sympos. Theoret. Aspects Comput. Sci.*, volume 1563 of *Lecture Notes Comput. Sci.*, pages 110–120. Springer-Verlag, 1999. [ikl-ocsws-99] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/ikl-ocsws-99.pdf. *Succeeds:* ikl-ocsws-98.

7302 Christian Icking, Rolf Klein, and Elmar Langetepe. Searching a goal on m rays within a fixed distance. In *Abstracts 15th European Workshop Comput. Geom.*, pages 137–139. INRIA Sophia-Antipolis, 1999. [ikl-sgmrw-99] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/ikl-sgmrw-99.pdf.

7303 Christian Icking, Rolf Klein, and Elmar Langetepe. Searching for the kernel of a polygon: A competitive strategy using self-approaching curves. Technical Report 211, Department of Computer Science, FernUniversität Hagen, Germany, 1997. [ikl-skpcs-97] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr211.pdf. *Succeeds:* ik-skpcs-95.

7304 Christian Icking, Rolf Klein, and Elmar Langetepe. Self-approaching curves. Technical Report 217, Department of Computer Science, FernUniversität Hagen, Germany, 1997. [ikl-sac-97] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr217.pdf. *Precedes:* ikl-sac-99.

7305 Christian Icking, Rolf Klein, and Elmar Langetepe. Self-approaching curves. *Math. Proc. Camb. Phil. Soc.*, 125:441–453, 1999. [ikl-sac-99] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr217.pdf. *Succeeds:* ikl-sac-97.

7306 Christian Icking, Rolf Klein, Ngoc-Minh Lê, and Lihong Ma. Convex distance functions in 3-space are different. Technical Report 133, Department of Computer Science, FernUniversität Hagen, Germany, 1992. [iklm-cdf3s-92] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr133.pdf. *Precedes:* iklm-cdf3s-93.

7307 Christian Icking, Rolf Klein, Ngoc-Minh Lê, and Lihong Ma. Convex distance functions in 3-space are different. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 116–123, 1993. [iklm-cdf3s-93] *Succeeds:* iklm-cdf3s-92. *Precedes:* iklm-cdf3s-95. *Cites:* a-vdsfg-91, b-eakfd-70, cgglmw-m5lrm-91, cd-vdbcd-85, ei-drmwc-79, h-ag-77, iklm-cdf3s-92, j-bal-74, k-cavd-89, k-cpavd-89, kmm-cavd2-90, km-weacs-92, l-al-69, l-tdvdl-80, m-ddvec-92, mr-vdbsc-91, mmo-cavd-91, sh-cpp-75, sd-hdvdc-92, ss-ampr-90, www-dpcgf-85, ZZZ.

7308 Christian Icking, Rolf Klein, Ngoc-Minh Lê, and Lihong Ma. Convex distance functions in 3-space are different. *Fundam. Inform.*, 22:331–352, 1995. [iklm-cdf3s-95] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/iklm-cdf3s-95.pdf. *Succeeds:* iklm-cdf3s-93.

7309 Christian Icking, Rolf Klein, Ngoc-Minh Lê, Lihong Ma, and Francisco Santos. On bisectors for convex distance functions in 3-space. Technical Report 250, Department of Computer Science, FernUniversität Hagen, Germany, 1999. [iklms-bcdf3-99t] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr250.pdf. *Precedes:* iklms-bcdf3-99.

7310 Christian Icking, Rolf Klein, Ngoc-Minh Lê, Lihong Ma, and Francisco Santos. On bisectors for convex distance functions in 3-space. In *Proc. 11th Canad. Conf. Comput. Geom.*, 1999. [iklms-bcdf3-99] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr250.pdf. *Succeeds:* iklms-bcdf3-99t.

7311 Christian Icking, Rolf Klein, and Lihong Ma. An optimal competitive strategy for looking around a corner. Technical Report 167, Department of Computer Science, FernUniversität Hagen, Germany, 1994. [ikm-ocsla-94] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr167.pdf. *Succeeds:* ikm-hlac-93.

7312 Christian Icking, Rolf Klein, and Lihong Ma. How to look around a corner. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 443–448, 1993. [ikm-hlac-93] *Precedes:* ikm-ocsla-94. *Cites:* cgglmw-m5lrm-91, dkp-hlue-91, elw-pgmpt-90, k-dvl-83, k-wusbd-91, m-aaorp-90, m-odes-60, py-spwm-89, ss-ampr-90, sy-agar-87, st-aelup-85, brs-nut-90, ZZZ.

7313 Christian Icking, Rolf Klein, and Lihong Ma. The bisector with respect to different convex distance functions. In *Abstracts 14th European Workshop Comput. Geom.*, pages 99–101. Universitat Polytènica de Catalunya, Barcelona, 1998. [ikm-brdcd-98] *Precedes:* ikmnw-bddf-98.

7314 Christian Icking, Rolf Klein, and Lihong Ma. The optimal way for looking around a corner. In *Proc. 4th IEEE–IEE Vehicle Navigation and Informations Systems Conference*, 1993. [ikm-owlac-93]

7315 Christian Icking, Rolf Klein, Lihong Ma, Stefan Nickel, and Ansgar Weißler. On bisectors for different distance functions. Technical Report 237, Department of Computer Science, FernUniversität Hagen, Germany, 1998. [ikmnw-bddf-98] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr237.pdf. *Succeeds:* ikm-brdcd-98. *Precedes:* ikmnw-bddf-99.

7316 Christian Icking, Rolf Klein, Lihong Ma, Stefan Nickel, and Ansgar Weißler. On bisectors for different distance functions. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 291–299, 1999. [ikmnw-bddf-99] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/ikmnw-bddf-99.pdf. *Succeeds:* ikmnw-bddf-98. *Precedes:* ikmnw-bddf-01.

7317 Christian Icking, Rolf Klein, Lihong Ma, Stefan Nickel, and Ansgar Weißler. On bisectors for different distance functions. *Discrete Appl. Math.*, 109:139–161, 2001. [ikmnw-bddf-01] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr237.pdf. *Succeeds:* ikmnw-bddf-99. *Cites:* ae-oacwv-84, ak-vd-00, cd-vdbcd-85, cmr-gbscd-96, es-vda-86, h-mlps-95, iklm-cdf3s-95, kw-gcsmm-79, lb-cg2-93, nprw-gcmlp-97, os-lopst-97, rnp-falp-97, v-cs-64, ww-ubnlm-85, www-dpcgf-85, ZZZ.

7318 Christian Icking, Rolf Klein, and Thomas Ottmann. Priority search trees in secondary memory. In *Proc. 13th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 314 of *Lecture Notes Comput. Sci.*, pages 84–93. Springer-Verlag, 1988. [iko-pstsm-88] *Keywords:* search trees, B-tree, red-black tree, priority search trees.

7319 Christian Icking, Alejandro López-Ortiz, Sven Schuierer, and Ines Semrau. Going home through an unknown street. Technical Report 228, Department of Computer Science, FernUniversität Hagen, Germany, 1998. [ilss-ghtus-98] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr228.pdf.

7320 Christian Icking and Lihong Ma. A tight bound for the complexity of Voronoi diagrams under polyhedral convex distance functions in 3D. Technical Report 277, Department of Computer Science, FernUniversität Hagen, Germany, 2000. [im-tbcvd-00] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr277.pdf. *Precedes:* im-tbcvd-01. *Cites:* ak-vd-00, bsty-vdhdc-98, by-ag-98, cd-vdbcd-85, ckstw-vdl3s-98, cs-arscg-89, dv-cprac-77, es-vda-86, f-vddt-97, gmr-vdmpp-92, gs-ccrs-87, iklm-cdf3s-95, iklms-bcdf3-99, ikmnw-bddf-99, k-cavd-89, kw-vdbgm-88, ls-pptmc-87, m-bvdcd-00, mmo-cavd-91, ss-ampr-90, s-atubl-94, s-ahdvd-95, sa-dsstg-95, t-csas-96, t-ntasa-96, ZZZ.

7321 Christian Icking and Lihong Ma. A tight bound for the complexity of Voronoi diagrams under polyhedral convex distance functions in 3D. In *Proc. 33rd Annu. ACM Sympos. Theory Comput.*, pages 316–321, 2001. [im-tbcvd-01] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr277.pdf. *Succeeds:* im-tbcvd-00.

7322 Christian Icking, Günter Rote, Emo Welzl, and Chee Yap. Shortest paths for line segments. Technical Report B-89-14, Fachbereich Mathematik, Freie Universität Berlin, Berlin, Germany, September 1989. [irwy-spls-89] *Precedes:* irwy-spls-91.

7323 Christian Icking, Günter Rote, Emo Welzl, and Chee Yap. Shortest paths for line segments. Technical Report 596, Courant Inst. Math. Sci., New York Univ., New York, NY, 1991. [irwy-spls-91] *Succeeds:* irwy-spls-89. *Precedes:* irwy-spls-92t.

7324 Christian Icking, Günter Rote, Emo Welzl, and Chee Yap. Shortest paths for line segments. Technical Report 125, Department of Computer Science, FernUniversität Hagen, Germany, 1992. [irwy-spls-92t] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr125.pdf. *Succeeds:* irwy-spls-91. *Precedes:* irwy-spls-92.

7325 Christian Icking, Günter Rote, Emo Welzl, and Chee Yap. Shortest paths for line segments. *Algorithmica*, 10:182–200, 1993. [irwy-spls-92] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/irwy-spls-92.pdf. *Keywords:* Ulam problem, motion planning. *Succeeds:* irwy-spls-92t.

Christian Icking. See also [38–40, 369–372, 670, 3786–3788, 6941, 6942, 7036–7044, 10154].

7326 P. J. Idicula. Drawing trees in grids. Master's thesis, Department of Computer Science, University of Auckland, 1990. [i-dtg-90] *Keywords:* master thesis, graph drawing.

R. M. Idury. See also [1102].

7327 D. J. Ieradi and Y.-B. Chen. The complexity of oblivious plans for orienting polygonal parts. Technical Report USC-CS-92-502, Dept. Comput. Sci., Univ. Southern California, December 1991. [ic-copop-91] *Precedes:* ci-copod-95.

Doug Ierardi. See also [1202, 3090–3094, 7207].

D. J. Ierardi. See also [3095].

7328 A. Iftikhar. Linear geometric transformations on octrees. Technical Report TR-81-003, Rensselaer Polytechnic Inst., Troy, NY, 1981. [i-lgto-81]

Yoshihide Igarashi. See also [9491–9493].

7329 J. Ignatowicz. Drawing force-directed graphs using optigraph. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 333–336. Springer-Verlag, 1996. [i-dfdgu-96] *Keywords:* graph drawing, straight-line, system, force-direceted.

7330 J. P. Ignizio and T. M. Cavalier. *Linear Programming.* Prentice Hall International Series in Industrial and Systems Engineering. Prentice Hall, 1994. [ic-lp-94]

7331 Edmund Ihler. Minimum rectilinear Steiner trees for intervals on two parallel lines. In *Proc. 18th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, page ??, 1992. [i-mrsti-92] *Precedes:* i-rcstp-94.

7332 Edmund Ihler. The complexity of approximating the class Steiner tree problem. In *Graph Theoretic Concepts in Computer Science: Proc. Internat. Workshop WG '91*, volume 570 of *Lecture Notes Comput. Sci.*, pages 85–96. Springer-Verlag, 1992. [i-cacst-92] *Keywords:* TSP.

7333 Edmund Ihler. The rectilinear Steiner tree problem for intervals on two parallel lines. *Math. Program. Ser. B*, 63:281–296, 1994. [i-rcstp-94] *Succeeds:* i-mrsti-92.

7334 Edmund Ihler, Gabriele Reich, and Peter Widmayer. On shortest networks for classes of points in the plane. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 103–111. Springer-Verlag, 1991. [irw-sncpp-91] *Annote:* 7th Intern. Workshop Comput. Geom.

7335 E. Ihler, D. Wagner, and F. Wagner. Modeling hyperedges by graphs with the same mincut properties. *Inform. Process. Lett.*, 45:171–175, 1993. [iww-mhgsm-93]

7336 I. Ihm and B. Naylor. Piecewise linear approximations of digitized curves with applications. In N. M. Patrilakis, editor, *Scientific Visualization of Physical Phenomena*, pages 545–568. Springer-Verlag, New York, 1991. [in-pladc-91]

I. Ihm. See also [1263, 1290].

Kenneth E. Hoff III. See also [13875].

T. Ikeda. See also [12712].

7337 K. I. Ikeuchi. Recognition of 3-d objects using the extended Gaussian image. In *Proc. 7th Internat. Joint Conf. Artif. Intell.*, pages 595–600, 1981. [i-r3dou-81]

7338 K. I. Ikeuchi, B. K. P. Horn, S. Nagata, T. Callahan, and O. Feingold. Picking up an object from a pile of objects. Memo AI Memo 726, ??, 1983. [ihncf-puopo-83]

7339 I. Ilinkin, R. Janardan, J. Majhi, J. Schwerdt, M. Smid, and R. Sriram. A decomposition-based approach to layered manufacturing. Report 00-041, Department of Computer Science, University of Minnesota, Minneapolis, 2000. [ijmsss-dbalm-00]

7340 I. Ilinkin, R. Janardan, J. Majhi, J. Schwerdt, M. Smid, and R. Sriram. A decomposition-based approach to layered manufacturing. In *Proc. 7th Workshop Algorithms Data Struct.*, volume 2125 of *Lecture Notes Comput. Sci.*, pages 389–400. Springer-Verlag, 2001. [ijmsss-dbalm-01]

V. V. Ilyukhin. See also [11057,11058].

H.-C. Im Hof. See also [4837].

7341 H. Imai. Extensions of the multiplicative penalty function method for linear programming. Report CSCE-86-C04, Dept. Comput. Sci., Kyushu Univ., Fukuoka, Japan, 1986. [i-empfm-86]

7342 H. Imai. Geometric algorithms for locating a single-eye robot. Manuscript, Dept. Comput. Sci. Commun. Engrg., Kyushu Univ., Fukuoka, Japan, 1987. [i-galse-87]

7343 H. Imai. Network-flow algorithms for lower-tuncated transversal polymatroids. *J. Oper. Res. Soc. Japan*, 26(3):186–210, 1983. [i-nfalt-83]

7344 H. Imai. On combinatorial structures of line drawings of polyhedra. *Discrete Appl. Math.*, 10:79–92, 1985. [i-csldp-85]

7345 H. Imai. Worst-case analysis for planar matching and tour heuristics with bucketing techniques and spacefilling curves. *J. Oper. Res. Soc. Japan*, 29(1):43–68, 1986. [i-wcapm-86]

7346 H. Imai and Ta. Asano. An efficient algorithm for finding a maximum matching of an intersection graph of horizontal and vertical line segments. Paper CAS 83-143, IECE Tech. Group Circuits & Systems, 1983. [ia-eafmm-83]

7347 H. Imai and Ta. Asano. An $O(n \log n)$ greedy heuristic for the minimum chord-length rectangular partition (extended abstract). Technical Report CAS84-115, IECE of Japan, ?? [ia-oghmc-??] *Keywords:* decomposition, approximation, VLSI design.

7348 H. Imai and Ta. Asano. Dynamic orthogonal segment intersection search. *J. Algorithms*, 8:1–18, 1987. [ia-dosis-87] *Keywords:* intersection, dynamizing, data structuring, searching, VLSI design, decomposition, amortized analysis. *Succeeds:* ia-dsisa-84.

7349 H. Imai and Ta. Asano. Dynamic segment intersection search with applications. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 393–402, Los Angeles, Ca., USA, 1984. IEEE Computer Society Press. [ia-dsisa-84] *Precedes:* ia-dosis-87.

7350 H. Imai and Ta. Asano. Efficient algorithms for geometric graph search problems. *SIAM J. Comput.*, 15(2):478–494, 1986. [ia-eaggs-86] *Keywords:* intersection, dynamizing, data structuring, searching, VLSI design, decomposition, amortized analysis.

7351 H. Imai and Ta. Asano. Finding the connected components and a maximum clique of an intersection graph of rectangles in the plane. *J. Algorithms*, 4:310–323, 1983. [ia-fccmc-83] *Keywords:* VLSI design, plane-sweep, rectangles, intersection.

7352 H. Imai and K. Imai. Voronoi diagrams of moving points. In *Proc. Int. Computer Symp.*, pages 600–606, 1990. [ii-vdmp-90]

7353 H. Imai and M. Inaba. Geometric clustering with applications. *Zeitschrift für Angewandte Mathematik*, 3:183–186, 1996. ICIAM95 Proc., Applied Stochastics and Optimzation. [ii-gca-96]

7354 H. Imai and M. Iri. An optimal algorithm for approximating a piecewise linear function. Report CSCE-86-C03, Dept. Comput. Sci. Commun. Engrg., Kyushu Univ., Fukuoka, Japan, 1986. [ii-oaapl-86t] *Precedes:* ii-oaapl-86a.

7355 H. Imai and M. Iri. An optimal algorithm for approximating a piecewise linear function. *J. Inform. Process.*, 9(3):159–162, 1986. [ii-oaapl-86a] *Succeeds:* ii-oaapl-86t.

7356 H. Imai and M. Iri. Computational-geometric methods for polygonal approximations of a curve. Report RMI 85-01, Dept. Math. Engrg. Instrumentation Phys., Univ. Tokyo, Bunkyo-ku, Tokyo, Japan, 1985. [ii-cgmpa-85] *Precedes:* ii-cgmpa-86.

7357 Hiroshi Imai and Masao Iri. Computational-geometric methods for polygonal approximations of a curve. *Comput. Vision Graph. Image Process.*, 36:31–41, 1986. [ii-cgmpa-86] *Succeeds:* ii-cgmpa-85.

7358 H. Imai and M. Iri. Polygonal approximations of a curve-formulations and algorithms. In G. T. Toussaint, editor, *Computational Morphology*, pages 71–86. North-Holland, Amsterdam, Netherlands, 1988. [ii-pacfa-88] *Succeeds:* ii-pacfs-86.

7359 H. Imai and M. Iri. Polygonal approximations of a curve-formulations and solution algorithms. Report CSCE-86-C07, Dept. Comput. Sci. Commun. Engrg., Kyushu Univ., Fukuoka, Japan, 1986. [ii-pacfs-86] *Precedes:* ii-pacfa-88.

7360 H. Imai, M. Iri, and K. Murota. Voronoi diagrams in the Laguerre geometry and its applications. *SIAM J. Comput.*, 14:93–105, 1985. [iim-vdlgi-85]

7361 H. Imai, K. Kato, and P. Yamamoto. A linear-time algorithm for linear L_1 approximation of points. Report CSCE-87-C30, Dept. Comput. Sci. Commun. Engrg., Kyushu Univ., Kukuoka, Japan, 1987. [iky-ltall-87] *Precedes:* iky-ltall-89.

7362 H. Imai, K. Kato, and P. Yamamoto. A linear-time algorithm for linear L_1 approximation of points. *Algorithmica*, 4:77–96, 1989. [iky-ltall-89] *Succeeds:* iky-ltall-87.

7363 H. Imai, D. Lee, and C. Yang. 1-segment center covering problems. *ORSA J. Comput.*, 4(4):426–434, 1992. [ily-sccp-92] *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

7364 H. Imai, D. T. Lee, and C. D. Yang. On the 1-segment-center problem. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 18, 1989. [ily-1scp-89]

H. Imai. See also [292, 293, 450, 708–711, 939–942, 944, 969, 970, 1107–1109, 1139, 1140, 1167, 6706, 6707, 7141–7143, 7366, 7375–7377, 9227, 10278, 10285, 11042, 11043, 12713, 13745].

7365 K. Imai. Voronoi diagrams for moving points. *Memoirs of Mathematical Research Institute, Kyoto Univ.*, 695:225–232, 1989. In Japanese. [i-vdmp-89]

7366 K. Imai, S. Sumino, and H. Imai. Minimax geometric fitting of two corresponding sets of points. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 266–275, 1989. [isi-mgftc-89] *Cites:* ass-sulbl-89, amww-cssgo-88, a-sdcgp-85, epss-lebfi-87, h-fuenl-89, ms-rcibt-88, m-lpltw-84, m-dlp-86, n-avsir-87, s-ossac-86, s-pds-74, ZZZ.

K. Imai. See also [708–710, 969, 970, 7141–7143, 7352, 8435, 9227, 10285, 13745].

7367 Toshiyuki Imai. A simple treatment for degeneracies in geometric programs. In *Abstracts 14th European Workshop Comput. Geom.*, pages 103–105. Universitat Polytènica de Catalunya, Barcelona, 1998. [i-stdgp-98]

7368 T. Imai. A topology oriented algorithm for the Voronoi diagram of polygons. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 107–112. Carleton University Press, Ottawa, Canada, 1996. [i-toavd-96]

7369 T. Imai. Numerically robust algorithm for constructing Voronoi diagrams for line segments (in Japanese). M.Sc. thesis, Dept. Math. Engr. Info. Phys., Univ. Tokyo, Tokyo, Japan, 1989. [i-nracv-89] *Keywords:* master thesis.

7370 Toshiyuki Imai. Some methods to determine the sign of an integer from its remainders. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 117–122, 1997. [i-smdsi-97]

T. Imai. See also [12629, 12630].

7371 M. Imase and B. M. Waxman. Dynamic Steiner tree problem. *SIAM J. Discrete Math.*, 4:369–384, 1991. [iw-dstp-91]

7372 E. Imhof. Positioning names on maps. *Amer. Cartogr.*, 2:128–144, 1975. [i-pnm-75]

7373 C. Imielinska and B. Kalantari. On the complexity of the hypergreeedy matching heuristic for the Euclidean points in the plane. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 17, 1989. [ik-chmhe-89]

T. Imielinski. See also [325].

W. Imrich. See also [1103].

7374 M. Inaba, Y. Aoki, and S. Hasegawa. Level difference of the reconstructed arrangement. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 12–17, 1994. [iah-ldra-94] *Cites:* a-ccra-93, ZZZ.

7375 Mary Inaba, Hiroshi Imai, and Naoki Katoh. Experimental results of a randomized clustering algorithm. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C1–C2, 1996. [iik-errca-96] *Cites:* h-ciqfb-80, iki-awvdr-94, si-kmtag-84, wwp-amdc-88, ZZZ.

7376 M. Inaba, H. Imai, M. Nakade, and T. Sekiguchi. Application of an effective geometric clustering method to color quantization problem. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 477–478, 1997. [iins-aegcm-97] *Keywords:* video review. *Cites:* h-ciqfb-82, hiikn-eavbk-93, imo-fvdaa-83, ii-gca-96, iki-awvdr-94, iik-errca-96, si-kmtag-84, wwp-amdc-88, ZZZ.

7377 M. Inaba, N. Katoh, and H. Imai. Applications of weighted Voronoi diagrams and randomization to variance-based k-clustering. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 332–339, 1994. [iki-awvdr-94] *Cites:* abky-cabmm-88, bh-cpcoe-88, crw-gc-91, fg-oaac-88i, hr-tcpp-93, h-senea-93, hiikn-eavbk-93, hii-eakls-93, h-ciqfb-82, h-msde-92, i-ecchs-94, ki-pceas-87, kl-ehppg-70, ms-cscgl-84, wwp-amdc-88, ZZZ.

M. Inaba. See also [6706, 7353, 10285].

7378 H. Inagaki and K. Sugihara. Numerically robust algorithm for constructing constrained Delaunay triangulation. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 171–176, 1994. [is-nracc-94] *Cites:* ps-cgi-85, a-vdsfg-91, obs-stcav-92, be-mgot-92i, hhk-tirgc-88, m-vigau-88a, si-cvdom-92, iss-nriac-92, oim-iimvd-84, ZZZ.

7379 H. Inagaki, K. Sugihara, and N. Sugie. Numerically robust incremental algorithm for constructing three-dimensional Voronoi diagrams. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 334–339, 1992. [iss-nriac-92] *Cites:* h-pargc-89, si-tdpga-89, si-cvdom-92, oim-iimvd-84, ZZZ.

H. Inagaki. See also [12618, 12629].

Y. Inagaki. See also [12788–12792].

J. Incerpi. See also [2998–3000].

7380 Piotr Indyk. A sublinear-time approximation scheme for clustering in metric spaces. In *Proc. 40th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 154–159, 1999. [i-stasc-99]

7381 Piotr Indyk. Dimensionality reduction techniques for proximity problems. In *Proc. 11th ACM-SIAM Sympos. Discrete Algorithms*, pages 371–378, 2000. [i-drtpp-00]

7382 Piotr Indyk. On approximate nearest neighbors in non-Euclidean spaces. In *Proc. 39th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 148–155, 1998. [i-annne-98]

7383 Piotr Indyk and M. Farach-Colton. Approximate nearest neighbor algorithms for Hausdorff metrics via embeddings. In *Proc. 40th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 171–180, 1999. [if-annah-99]

7384 Piotr Indyk and Rajeev Motwani. Approximate nearest neighbors: Towards removing the curse of dimensionality. In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, page to appear, 1998. [im-anntr-98]

7385 P. Indyk, R. Motwani, P. Raghavan, and S. Vempala. Locality-preserving hashing in multidimensional spaces. In *Proc. 29th Annu. ACM Sympos. Theory Comput.*, pages 618–625, 1997. [imrv-lphms-97]

P. Indyk. See also [1481, 6667].

A. Ingraffea. See also [6248].

Patricio Inostroza. See also [11263].

A. Inoue. See also [7412].

K. Inoue. See also [25].

7386 A. Inselberg. Conflict resolution, one-shot problem, and air traffic control. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 26, 1989. [i-crosp-89]

7387 A. Inselberg. *N*-dimensional graphics, part I: lines and hyperplanes. Report G320-2711, IBM Sci. Center, Los Angeles, CA, 1981. [i-ndgp1-81]

7388 A. Inselberg. The plane with parallel coordinates. *Visual Comput.*, 1:69–91, 1985. [i-ppc-85]

7389 A. Inselberg, T. Chomut, and M. Reif. Complexity algorithms in parallel coordinates. *J. ACM*, 34:765–801, 1987. [icr-capc-87]

7390 A. Inselberg and M. Reif. Convexity in parallel coordinates. Manuscript, Dept. Comput. Sci., Univ. California, Los Angeles, CA, 1984. [ir-cpc-84]

A. Inselberg. See also [3089, 4239, 11268].

Andrei Iones. See also [13900].

7391 S. Irani. Coloring inductive graphs online. In *Proc. 30th FOCS*, pages 470–479, 1990. [i-cigol-90]

7392 Sandy Irani and Prabhakar Raghavan. Combinatorial and experimental results for randomized point matching algorithms. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 68–77, 1996. [ir-cerrp-96] *Cites:* cghkkk-gpmem-93, ee-scpps-, fb-rscpm-81, gh-sgh-90, hh-gicv-92, hu-orua-87, hu-rsoa-90, lsw-oraim-88, lw-ghgem-88, lw-eagh-91, w-mborg-90, ZZZ.

7393 ?? Iri. *Survey of mathematical programming*. North-Holland, Amsterdam, Netherlands, 1979. [i-smp-79]

7394 M. Iri. Fundamental algorithms for geographical data processing. Report T-83-1, Oper. Res. Soc. of Japan, 1983. [i-fagdp-83]

7395 M. Iri and S. Fujishige. Use of matroid theory in operating research, circuits and systems theory. *Int. J. Systems Sci.*, 12(1):27–54, 1981. [if-umtor-81]

7396 M. Iri, K. Murota, and S. Matsui. Heuristics for planar minimum-weight perfect matchings. *Networks*, 13:67–92, 1983. [imm-hpmwp-83]

7397 M. Iri, K. Murota, and S. Matsui. Linear-time approximation algorithms for finding the minimum-weight perfect matching on a plane. *Inform. Process. Lett.*, 12:206–209, 1981. [imm-ltaaf-81]

7398 M. Iri, K. Murota, and T. Ohya. A fast Voronoi-diagram algorithm with applications to geographical optimization problems. In *Proc. 11th IFIP Conf.*, volume 59 of *Lecture Notes in Control and Information Science*, pages 253–288. Springer-Verlag, 1983. [imo-fvdaa-83]

7399 M. Iri, K. Murota, and T. Ohya. Geographical optimization problems and their practical solutions. In *Proc. Spring Conf. Oper. Res. Soc. of Japan*, volume C-2, pages 92–93, 1983. [imo-goptp-83]

M. Iri. See also [944, 4626, 7354–7360, 10252–10254, 12619–12629, 12679].

7400 G. Iribarren and M. C. Rivara. A study on the classes of similar triangles produced by 4-t-bisection. Technical report, Dept. of Computer Science, University of Chile, 1992. [ir-scstp-92]

R. Irving. See also [6493].

7401 R. W. Irving. On approximating the minimum independent dominating set. *Inf. Proc. Lett.*, 37:197–200, 1991. [i-amids-91]

G. Isaak. See also [2130].

7402 Martin Isenburg. Triangle fixer: Edge-based connectivity compression. In *Abstracts 16th European Workshop Comput. Geom.*, pages 18–23. Ben-Gurion University of the Negev, 2000. [i-tfebc-00]

7403 M. Isenburg and J. Snoeyink. Spirale Reversi: Reverse decoding of the Edgebreaker encoding. *Comput. Geom. Theory Appl.*, 20:39–52, 2001. [is-srrde-01]

7404 Martin Isenburg and Jack Snoeyink. The face fixer video. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 377–378, 2000. [is-ffv-00] *Keywords:* video review.

T. L. Isenhour. See also [11246].

7405 M. Ishiguro. Evaluation of combinatorial complexity for hypothesis spaces in learning theory with applications. Master's thesis, Dept. Inform. Sci., Univ. Tokyo, Tokyo, Japan, 1994. [i-ecchs-94] *Keywords:* master thesis.

M. Ishiguro. See also [6707].

7406 H. Ishii. Minimax location problem with a distance. In *Proc. 5th Franco-Japanese Days on Combinatorics and Optimization*, page ??, 1992. [i-mlpd-92]

7407 M. Ishijama, S.-B. Shin, G. H. Hostetter, and J. Sklansky. Scan-along polygonal approximation for data compression of electrocardiograms. *IEEE Trans. on Biomedical Engg.*, BME-30(11):723–729, 1983. [ishs-spadc-83]

M. A. Ismail. See also [11970].

7408 S. Isoda, T. Shimonmura, and Y. Ono. Vips: A visual debugger. *IEEE Softw.*, 4(3):8–19, 1987. [iso-vvd-87] *Keywords:* graph drawing, system.

L. Israel. See also [5637].

7409 A. Itai, C. H. Papadimitriou, and J. L. Szwarcfiter. Hamilton paths in grid graphs. *SIAM J. Comput.*, 11:676–686, 1982. [ips-hpgg-82]

7410 A. Itai and M. Rodeh. The multi-tree approach to reliability in distributed networks. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 137–147, 1984. [ir-mtard-84]

7411 A. Itai and Y. Shiloach. Maximum flow in planar networks. *SIAM J. Comput.*, 8(2):135–150, May 1979. [is-mfpn-79]

7412 A. Itai, N. Tomioka, M. Yamada, A. Inoue, and Y. Kato. Molecular superposition for rational drug design. In ?? Kubingi, editor, *3D QSAR in Drug Design: Theory, Methods, and Applications*. ESCOM, 1995. [ityik-msrdd-95]

A. Itai. See also [1349, 4805, 4806, 5069].

G. Italiano. See also [4958].

7413 G. F. Italiano. Amortized efficiency of a path retrieval data structure. *Theoret. Comput. Sci.*, 48:273–281, 1986. [i-aeprd-86]

7414 G. F. Italiano. Finding paths and deleting edges in directed acyclic graphs. *Inform. Process. Lett.*, 28(1):5–11, 1988. [i-fpded-88]

7415 Giuseppe F. Italiano, Johannes A. La Poutré, and Monika H. Rauch. Fully dynamic planarity testing in planar embedded graphs. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 212–223. Springer-Verlag, 1993. [ipr-fdptp-93]

G. F. Italiano. See also [1119, 4957, 4959, 4960, 4962–4964, 5710–5713, 5929].

7416 H. Ito, H. Uehara, and M. Yokayama. Np-completeness of stage illumination problem. In *Proc. Japan Conf. Discrete Comput. Geom. '98*, pages 88–92, 1998. [iuy-npsip-98]

7417 T. Itoh and K. Koyamada. Automatic isosurface propagation using an extrema graph and sorted boundary cell lists. *IEEE Trans. Visualizat. Comput. Graph.*, 1:319–327, 1995. [ik-aipue-95]

7418 Claudia Iturriaga and Anna Lubiw. Elastic labels: the two-axis case. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 181–192. Springer-Verlag, 1997. [il-eltac-97] *Keywords:* graph drawing.

C. Iturriaga. See also [1344].

7419 M. Iwai, H. Suzuki, and T. Nishizeki. Shortest path algorithm in the plane with rectilinear polygonal obstacles. In *Proc. SIGAL Workshop*, July 1994. [isn-spapr-94]

7420 M. Iwai, H. Suzuki, and T. Nishizeki. Shortest paths in a plane with rectiliinear polygonal obstacles. Report, Graduate School of Information Science, Tohoku University, Japan, 1995?? [isn-spprp-95] *Keywords:* shortest paths, L1 metric, shortest path query, rectilinear polygons. *Annote:* abstract in English, but paper in Japanese Submitted to a journal: Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo.

7421 C. Iwamoto and G. T. Toussaint. Finding Hamiltonian circuits in arrangements of Jordan curves is NP-complete. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 93–98, 1994. [it-fhcaj-94i] *Cites:* ans-nchcp-80, c-hc-85, egt-cal-92, egt-eal-93, gjt-phcpn-76, g-hcppc-82, lw-ehppn-93, or-cswvg-91, r-cscsl-87, rit-cscsl-90, t-tpg-56, w-tg-31, k-racpc-72, ZZZ.

7422 C. Iwamoto and G. T. Toussaint. Finding Hamiltonian circuits in arrangements of Jordan curves is NP-complete. *Inform. Process. Lett.*, 52:183–189, 1994. [it-fhcaj-94a]

7423 K. Iwano. Strong Minkowski decomposition is NP-complete. *IEICE Trans.*, E74(4):653–656, 1991. [i-smdnc-91]

7424 K. Iwano, P. Raghavan, and H. Tamaki. The traveling cameraman problem, with applications to automatic optical inspection. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 29–37. Springer-Verlag, 1994. [irt-tcpaa-94]

7425 K. Iwano and K. Steiglitz. A semiring on convex polygons and zero-sum cycle problems. *SIAM J. Comput.*, 19:883–901, 1990. [is-scpzs-90]

K. Iwano. See also [7877–7879, 7881, 7882].

7426 S. Iwanowski. *Approximate congruence and symmetry detection in the plane*. Ph.D. thesis, Fachbereich Mathematik, Freie Universität Berlin, Berlin, Germany, 1990. [i-acsdp-90] *Keywords:* doctoral thesis.

7427 S. Iwanowski. Linear time algorithms for testing approximate congruence in the plane. In *Proc. 14th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 344 of *Lecture Notes Comput. Sci.*, pages 213–228, 1989. [i-ltata-89]

7428 S. Iwanowski. Testing approximate symmetry in the plane is NP-hard. In *Proc. 17th Internat. Sympos. Math. Found. Comput. Sci.*, Lecture Notes Comput. Sci. Springer-Verlag, 1989. [i-taspi-89]

7429 S. Iwanowski. Testing approximate symmetry in the plane is NP-hard. *Theoret. Comput. Sci.*, 80:227–262, 1991. [i-taspn-91]

7430 M. Iwata, J. Tanida, and Y. Ichioka. Inference engine for expert system by using optical array logic. *Appl. Optics*, 31(26):5604–5613, 1992. [iti-ieesu-92]

7431 M. Iwayama and T. Tokunaga. Cluster-based text categorization: A comparison of category search strategies. In *Proc. 16th Annu. Internat. ACM SIGIR Conf. Research and Develop. in Inform. Retrieval*, pages 273–280, 1995. [it-cbtcc-95]

7432 S. Iyanaga and Y. Kawada. *Encyclopedic Dictionary of Mathematics*. MIT Press, Cambridge, MA, 1968. [ik-edm-68]

S. Iyengar. See also [8810].

7433 S. Sitharama Iyengar and Alberto Elfes, editors. *Autonomous Mobile Robots: Perception, Mapping, and Navigation*. IEEE Computer Society Press, Los Alamitos, CA, 1991. [ie-amrpm-91]

7434 S. S. Iyengar, C. C. Jorgensen, S. V. N. Rao, and C. R. Weisbin. Robot navigation algorithms using learned spatial graphs. *Robotica*, 4:93–100, 1986. [ijrw-rnaul-86]

S. S. Iyengar. See also [3125, 9647, 10288, 10973, 11022–11028].

S. Iyenger. See also [11911].

B. Iyer. See also [325].

7435 David Izraelevitz. Fast algorithm for Voronoi diagram calculation based on distance doubling. In *Proceedings: The 2nd Symposium on the Frontiers of Massively Parallel Computations*, pages 173–176, IEEE Service Center, Piscataway, NJ, 1988. IEEE. [i-favdc-88] *Keywords:* Voronoi diagrams, fine-grain parallel computers. *Annote:* Discrete VD on parallel machine. *Abstract:* An efficient algorithm is described for calculation of the Voronoi diagram over one- and two-dimensional lattices. The algorithm proceeds by propagating the location of Voronoi points through the lattice using a distance-doubling strategy. This algorithm is designed for implementation on a fine-grain parallel computer such as the connection machine. It is shown how the algorithm is extended to calculation of distance-from-region computations and the use of nonstandard metrics. Two algorithms are presented for the calculation of the Voronoi diagram over one- and two- dimensional lattices. Both algorithms propagate the explicit location of the nearest Voronoi point rather than the distance to the point and so are more accurate than traditional methods. The first algorithm is based on brushfire propagation while the second algorithm relies on distance doubling. It is found that the distance-doubling algorithm is more efficient than the classical algorithm when at least one Voronoi polygon is large. It is found that there is little penalty in using the updated brushfire algorithm over the traditional algorithm. 6 Refs.

7436 T. Jabbour, C. Mascle, and R. Maranzana. A database for the representation of assembly features in mechanical products. *Internat. J. Comput. Geom. Appl.*, 8:483–509, 1998. [jmr-drafm-98]

7437 D. Jablonowsky and V. A. Guarna. GMB: A tool for manipulating and animating graph data structures. *Softw. – Pract. Exp.*, 19(3):283–301, 1989. [jg-gtmag-89] *Keywords:* graph drawing.

D. Jackél. See also [12947].

7438 C. Jackins and S. L. Tanimoto. Oct-trees and their use in representing 3-d objects. *Comput. Graph. Image Process.*, 14:249–270, 1980. [jt-ottur-80]

7439 C. L. Jackins. Computer modeling of three-dimensional objects using oct-trees. Master's thesis, Univ. Washington, Seattle, WA, 1979. [j-cmtdo-79] *Keywords:* master thesis.

7440 C. L. Jackins and S. L. Tanimoto. Oc-trees and their use in representing 3-d objects. Technical Report 82-02-02, Dept. Comput. Sci., Univ. Washington, Seattle, WA, 1982. [jt-otur3-82]

7441 L. Jackson and S. K. Wismath. Orthogonal polygon reconstruction. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 44–49. Carleton University Press, Ottawa, Canada, 1996. [jw-opr-96]

7442 R. Jacob. Emerging user-interface media: potentials and challenges - eye tracking. In *Tutorial SIGGRAPH '89*, 1989. [j-euimp-89]

Riko Jacob. See also [2459].

7443 C. G. J. Jacobi. De functionibus alternatibus earumque divisione per productum e differentiis elementorum conflatum. *J. Reine Angew. Math.*, 22:360–371, 1841. [j-dfaed-41]

7444 P. Jacobs. Minimal length curvature constrained paths in the presence of obstacles. Research Report 90042, LAAS, 7, av du colonel-Roche 31077 Toulouse Cedex, 1990. [j-mlccp-90]

7445 P. Jacobs and J. Canny. Planning smooth paths for mobile robots. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 2–7, 1989. [jc-pspmr-89] *Precedes:* jc-pspmr-92.

7446 P. Jacobs and J. Canny. Planning smooth paths for mobile robots. In Z. Li and J. F. Canny, editors, *Nonholonomic Motion Planning*, pages 271–342. Kluwer Academic Pubishers, Norwell, MA, 1992. [jc-pspmr-92] *Succeeds:* jc-pspmr-89.

7447 P. Jacobs, G. Heinzinger, J. Canny, and B. Paden. Planning guaranteed near-time-optimal trajectories for a manipulator in a cluttered workspace. Technical Report ESRC 89-20/RAMP 89-15, Engineering Systems Research Center, Univ. California, Berkeley, CA, October 1989. [jhcp-pgnto-89]

7448 P. Jacobs, G. Heinzinger, J. Canny, and B. Paden. Planning guaranteed near-time-optimal trajectories in a cluttered workspace. In *Internat. Workshop on Sensorial Integration for Industrial Robots: Architectures and Applications*, November 1989. [jhcp-pgnto-89i]

7449 P. Jacobs, J.-P. Laumond, and M. Taix. Efficient motion planners for nonholonomic mobile robots. In *Proc. IEEE/RSJ Internat. Workshop Intell. Robots Syst.*, pages 1229–1235, 1991. [jlt-empnm-91]

P. Jacobs. See also [8519].

7450 N. Jacobson. *Basic Algebra I*. W. H. Freeman, San Francisco, CA, 1974. [j-ba1-74] *Precedes:* j-ba1-85.

7451 N. Jacobson. *Basic algebra I*. W. H. Freeman, New York, NY, 2nd edition, 1985. [j-ba1-85] *Succeeds:* j-ba1-74.

W. Jacometti. See also [11199].

7452 W. R. Jacometti. Geolab - um ambiente para desenvolvimento de algoritmos em geometria computacional. Technical Report DCC-IMECC-UNICAMP, Departamento de Ciência da Computação, Universidade Estadual de Campinas, Campinas, Brazil, 1992. [j-guapd-92] *Keywords:* master thesis.

W. R. Jacometti. See also [11201].

7453 K. J. Jacquemin. Average case analysis of quad-trees. Report 8003, Lehrstuhl Inform. III, Rheinisch-Westfälischen Tech. Hochschule Aachen, Aachen, West Germany, 1980. [j-acaqt-80]

7454 K. J. Jacquemin. Effiziente Datenstrukturen und Algorithmen für ausgewählte mehrdimensionale Suchprobleme. Manuscript, Lehrstuhl Inform. III, Rheinisch-Westfälischen Tech. Hochschule Aachen, Aachen, West Germany, 1982. [j-eduaf-82]

7455 K. J. Jacquemin. Lower and upper bounds for the average case complexity of quad-trees of arbitrary dimension. Report 9011, Lehrstuhl Inform. III, Rheinisch-Westfälischen Tech. Hochschule Aachen, Aachen, West Germany, 1980. [j-lubac-80]

7456 A. Jacques. Constellations et graphes topologiques. In *Combinatorial Theory and Applications*, Colloquia Mathematica Societatis János Bolyai, pages 657–672. ??, Budapest, 1970. [j-cegt-70]

7457 S. Jadhav and A. Mukhopadhyay. Computing a centerpoint of a finite planar set of points in linear time. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 83–90, 1993. [jm-ccfps-93] *Cites:* c-sdsno-87, csy-khrp-87, e-acg-87, ls-otahs-90, m-aogdc-91, m-apcad-83, m-ltalp-83, m-ptlp-85, yb-cf-61, ZZZ.

7458 S. Jadhav and A. Mukhopadhyay. Computing a centerpoint of a finite planar set of points in linear time. *Discrete Comput. Geom.*, 12:291–312, 1994. [jm-ccfps-94]

7459 S. Jadhav, A. Mukhopadhyay, and B. K. Bhattacharya. An optimal algorithm for the intersection radius of a set of convex polygons. In *Proc. 12th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, 1992. [jmb-oairs-92]

7460 S. Jadhav, A. Mukhopadhyay, and B. K. Bhattacharya. An optimal algorithm for the intersection radius of a set of convex polygons. *J. Algorithms*, 20:244–267, 1996. [jmb-oairs-96] *Keywords:* prune and search, optimization.

S. Jadhav. See also [1959].

7461 H. V. Jagadish, A. O. Mendelzon, and T. Milo. Similarity-based queries. In *Proc. 14th Annu. ACM Sympos. Principles Database Syst.*, pages 36–45, 1995. [jmm-sbq-95]

7462 H. V. Jagdish. Linear clustering of objects with multiple attributes. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 332–342, 1990. [j-lcoma-90]

7463 H. V. Jagdish. On indexing line segments. In *Proc. 16th VLDB Conference*, pages 614–625, 1990. [j-oils-90]

H. V. Jagdish. See also [8817].

7464 B. Jaggi, P. Mani-Levitska, B. Sturmfels, and N. White. Uniform oriented matroids without the isotopy property. *Discrete Comput. Geom.*, 4:97–100, 1989. [jmsw-uomwi-89]

7465 K.-U. Jahn. Evaluation of Hausdorff distances in interval mathematics. *Computing*, 45:69–77, 1990. [j-ehdim-90]

7466 Fabrice Jaillet, Behzad Shariat, and Denis Vandorpe. Periodic B–spline surface skinning of anatomic shapes. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 199–204, 1997. [jsv-pbsss-97]

7467 P. Jaillon. LEA, a lazy exact arithmetic: Implementation and related problems. Technical Report in preparation, École Nationale Supérieure des Mines de Saint-Étienne, 1993. [j-leair-93]

P. Jaillon. See also [1616].

Jain. See also [4463].

7468 A. K. Jain and R. C. Dubes. *Algorithms for Clustering Data*. Prentice Hall, Englewood Cliffs, NJ, 1988. [jd-acd-88]

A. K. Jain. See also [13056].

R. Jain. See also [6316, 13513].

R. C. Jain. See also [1881].

7469 J. JáJá. *An Introduction to Parallel Algorithms*. Addison-Wesley, Reading, Mass., 1992. [j-ipa-92]

7470 J. Ja'Ja' and J. Simon. Parallel algorithms in graph theory: Planarity testing. *SIAM J. Comput.*, 11(2):314–328, 1982. [js-pagtp-82] *Keywords:* graph drawing.

7471 A. James and A. M. Day. The hidden face determination tree. *Comput. & Graphics*, 23(3):377–387, June 1999. [jd-hfdt-99]

M. James. See also [1925, 10929].

M. I. James. See also [10930].

7472 A. Jameson and T. Baker. Improvements to the aircraft Euler method. In *AIAA 25th Aerospace Science Meeting*, 1987. Paper AIAA-87-0452. [jb-iaem-87]

7473 J. Jameson. *Analytic techniques for automated grasp*. PhD thesis, Stanford Univ., Stanford, CA, 1985. [j-atag-85] *Keywords:* doctoral thesis.

7474 R. E. Jamison. Direction trees. *Discrete Comput. Geom.*, 2:249–254, 1987. [j-dt-87]

7475 R. E. Jamison-Waldner. A perspective of abstract convexity: classifying alignments by varieties. In D. C. Kay and M. Breen, editors, *Convexity and Related Combinatorial Geometry, Proc. 2nd University of Oklahoma Conference*, volume 76 of *Lecture Notes in Pure and Applied Mathematics*, pages 113–150. Marcel Dekker, Inc., 1982. [j-pacca-82]

7476 R. Janaardan and F. P. Preparata. Widest-corridor problemes. Technical Report TR-93-17, Dept. of Computer Science, University of Minnesota, Twin Cities, May 1993. [jp-wcp-93t] *Precedes:* jp-wcp-93, jp-wcp-94.

7477 R. Janardan. On maintaining the width and diameter of a planar point-set online. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 137–149. Springer-Verlag, 1991. [j-mwdpp-91] *Precedes:* j-mwdpp-93, j-mwdpp-93.

7478 R. Janardan. On maintaining the width and diameter of a planar point-set online. *Internat. J. Comput. Geom. Appl.*, 3:331–344, 1993. [j-mwdpp-93] *Keywords:* diameter, duality, dynamization, width. *Succeeds:* j-mwdpp-91.

7479 R. Janardan. On the dynamic maintenance of maximal points in the plane. *Inform. Process. Lett.*, 40:59–64, 1991. [j-dmmpp-91]

7480 R. Janardan and M. Lopez. Generalized intersection searching problems. *Internat. J. Comput. Geom. Appl.*, 3:39–69, 1993. [jl-gisp-93]

7481 R. Janardan and F. P. Preparata. Widest-corridor problems. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 426–431, 1993. [jp-wcp-93] *Succeeds:* jp-wcp-93t. *Cites:* cd-kdcp-90, cgl-pgd-85, eg-tsa-89, egs-oplms-86, hm-fwecs-88, jp-wcp-93t, ps-cgi-85, t-sgprc-83, ZZZ.

7482 R. Janardan and F. P. Preparata. Widest-corridor problems. *Nordic J. Comput.*, 1:231–245, 1994. [jp-wcp-94] *Succeeds:* jp-wcp-93t.

7483 R. Janardan and T. Woo. Manufacturing processes. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 46, pages 851–862. CRC Press LLC, Boca Raton, FL, 1997. [jw-mp-97]

R. Janardan. See also [3111–3118, 5555, 6457–6478, 7069, 7075, 7339, 7340, 9122–9131, 11901–11909, 12307–12309, 12801].

7484 E. Jansen and W. de Leeuw. Recursive ray traversal. *Ray Tracing News*, 5(1), 1992. [jl-rrt-92] *URL:* nic.funet.fi:/pub/graphics/misc/RTNews.

7485 F. W. Jansen. Depth-order point classification techniques for CSG display algorithms. *ACM Trans. Graph.*, 10(1):40–70, 1991. [j-dopct-91]

7486 Klaus Jansen. An approximation scheme for bin packing with conflicts. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 35–46. Springer-Verlag, 1998. [j-asbpc-98]

7487 K. Jansen. One strike against the min-max degree triangulation problem. *Comput. Geom. Theory Appl.*, 3:107–120, 1993. [j-sammd-93]

7488 Klaus Jansen. The complexity of the min-max degree triangulation problem. In *Abstracts 9th European Workshop Comput. Geom.*, pages 40–43. FernUniversität Hagen, 1993. [j-cmmdt-93]

7489 K. Jansen and G. J. Woeginger. The complexity of detecting crossingfree configurations in the plane. *BIT*, 33(4):580–595, 1993. [jw-cdccp-93]

7490 V. Jansen, A. Potthoff, W. Thomas, and U. Wermuth. A short guide to the AMORE system. Technical Report 90-2, Fachgruppe Informatik, RWTH Aachen, 1990. [jptw-sgas-90] *Keywords:* graph drawing.

Ali Jaoua. See also [1441].

7491 H. Jaouni, M. Khatib, and J.-P. Laumond. Elastic bands for nonholonomic car-like robots: Algorithms and combinatorial issues. In *Proc. 3rd Workshop Algorithmic Found. Robot.*, page to appear, 1998. [jkl-ebncl-98]

C. Jard. See also [7528].

7492 V. Jarnik. Ü ber Gitterpunkte und konvexe Kurven. *Math. Zeitschrift*, 24:500–518, 1925. [j-ugukk-25]

7493 J. W. Jaromczyk. Algorithmic and combinatorial techniques for graphs in R^d. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 27, 1989. [j-actgr-89]

7494 J. W. Jaromczyk. Linear decision trees are too weak for convex hull problem. *Inform. Process. Lett.*, 12:138–141, 1981. [j-ldtat-81]

7495 J. W. Jaromczyk. Lower bounds for polygon simplicity testing and other problems. In *Proc. Math. Found. of Computer Science '84*, pages 339–347. Springer-Verlag, 1984. [j-lbpst-84]

7496 J. W. Jaromczyk. Proof of $\Omega(n \log n)$ lower bound for maximal gap problem using slicer transformation approach. Report 91-87, Dept. Comput. Sci., Univ. Kentucky, Lexington, KY, 1987. [j-polbm-87] *Keywords:* lower bounds.

7497 Jerzy W. Jaromczyk and Miroslaw Kowaluk. A geometric proof of the combinatorial bounds for the number of optimal solutions to the 2-center Euclidean problem. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 19–24, 1995. [jk-gpcbn-95]

7498 J. W. Jaromczyk and M. Kowaluk. A note on relative neighborhood graphs. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 233–241, 1987. [jk-nrng-87] *Cites:* e-acg-87, gf-iea-64, l-rtaa-69, lw-vdllm-80, l-tdvdl-80, s-rngam-83, t-egbnl-75, t-dsna-83, t-rngfp-80, ZZZ.

7499 J. W. Jaromczyk and M. Kowaluk. An efficient algorithm for the Euclidean two-center problem. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 303–311, 1994. [jk-eaetc-94] *Cites:* as-pglp-90, d-ptctm-84, e-acg-87, f-nolnm-61, f-samlp-67, hm-lnta-79, hs-ftp-91, k-sades-91a, ks-ebago-93, m-ltalp-83, rt-em-57, s-qgs-57, sh-cpp-75, v-cbrdf-87, ZZZ.

7500 Jerzy W. Jaromczyk and Miroslaw Kowaluk. Orientation independent covering of point sets in R^2 with pairs of rectangles or optimal squares. In *Abstracts 12th European Workshop Comput. Geom.*, pages 77–84. Universität Münster, 1996. [jk-oicps-96]

7501 J. W. Jaromczyk and M. Kowaluk. Relative neighborhood graphs and nearest neighbor pairs in d-dimensional space with the metric L^p. Report 98-87, Dept. Comput. Sci., Univ. Kentucky, Lexington, KY, 1987. [jk-rngnn-87]

7502 Jerzy W. Jaromczyk and Miroslaw Kowaluk. Sets of lines and cutting out polyhedral objects. In *Abstracts 17th European Workshop Comput. Geom.*, pages 183–186. Freie Universität Berlin, 2001. [jk-slcop-01]

7503 J. W. Jaromczyk and M. Kowaluk. Skewed projections with an application to line stabbing in R^3. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 362–370, New York, 1988. ACM, ACM Press. [jk-spals-88] *Keywords:* image part pattern. *Cites:* ab-eact-87, a-dp-86, ad-ahdsp-87, aw-alts-87, b-mag-69, dgk-htir-63, ds-cpcde-65, emprww-sls-82, e-ftssg-85, es-mnwsn-87, egs-ueplf-87, epss-lebfi-87, et-eaide-85, g-ct-58, hdk-cgp-64, hs-ndssg-86, klz-gpcs-85, scklps-gadss-86, s-pds-74, w-ublo-86, ZZZ.

7504 Jerzy W. Jaromczyk and Miroslaw Kowaluk. The face-wise continuity in hot wire cutting of polyhedral sets. In *Abstracts 16th European Workshop Comput. Geom.*, pages 93–97. Ben-Gurion University of the Negev, 2000. [jk-fwchw-00]

7505 Jerzy W. Jaromczyk and Miroslaw Kowaluk. The two-line center problem from a polar view: A new algorithm and data structure. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 13–25. Springer-Verlag, 1995. [jk-tlcpp-95]

7506 J. W. Jaromczyk and G. Świątek. A role of lower semi-continuous functions in combinatorial complexity of geometric problems. *J. Complexity*, ??, 1991. [js-rfccg-91]

7507 J. W. Jaromczyk and G. T. Toussaint. Relative neighborhood graphs and their relatives. *Proc. IEEE*, 80(9):1502–1517, September 1992. [jt-rngtr-92]

7508 J. W. Jaromczyk and G. W. Wasilkowski. Computing convex hull in a floating point arithmetic. *Comput. Geom. Theory Appl.*, 4:283–292, 1994. [jw-cchfp-94]

7509 J. W. Jaromczyk and G. W. Wasilkowski. Numerical stability of a convex hull algorithm for simple polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 257–260, 1990. [jw-nscha-90] *Cites:* e-acg-87, f-smpst-89, g-eadch-72, gy-fchsp-83, l-fchsp-83, ps-cgi-85, ZZZ.

7510 J. W. Jaromczyk and G. W. Wasilkowski. Numerical stability of a convex hull algorithm for simple polygons. *Algorithmica*, 10:457–472, 1993. [jw-nscha-93]

J. W. Jaromczyk. See also [4432, 4714–4716].

7511 R. A. Jarvis. Computing the shape hull of points in the plane. In *Proc. IEEE Internat. Conf. Pattern Recogn. Image Process.*, pages 231–241, 1977. [j-cshpp-77]

7512 R. A. Jarvis. On the identification of the convex hull of a finite set of points in the plane. *Inform. Process. Lett.*, 2:18–21, 1973. [j-ichfs-73] *Keywords:* designing algorithms, convex hull, two-dimensional, worst-case analysis. *Annote:* $O(nh)$ time.

7513 R. A. Jarvis. Shared near neighbor maximal spanning trees for cluster analysis. In *Proc. 4th IEEE Internat. Conf. Pattern Recogn.*, 1978. [j-snnms-78]

B. Jaumard. See also [3079, 6650].

7514 R. Jayakumar, K. Thulasiraman, and M. N. S. Swamy. An optimal algorithm for maximal planarization of nonplanar graphs. In *Proc. IEEE Internat. Sympos. on Circuits and Systems*, pages 1237–1240, 1986. [jts-oampn-86] *Keywords:* graph drawing.

7515 R. Jayakumar, K. Thulasiraman, and M. N. S. Swamy. $O(n^2)$ algorithms for graph planarization. Technical Report CSD-88-01, Department of Computer Science, Concordia University, 1988. [jts-oagp-88] *Keywords:* graph drawing.

7516 R. Jayakumar, K. Thulasiraman, and M. N. S. Swamy. $O(n^2)$ algorithms for graph planarization. *IEEE Trans. Comp.-Aided Design*, 8:257–267, 1989. [jts-oagp-89] *Keywords:* graph drawing, planarization.

7517 R. Jayakumar, K. Thulasiraman, and M. N. S. Swamy. Planar embedding: Linear-time algorithms for vertex placement and edge ordering. *IEEE Trans. Circuits Syst.*, 35(3):334–344, 1988. [jts-pelta-88] *Keywords:* graph drawing.

7518 R. Jayaraman and V. Srinivasan. Virtual boundary requirements and conditional tolerances in mechanical design. Report RC 12942 (#58050), Auto. Res. Group, IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1987. [js-vbrct-87]

P. Jeanne. See also [3849].

P. Jeannin. See also [5269, 5270].

Tudor Jebelean. See also [3637, 3638].

David J. Jeffrey. See also [3545].

7519 R. Jègan, R. Nowakowski, and I. Rival. The diagram invariant problem for planar lattices. *Acta Sci. Math. Szeged*, 51:103–121, 1987. [jnr-dippl-87]

G. F. Jenks. See also [5728, 7193].

7520 E. Jennings and A. Lingas. On the relationships among constrained geometric structures. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 289–298. Springer-Verlag, 1992. [jl-rcgs-92]

7521 G. F. Jennings and W. J. Lenhart. An art gallery theorem for line segments in the plane. In G. T. Toussaint, editor, *Pattern Recognition Letters Special Issue on Computational Geometry*. September 1993. [jl-agtls-93]

J. Jennings. See also [4364, 4365].

G. H. Jense. See also [7203].

7522 Henrik Wann Jensen. Rendering caustics on non-lambertian surfaces. In *Proc. Graphics Interface '96*, pages 116–121, 1996. [j-rcnls-96]

7523 C.-J. Jeong. Parallel Voronoi diagram in L_1 (L_∞) metric on a mesh-connected computer. *Parallel Comput.*, 17(2–3):241–252, June 1991. [j-pvdll-91]

7524 C. S. Jeong and D. T. Lee. Parallel geometric algorithms on a mesh-connected computer. *Algorithmica*, 5:155–177, 1990. [jl-pgamc-90]

7525 R. B. Jerard, R. L. Drysdale, and K. Hauck. The uses of computer graphics as a tool for detecting errors in numerical control machining of sculptured surfaces. In *Proceedings of NCGA's Computer Graphics '87*, March 1987. To appear. [jdh-ucgtd-87]

7526 R. B. Jerard, K. Hauck, and R. L. Drysdale. Simulation of numerical control machining of sculptured surfaces. In *15th International Symposium on Automative Technology and Automation*, October 1986. Paper No. 86057. [jhd-sncms-86]

R. B. Jerard. See also [1120, 3232, 4433, 4434, 12455].

7527 B. Jeromin and F. Körner. On the refinement of bounds of heuristic algorithms for the traveling salesman problem. *Math. Program.*, 32:114–117, 1985. [jk-rbhat-85] *Keywords:* heuristics, approximation.

7528 T. Jéron and C. Jard. 3D layout of reachability graphs of communicating processes. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 25–32. Springer-Verlag, 1995. [jj-3dlrg-95] *Keywords:* graph drawing, 3D.

7529 R. G. Jeroslow. The simplex algorithm with the pivot rule of maximizing criterion improvement. *Discrete Math.*, 4:367–377, 1973. [j-saprm-73]

R. G. Jeroslow. See also [2062].

7530 M. Jerrum. A compact representation for permutation groups. In *Proc. 23rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 126–133, 1982. [j-crpg-82]

7531 M. Jerrum. A compact representation for permutation groups. *J. Algorithms*, 7:60–78, 1986. [j-crpg-86]

7532 M. Jerrum. A data structure for systems of orthogonal, non-overlapping rectangles. Report CSR-239-87, Dept. Comput. Sci., Univ. Edinburgh, Edinburgh, Scotland, 1987. [j-dsson-87]

7533 M. Jerrum. Complementary partial orders and rectangle packing. Report CSR-190-85, Dept. Comput. Sci., Univ. Edinburgh, Edinburgh, Scotland, 1985. [j-cporp-85]

7534 M. Jerrum, L. Valiant, and V. Vazirani. Random generation of combinatorial structures from a uniform distribution. *Theoret. Comput. Sci.*, 43:169–188, 1986. [jvv-rgcsu-86]

M. Jerrum. See also [5743, 5744].

7535 Mário Jesus, Sérgio Jesus, and Alberto Márquez. Approximated solutions for the Euclidean Steiner tree problem with large sets of points. In *Abstracts 17th European Workshop Comput. Geom.*, pages 174–177. Freie Universität Berlin, 2001. [jjm-asest-01]

Sérgio Jesus. See also [7535].

7536 Yan-Bin Jia and Michael Erdmann. Sensing polygon poses by inscription. In *Proc. 1994 IEEE Internat. Conf. Robot. Autom.*, pages 1642–1649. IEEE Computer Society, 1994. [je-sppi-94] *Keywords:* probing, point probes, part orientation.

7537 Yan-Bin Jia and Michael Erdmann. The complexity of sensing by point sampling. In *Proc. 1st Workshop Algorithmic Found. Robot.*, Wellesley, MA, 1995. A. K. Peters. [je-csps-94] *Keywords:* probing, point probes, NP-complete.

Wein Chung Jiaan. See also [3102].

7538 T. Jiang and L. Wang. An approximation scheme for some Steiner tree problems in the plane. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 414–422. Springer-Verlag, 1994. [jw-assst-94]

7539 X. Jiang, K. Yu, and H. Bunke. Detection of rotational and involutional symmetries and congruity of polyhedra. *Visual Comput.*, 12(4):193–201, 1996. [jyb-drisc-96]

7540 Xiao-Yi Jiang and Horst Bunke. Determination of the symmetries of polyhedra and an application to object recognition. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 113–121. Springer-Verlag, 1991. [jb-dspao-91] *Annote:* 7th Intern. Workshop Comput. Geom. *Abstract:* In this paper we present a simple and efficient algorithm for determining the rotational symmetries of polyhedral objects in $O(m^2)$ time using $O(m)$ space where m represents the number of edges of the object. Our algorithm is an extension of Weinberg's algorithm for determining isomorphisms of planar triply connected graphs. The symmetry information detected by our algorithm can be utilized for various purposes in artificial intelligence, robotics, assembly planning and machine vision. In particular, an application of symmetry analysis to object recognition will be described in some detail.

H. Jin. See also [7115].

7541 R. A. Jinkerson, S. L. Abrams, L. Bardis, C. Chryssostomidis, A. Clément, N. M. Patrikalakis, and F.-E. Wolter. Inspection and feature extraction of marine propellers. *Journal of Ship Production*, 9(2):88–106, 1993. [jabccpw-ifemp-93]

R. A. Jinkerson. See also [1392].

7542 B. Joe. 3-dimensional triangulations from local transformations. *SIAM J. Sci. Statist. Comput.*, 10(4):718–741, 1989. [j-3dtlt-89] *Annote:* Considers 3D DT and max-min solid angle criterion. Shows 3D DT has local optimality property, but switchings will not necessarily converge to DT. Conjectures that switchings based on insertion algorithm give DT. Experiments with variations on switching order.

7543 Barry Joe. Construction of k-dimensional Delaunay triangulations using local transformations. Technical report, University of Alberta, Edmonton, Alberta, Canada, 1993. [j-ckddt-93]

7544 B. Joe. Construction of three-dimensional Delaunay triangulations using local transformations. *Comput. Aided Geom. Design*, 8(2):123–142, May 1991. [j-ctddt-91]

7545 Barry Joe. Construction of three-dimensional improved-quality triangulations using local transformations. Technical report, University of Alberta, Edmonton, Alberta, Canada, July 1993. [j-ctdiq-93]

7546 B. Joe. Delaunay triangular meshes in convex polygons. Report CS-84-15, Dept. Comput. Sci., Univ. Waterloo, Waterloo, ON, 1984. [j-dtmcp-84] *Keywords:* finite element method, mesh generation, numerical analysis, decomposition, Delaunay triangulations. *Precedes:* j-dtmcp-86.

7547 B. Joe. Delaunay triangular meshes in convex polygons. *SIAM J. Sci. Statist. Comput.*, 7(2):514–539, 1986. [j-dtmcp-86] *Succeeds:* j-dtmcp-84. *Annote:* Finds a Delaunay Triangulation of a convex polygon. Extra points are added on a semiregular grid and on boundary. Hard part is strip around boundary. Initial triangle constructed by a "walk" method, improved by switchings.

7548 Barry Joe. Delaunay versus max-min solid angle triangulations for three-dimensional mesh generation. *Internat. J. Numer. Methods Eng.*, 31(5):987–997, April 1991. [j-dvmms-91] *Keywords:* mesh generation, Delaunay triangulations. *Annote:* Builds 3D DT by incremental flip. Then flips to maximize minimum solid angle. Max-min seems to give better shapes. *Abstract:* The Delaunay triangulation has been used in several methods for generating finite element tetrahedral meshes in three-dimensional polyhedral regions. Other types of three-dimensional triangulations are possible, such as a triangulation satisfying a local max-min solid angle criterion. In this paper, we present experimental results to show that max-min solid angle triangulations are better than Delaunay triangulations for finite element tetrahedral meshes, since the former type of triangulations contains tetrahedra of better shape than the latter type. We also describe how mesh points are generated and triangulated in our tetrahedral mesh generation method. (Author abstract) 16 Refs.

7549 B. Joe. Finite element triangulation of complex regions using computational geometry. Report CS-84-19, Dept. Comput. Sci., Univ. Waterloo, Waterloo, ON, 1984. [j-fetcr-84]

7550 B. Joe. Geompack. A software package for the generation of meshes using geometric algorithms. *Advances in Engineering Software and Workstations*, 13(5–6):325–331, September 1991. [j-gspgm-91] *Keywords:* geompack computer software, mesh generation software, geometric algorithms, Delaunay triangulation, visibility polygons. *Annote:* 2D and 3D triangulations via insertion flip alg. Vertices are bin sorted in $\sqrt(n)$ bins. *Abstract:* We describe the mathematical software package GEOMPACK, which contains standard Fortran 77 routines for the generation of two-dimensional triangular and three-dimensional tetrahedral finite element meshes using efficient geometric algorithms. This package results from our research into mesh generation and geometric algorithms. It contains routines for constructing two- and three-dimensional Delaunay triangulations, decomposing a general polygonal region into simple or convex polygons, constructing the visibility polygon of a simple polygon from a viewpoint, and other geometric algorithms, from which our mesh generation method is built and others can be implemented. Our method generates meshes in polygonal or polyhedral regions specified by their boundary representation and possible interfaces between subregions. (Author abstract) 15 Refs.

7551 Barry Joe. Geompack: A software package for the generation of meshes using geometric algorithms. Technical report, University of Alberta, Edmonton, Alberta, Canada, July 1993. [j-gspgm-93]

7552 B. Joe. On the correctness of a linear-time visibility polygon algorithm. *Internat. J. Comput. Math.*, 32:155–172, 1990. [j-ocltv-90]

7553 B. Joe. Quadrilateral mesh generation in polygonal regions. *Comput. Aided Design*, 27:209–222, 1995. [j-qmgpr-95]

7554 Barry Joe. Three-dimensional boundary-constrained triangulations. Technical report, University of Alberta, Edmonton, Alberta, Canada, 1993. [j-tdbct-93]

7555 B. Joe and R. B. Simpson. Algorithms and correctness proofs for visibility polygon computations. Report CS-87-03, Dept. Comput. Sci., Univ. Waterloo, Waterloo, ON, 1987. [js-acpvp-87] *Keywords:* visibility, hidden line/surface elimination.

7556 B. Joe and R. B. Simpson. Correction to Lee's visibility polygon algorithm. *BIT*, 27:458–473, 1987. [js-clvpa-87]

7557 B. Joe and R. B. Simpson. Finite element triangulation of complex regions. Report ??, Dept. Comput. Sci., Univ. Waterloo, Waterloo, ON, ?? [js-fetcr-??]

7558 B. Joe and R. B. Simpson. Triangular meshes for regions of complicated shape. *Internat. J. Numer. Methods Eng.*, 23:751–778, 1986. [js-tmrcs-86] *Keywords:* finite element method, mesh generation, numerical analysis, decomposition, multiply-connected.

7559 B. Joe and R. B. Simpson. Visibility of a simple polygon from a point. Report CS-85-38, Dept. Math. Comput. Sci., Drexel Univ., Philadelphia, PA, 1985. [js-vspp-85] *Keywords:* visibility, hidden line/surface elimination, algorithm correctness.

7560 B. Joe and C. Wang. Duality constrained Voronoi diagrams and Delaunay triangulation of a set of line segments. Technical Report, Memorial Univ. of Newfoundland, 1988. [jw-dcvdd-88]

B. Joe. See also [8916, 13375].

7561 L. S. Joel, D. R. Shier, and M. L. Stein. Planes, cubes and center-representable polytopes. *Amer. Math. Monthly*, 84:360–363, 1977. [jss-pccrp-77]

7562 A. Joffe. On a set of almost deterministic k-independent random variables. *Ann. Probab.*, 2:161–162, 1974. [j-sadki-74]

K. Jogdeo. See also [4116].

7563 G. H. Johansen and C. Gram. A simple algorithm for building the 3-d convex hull. *BIT*, 23:146–160, 1983. [jg-sab3d-83]

O. Johansson. See also [4896].

7564 Peter Johansson. On a weighted distance model for injection moulding. Linköping Studies in Science and Technology, Thesis No. 604 LiU-TEK-LIC-1997:05, Division of Applied Mathematics, Linköping University, Linköping, Sweden, February 1997. [j-wdmim-97] *Keywords:* shortest paths, injection molding, weighted region problem. *Annote:* Licentiate thesis.

7565 F. John. Extremum problems with inequalities as subsidary conditions. *Courant Anniversary*, ??:187–204, 1948. [j-episc-48]

Matthias John. See also [89].

7566 B. Johnson. Treeviz: Treemap visualization of hierarchically structured information. In *Proc. ACM Conf. on Human Factors in Computing Systems*, pages 369–370, 1993. [j-ttvhs-93] *Keywords:* graph drawing, planar.

7567 B. Johnson and B. Shneiderman. Treemaps: A space-filling approach to the visualization of hierarchical information systems. *IEEE Visualization*, ??, 1991. [js-tmsat-91] *Keywords:* graph drawing, planar.

7568 C. Johnson. *Numerical solution of partial differential equations by the finite element method*. Cambridge University Press, 1987. [j-nspde-87]

C. K. Johnson. See also [1810].

C. R. Johnson. See also [5967, 8931].

D. Johnson. See also [5766].

7569 D. B. Johnson. A priority queue in which initialization and queue operations take $o(\log\log d)$ time. *Math. Syst. Theory*, ??:295–309, 1982. [j-pqiqo-82]

7570 D. B. Johnson and T. Mizoguchi. Selecting the k-th element in $X+Y$ and $X_1 + X_2 + \ldots + X_m$. *SIAM J. Comput.*, 7:147–153, 1978. [jm-sktex-78]

D. B. Johnson. See also [5545–5547].

7571 D. S. Johnson. Approximation algorithms for combinatorial problems. *J. Comput. Syst. Sci.*, 9:256–278, 1974. [j-aacp-74]

7572 D. S. Johnson. The NP-completeness column: an ongoing guide. *J. Algorithms*, 3(1):89–99, 1982. [j-nccog-82] *Keywords:* graph drawing.

7573 D. S. Johnson. The NP-completeness column: an ongoing guide. *J. Algorithms*, 5(2):147–160, 1984. [j-nccog-84] *Keywords:* graph drawing.

7574 D. S. Johnson, A. Demers, J. D. Ullmann, M. R. Garey, and R. L. Graham. Worst-case performance bounds for simple one-dimensional packing algorithms. *SIAM J. Comput.*, 3:299–325, 1974. [jdugg-wcpbs-74]

7575 D. S. Johnson, L. A. McGeoch, and E. E. Rothberg. Asymptotic experimental analysis for the Held-Karp traveling salesman bound. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 341–350, 1996. [jmr-aeahk-96] *Keywords:* integer programming, linear programming, approximation, TSP, uniform random points.

7576 D. S. Johnson and C. H. Papadimitriou. Computational complexity and the traveling salesman problem. In E. Lawler, J. Lenstra, A. Rinnooy Kan, and D. Shmoys, editors, *The Traveling Salesman Problem*, pages 68–74. John Wiley & Sons, New York, 1985. [jp-cctsp-85]

7577 D. S. Johnson and H. O. Pollak. Hypergraph planarity and the complexity of drawing Venn diagrams. *J. Graph Theory*, 11(3):309–325, 1987. [jp-hpcdv-87] *Keywords:* graph drawing.

7578 D. S. Johnson and F. P. Preparata. The densest hemisphere problem. *Theoret. Comput. Sci.*, 6:93–107, 1978. [jp-dhp-78]

D. S. Johnson. See also [1473, 3322, 3398, 5767–5773, 9430, 9431].

D. W. Johnson. See also [5948–5950]

E. Johnson. See also [11902–11906].

Ralph Johnson. See also [5730].

7579 R. A. Johnson. *Advanced Euclidean Geometry*. Dover, New York, 1960. [j-aeg-60]

7580 S. C. Johnson. Hierarchical clustering schemes. *Psychometrika*, 32:241–254, 1967. [j-hcs-67]

7581 W. Johnson and J. Lindenstrauss. Extensions of Lipschitz maps into a Hilbert space. *Contemp. Math.*, 26:189–206, 1984. [jl-elmhs-84]

7582 B. P. Johnston, J. M. Sullivan, and A. Kwasnik. Automatic conversion of triangular finite meshes to quadrilateral elements. *Internat. J. Numer. Methods Eng.*, 31(1):67–84, 1991. [jsk-actfm-91] *Annote:* Works by combining adjacent triangles—looking at those with one neighbour first and trying to combine them with adjacent nodes. Bad quads are rejected. Splitting triangles may be necessary.

H. Johnston. See also [2706].

J. Johnstone. See also [5139].

7583 J. K. Johnstone. A new intersection algorithm using circle decomposition. Technical Report JHU-91-20, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, October 1991. [j-niauc-91]

7584 J. K. Johnstone. Finding generators and directrix curves on ruled surfaces. Technical Report 91-17, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, September 1991. [j-fgdcr-91] *Succeeds:* j-wrssm-89.

7585 J. K. Johnstone. *The sorting of points along an algebraic curve*. Ph.D. thesis, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1987. Technical Report TR 87-841. [j-spaac-87] *Keywords:* doctoral thesis.

7586 J. K. Johnstone. Working with ruled surfaces in solid modeling. In *Computers and Mathematics*, pages 260–268. Springer-Verlag, 1989. [j-wrssm-89] *Precedes:* j-fgdcr-91.

7587 J. K. Johnstone and C. Bajaj. Sorting points along an algebraic curve. *SIAM J. Comput.*, 19:925–967, 1990. [jb-spaac-90]

7588 J. K. Johnstone and M. Goodrich. A localized method for intersecting plane algebraic curve segments. *Visual Comput.*, 7:60–71, 1991. [jg-lmipa-91]

7589 J. K. Johnstone and C.-K. Shene. Computing the intersection of a plane and a natural quadric. Technical Report JHU-91-04, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1991. [js-cipnq-91] *Comments:* to appear in Computers and Graphics 16 (1992).

7590 J. K. Johnstone and C. K. Shene. The distance representation of quadric surfaces: Ruled quadrics. Technical Report JHU-90/08, Dept. of Comp. Sci., Johns Hopkins Univ, Baltimore, MD, July 1990. [js-drqsr-90] *Keywords:* representation of surfaces, bisector, quadric surfaces, design, solid modeling.

7591 J. K. Johnstone and C.-K. Shene. The representation of all hyperboloids of one sheet by two lines. Technical Report JHU-91-19, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, July 1991. [js-rahos-91]

J. K. Johnstone. See also [5140, 5142, 12101, 12102].

7592 J. Jolion, P. Meer, and S. Batauche. Robust clustering with applications in computer vision. *IEEE Trans. Pattern Anal. Mach. Intell.*, 13:791–802, 1991. [jmb-rcacv-91]

7593 A. T. Jonassen and D. E. Knuth. A trivial algorithm whose analysis isn't. *J. Comput. Syst. Sci.*, 16:301–322, 1978. [jk-tawai-78]

A. R. Jones. See also [13919].

7594 C. Jones. Cartographic name placement with Prolog. *IEEE Comput. Graph. Appl.*, 5:36–47, 1989. [j-cnpp-89]

C. Jones. See also [616].

7595 C. B. Jones. A new approach to the "hidden line" problem. *Comput. J.*, 14:232–237, 1971. [j-nahlp-71]

7596 C. B. Jones, J. M. Ware, and C. D. Enyon. Triangulated spatial models and neighborhood search: An experimental comparison with quadtrees. *Visual Comput.*, 15(5):235–248, 1999. [jwe-tsmns-99]

C. B. Jones. See also [6830].

7597 C. H. Jones. An obstacle to realizing visibility graphs and triangle intersection graphs. Technical report, Washington State University, Pullman, WA, July 1993. [j-orvgt-93]

7598 D. W. Jones. An empirical comparison of priority-queue and event-set implementations. *Commun. ACM*, 29(4):300–311, April 1986. [j-ecpqe-86]

7599 L. G. Jones. Incremental compaction of flat symbolic ic layouts. Technical Report UIUCDCS-R-87-1386, Dept. Computer Science, Univ. Illinois., Urbana, IL, 1987. [j-icfsi-87]

7600 L. G. Jones and J. Simon. Hierarchical vlsi design systems based on attribute grammars. In *13th ACM Sympos. on Principles of Programming Languages*, pages 58–69, 1986. [js-hvdsb-86]

L. K. Jones. See also [5337].

Mark Jones. See also [2634, 5591].

7601 M. R. Jones, M. A. Price, and G. Butlin. Geometry management support for automeshing. In *Proc. 4th International Meshing Roundtable*, pages 153–164, Albuquerque, NM, 1995. Sandia National Laboratories. [jpb-gmsam-95]

7602 M. W. Jones and M. Chen. A new approach to the construction of surfaces from contour data. *Comput. Graph. Forum*, 13(3):75–84, 1994. [jc-nacsc-94] *Keywords:* computer graphics, contours, surfaces, approximation.

7603 Norman L. Jones and Stephen G. Wright. Algorithm for smoothing triangulated surfaces. *Journal of Computing in Civil Engineering*, 5(1):85–102, January 1991. [jw-asts-91] *Keywords:* contouring, volume calculations, smooth interpolation surfaces, triangulated surface smoothing. *Annote:* Extra points added where deviation is maximum. Insertion inside flip to update tri. Also suggests flips to minimize deviation. *Abstract:* Surfaces defined by linearly interpolating a two-dimensional triangulation of a set of scattered data points are frequently used to describe geometry in computer applications. The linear nature of such surfaces simplifies many subsequent operations on the surface such as contouring and volume calculations. However, if the data points defining the surface are sparse, the resulting triangulated surface may be unacceptably rough or irregular. An algorithm is presented for smoothing a triangulated surface by adding extra data points at special locations in the interior of the triangulated region. The incremental addition of the supplemental data points forces the triangulated surface to approximate or converge to a previously specified smooth surface that interpolates the original data points. A unique feature of the algorithm is that any smooth interpolation scheme or surface can be used to smooth the triangulated surface. The algorithm has been implemented on a microcomputer and the results have been satisfactory. (Author abstract) 21 Refs.

7604 P. Jones. Rectifiable sets and the Traveling Salesman Problem. *Invent. Math.*, 102:1–15, 1990. [j-rstsp-90]

7605 S. Jones, P. Eades, A. Moran, N. Ward, G. Delott, and R. Tamassia. A note on planar graph drawing algorithms. Technical Report 216, Department of Computer Science, University of Queensland, 1991. [jemwdt-npgda-91] *Keywords:* graph drawing, experiments, planar, straight-line.

7606 S. Jones and J. O'Rourke. A note on moving a chair through a doorway. *Algorithms Rev.*, 1(3):139–149, 1990. S. Jones is now S. Dorward. [jo-nmctd-90] *Keywords:* motion planning, lower bounds.

S. E. Jones. See also [1233].

S. M. Jones. See also [5055].

7607 S. T. Jones. Solving problems involving variable terrain. part 1: A general algorithm. *Byte*, 5(2):58–68, February 1980. [j-spivt1-80]

7608 S. T. Jones. Solving problems involving variable terrain. part 2: Special case. *Byte*, 5(3):74–82, March 1980. [j-spivt2-80]

7609 W. D. Jones. Computational geometry, a community bibliography. Overview at http://compgeom.cs.duke.edu/~jeffe/compgeom/biblios.html#geombib. [j-cgcb-] *URL:* ftp://ftp.cs.usask.ca/pub/geometry/geombib.tar.gz. *Keywords:* bibliography.

7610 W. D. Jones and Y. Ke. Maximal segment-stabbing of segments in the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 85–88, 1990. [jk-msssp-90] *Keywords:* stabbing, line segments, two-dimensional, plane-sweep, configuration space. *Cites:* ab-eact-87, ad-ahdsp-87, aw-alts-87, e-ftssg-85, e-ftssg-85, emprww-sls-82, epss-lebfi-87, ew-spdtl-89, gs-spscp-90, g-ct-58, g-scop-83, hdk-cgp-64, jk-spals-88, ls-esmpa-87, o-olafs-81, ss-pmp1c-83, ZZZ.

H. Jonkers. See also [3556].

H. B. M. Jonkers. See also [3557].

H. Jonsson. See also [2728–2731].

7611 Håkan Jonsson. On the zookeeper's problem. In *Abstracts 15th European Workshop Comput. Geom.*, pages 141–144. INRIA Sophia-Antipolis, 1999. [h-zp-99m]

7612 Denis Jordan and Marcel Steiner. Configuration spaces of mechanical linkages. *Discrete Comput. Geom.*, 22:297–315, 1999. [js-csml-99]

7613 H. F. Jordan. Interview to 'computerworld' magazine, March 1993. [j-icm-93]

M. Jordan. See also [1435].

7614 C. Jorgensen, W. Hamel, and C. Weisbin. Autonomous robot navigation. *Byte*, 11(1):223–235, January 1986. [jhw-arn-86]

C. C. Jorgensen. See also [7434, 11022–11024].

7615 A. Josefczyk, J. Miller, and J. O'Rourke. Arkin's conjecture for rectangle and box visibility graphs. Technical Report 036, Dept. Comput. Sci., Smith College, July 1994. [jmo-acrbv-94] *Keywords:* visibility graphs.

A. Josefczyk. See also [2319].

7616 D. Joseph. Polynomial time computations in models of ET. *J. Comput. Syst. Sci.*, 26:311–338, 1983. [j-ptcme-83]

7617 D. Joseph, J. Meidanis, and P. Tiwari. Determining DNA sequence similarity using maximum independent set algorithms for interval graphs. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 326–337. Springer-Verlag, 1992. [jmt-ddssu-92]

D. Joseph. See also [608, 609, 2545, 3758–3761].

7618 D. A. Joseph and W. H. Plantinga. On the complexity of reachability and motion planning questions. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 62–66, 1985. [jp-crmpq-85] *Cites:* h-sp-68, lw-apcfp-79, r-cmpg-79, b-pcfmp-83, ss-pmp2g-83, hss-cmpmi-84, hjw-mra2d-85, hjw-mp2dl-84, k-racpc-72, ZZZ.

D. A. Joseph. See also [7092–7094].

7619 Eugene Joseph and Steven S. Skiena. Model-based probing strategies for convex polygons. *Comput. Geom. Theory Appl.*, 2:209–221, 1992. [js-mbpsc-92] *Keywords:* probing, model-based, convex polygons.

S. Joshi. See also [3970, 13050].

7620 L. Joskowicz and E. Sacks. Computational kinematics. *Artif. Intell.*, 51(1-3), 1991. [js-ck-91]

7621 L. Joskowicz, E. Sacks, and V. Srinivasan. Kinematic tolerance analysis. In *Proc. 3rd ACM Symposium on Solid Modeling and Applications*. ACM Press, 1995. [jss-kta-95]

L. Joskowicz. See also [11515–11517].

7622 Leo Joskowitz and Elisha Sacks. HIPAIR: Interactive mechanism analysis and design using configuration spaces. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages V5–V6, 1995. [js-himad-95] *Keywords:* video review. *Cites:* js-ck-91, sj-amksm-93, sj-cscmd-94, jss-kta-95, sj-ckahp-95, ZZZ.

7623 Michael Joswig, Volker Kaibel, and Friederike Körner. On the k-systems of a simple polytope. In *Abstracts 17th European Workshop Comput. Geom.*, pages 140–141. Freie Universität Berlin, 2001. [jkk-kssp-01]

7624 Michael Joswig and Günter M. Ziegler. Polytope verification by homology computation. In *Abstracts 17th European Workshop Comput. Geom.*, pages 142–145. Freie Universität Berlin, 2001. [jz-pvhc-01]

E. Jou. See also [8204].

7625 A. Joukhadar, A. Deguet, and C. Laugier. Models and algorithms for the collision of rigid and deformable bodies. In *Proc. 3rd Workshop Algorithmic Found. Robot.*, page to appear, 1998. [jdl-macrd-98]

D. Jouppi. See also [8262].

7626 G.-V. Jourdan, I. Rival, and N. Zaguia. Upward drawing on the plane grid using less ink. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 318–327. Springer-Verlag, 1995. [jrz-udpgu-95] *Keywords:* graph drawing, order, upward.

7627 K. I. Joy. Utilizing parametric hyperpatch methods for modeling and display of free-form solids. *Internat. J. Comput. Geom. Appl.*, 1(4):455–471, 1991. [j-uphmm-91] *Keywords:* Bsplines, hypermatch models, free form surfaces, free form solids, sweeping operation.

K. I. Joy. See also [5937].

C. C. Joyce. See also [9105].

7628 A. Jóźwik. A method for solving the n-dimensional convex hull problem. *Pattern Recogn. Lett.*, 2:23–25, 1983. [j-msndc-83]

7629 A. Jóźwik. A recursive method for the investigation of the linear separability of two sets. *Pattern Recogn.*, 11:429–431, 1983. [j-rmils-83]

7630 Jr. Allen B. Tucker, editor. *The Computer Science and Engineering Handbook*. CRC Press, Boca Raton, FL, 1996. [t-cseh-96] *ISBN:* 0-8493-2909-4. *Comments:* contains survey articles, 130 chapters, 2500 pages.

Clovis Maliska Jr. See also [11374].

7631 Robert Juan-Arinyo. Monotone boolean formulae for isothetic polyhedra. In *Abstracts 10th European Workshop Comput. Geom.*, pages 58–61. Universidad de Cantabria, Santander, 1994. [j-mbfip-94]

7632 R. Juan-Arinyo, A. Vinacua, and P. Brunet. Classification of a point with respect to a polyhedron vertex. *Internat. J. Comput. Geom. Appl.*, 6:157–168, 1996. [jvb-cprpv-96]

R. Juan. See also [1200].

7633 E. Jucovic and S. Sevec. Note on inscribability of quadrangular polyhedra with restricted number of edge-types. *J. Geom.*, 42(1–2):126–131, 1991. [js-niqpr-91]

7634 F. Juhnke. Löwner ellipsoids via semiinfinite optimization and (quasi-) convexity theory. Report 4/90, Sektion Mathematik, Technische Universität Magdeburg, Magdeburg, Germany, 1990. [j-levso-90]

7635 D. Jung. On constructing the constrained Delaunay triangulation. report 100, Electrical, Computer and Systems Engineering Department, Rensselaer Polytechnic Institute, 1988. [j-ccdt-88]

7636 Dz-Mou Jung. An optimal algorithm for constrained Delaunay triangulation. In *Proc. 26th Allerton Conf. Commun. Control Comput.*, pages 85–86, Urbana, IL, 1988. Univ. Illinois. [j-oacdt-88] *Annote:* O(n log n) algorithm for CDT. First build DT, delete edges intersected by constraint edges and then builds CDT for the resulting simple polygons.

7637 H. Jung. Über die kleinste Kugel, die eine räumliche Figur einschließt. *J. Reine Angew. Math.*, 123:241–257, 1901. [j-udkkd-01]

H. Jung. See also [1528–1531, 6556].

7638 Michael Jünger, Eva K. Lee, Petra Mutzel, and Thomas Odenthal. A polyhedral approach to the multi-layer crossing minimization problem. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, number 1353 in Lecture Notes Comput. Sci., pages 13–24. Springer-Verlag, 1997. [jlmo-pamlc-97] *Keywords:* graph drawing.

7639 Michael Jünger, Sebastian Leipert, and Petra Mutzel. Pitfalls of using PQ-Trees in automatic graph drawing. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 193–204. Springer-Verlag, 1997. [jlm-pupqt-97] *Keywords:* graph drawing.

7640 Michael Jünger and Petra Mutzel. 2-layer straightline crossing minimization: Performance of exact and heuristic algorithms. *J. Graph Algorithms Appl.*, 1(1):1–25, 1997. [jm-2lscm-97] *URL:* http://www.cs.brown.edu/publications/jgaa/accepted/97/JuengerMutzel97.%1.1.ps.gz. *Keywords:* graph drawing, straight-line, planarization, crossings, experiments. *Succeeds:* jm-eha2s-96.

7641 Michael Jünger and Petra Mutzel. Exact and heuristic algorithms for 2-layer straightline crossing minimization. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 337–348. Springer-Verlag, 1996. [jm-eha2s-96] *Keywords:* graph drawing, straight-line, layered, crossings, experiments.

7642 M. Jünger and P. Mutzel. Maximum planar subgraphs and nice embeddings: Practical layout tools. *Algorithmica*, 16(1):33–59, 1996. (special issue on Graph Drawing, edited by G. Di Battista and R. Tamassia). [jm-mpsne-96] *Keywords:* graph drawing, planarization.

7643 M. Jünger and P. Mutzel. The polyhedral approach to the maximum planar subgraph problem: New chances for related problems. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 119–130. Springer-Verlag, 1995. [jm-pamps-95] *Keywords:* graph drawing, planarization.

7644 M. Jünger and W. Pulleyblank. Geometric duality and combinatorial optimization. *Jahrb. Ueberbl. Math*, ??:1–24, 1993. [jp-gdco-93]

7645 M. Jünger and W. Pulleyblank. New primal and dual matching heuristics. *Algorithmica*, 13(4):357–380, 1995. [jp-npdmh-95]

7646 M. Jünger, G. Reinelt, and G. Rinaldi. The traveling salesman problem. In M. O. Ball, T. L. Magnanti, C. L. Monma, and G. L. Nemhauser, editors, *Network Models*, Handbook of Operations Research/Management Science, pages 225–330. Elsevier Science, Amsterdam, 1995. [jrr-tsp-95]

7647 M. Jünger, G. Reinelt, and D. Zepf. Computing correct Delaunay triangulations. *Computing*, 47(1):43–49, 1991. [jrz-ccdt-91] *Keywords:* Delaunay triangulation, computational geometry. *Annote:* For cc test need numbers up $6M^4$. *Abstract:* In recent years the practical computation of Delaunay triangulations, resp. Voronoi diagrams has received a lot of attention in the literature. While the Delaunay triangulation is an important basic tool in geometric optimization algorithms, it is nontrivial to achieve a numerically stable computer implementation. In this technical note we assume that all generating points are grid points of a regular M by M lattice in the plane. Depending on M we derive the necessary word length a binary computer must have for integer representation in order to obtain exact Delaunay triangulations. This analysis is carried out for the L//1-, L//2- and L// infinity -metric. (Author abstract) 4 Refs.

M. Jünger. See also [2274, 3272].

7648 D. L. B. Jupp. Approximation to data by splines with free knots. *SIAM J. Numer. Anal.*, 15(2):328–343, 1978. [j-adsfk-78]

7649 H. Jurgensen and J. Loewer. Drawing hasse diagrams of partially ordered sets. Technical Report TI 5/79, Institut fur Theoretische Informatik, Technische Hochschule Darmstad, 1979. [jl-dhdpo-79] *Keywords:* graph drawing.

B. Just. See also [1208].

R. Kaas. See also [4895].

7650 S. Kabadi, Y. P. Aneja, and K. P. K. Nair. Weighted 1-center problem in a simple polygon. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 306–308, 1990. [kan-w1cps-90] *Cites:* d-mstia-86, m-lpltw-84, m-bsb-89, psr-cgcsp-89, ZZZ.

7651 S. N. Kabadi and R. Chandrasekaran. Solvable classes of generalized traveling salesman problem. ??, 1985. [kc-scgts-85]

7652 S. N. Kabadi and R. Chandrasekaran. Tree traveling salesman problem. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 366–371, 1990. [kc-ttsp-90] *Cites:* gg-sosvm-64, k-sssgt-56, kc-scgts-85, llrs-tsp-85, ZZZ.

7653 M. Kac. *Statistical Independence in Probability , Analysis and Number Theory*, volume 12 of *The Carus Mathematical Monographs*. Mathematical Association of America, 1959. [k-sipan-59]

7654 I. N. Kagno. Corrections. *Amer. J. Math.*, 69:872, 1947. [k-c-47]

7655 I. N. Kagno. Desargue's and pappus' graphs and their groups. *Amer. J. Math.*, 69:859–862, 1947. [k-dpgtg-47]

7656 I. N. Kagno. Linear graphs of degree ≤ 6 and their groups. *Amer. J. Math.*, 68:505–520, 1946. [k-lgdlt-46]

7657 S. Kahan. A model for data in motion. In *Proc. 23th Annu. ACM Sympos. Theory Comput.*, pages 267–277, 1991. [k-mdm-91]

7658 S. Kahan. *Real time processing of moving data*. Ph.D. dissertation, University of Washington, Seattle, WA, 1991. [k-rtpmd-91] *Keywords:* doctoral thesis.

7659 Simon Kahan and Jack Snoeyink. On the bit complexity of minimum link paths: Superquadratic algorithms for problems solvable in linear time. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 151–158, 1996. [ks-bcmlp-96] *Cites:* abosy-fmcnp-89, ams-olpqs-92, c-tpca-82, d-haitn-83, dls-oaclc-92, g-cvpcs-91, gm-rad-95, ghms-apsml-93, hs-cmlpg-94, h-psifp-94, h-patmn-93, k-ealdp-89, lp-esppr-84, lpsssstwy-clcsp-88, m-cacau-89, m-dpggt-89, m-vigau-88p, m-pmsop-95, mrw-mlpop-92, ps-cgi-85, s-tfga-94, s-ltaml-86, s-mlppr-87, ZZZ.

S. Kahan. See also [662].

J. Kahmann. See also [2126].

7660 J. Kahn. On lattices with Möbius function $\pm 1, 0$. *Discrete Comput. Geom.*, 2:1–8, 1987. [k-lmfp-87]

7661 J. Kahn, M. M. Klawe, and D. Kleitman. Traditional galleries require fewer watchmen. *SIAM J. Algebraic Discrete Methods*, 4:194–206, 1983. [kkk-tgrfw-83]

P. Kahn. See also [7083].

P. J. Kahn. See also [7095].

S. Kahn. See also [12284].

7662 Andrew Kahng and Gabriel Robins. Optimal algorithms for determining regularity in pointsets. Technical Report CSD-900045, UCLA CS Department, 1990. [kr-oadrp-90] *Precedes:* kr-oadrp-91.

7663 Andrew Kahng and Gabriel Robins. Optimal algorithms for determining regularity in pointsets. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 167–170, August 1991. [kr-oadrp-91] *Succeeds:* kr-oadrp-90. *Cites:* bs-cht-90, dh-uhtdl-72, e-acg-87, eg-tsa-86, kr-oadrp-90, ps-cgi-85, r-trcad-89,.

7664 A. B. Kahng and G. Robins. A new class of iterative Steiner tree heuristics with good performance. *IEEE Trans. Comput. Aided Design*, 11:893–902, 1992. [kr-ncist-92]

Andrew B. Kahng. See also [7162, 7163].

Volker Kaibel. See also [7623].

T. Kailath. See also [11459].

P. C. Kainen. See also [1844].

7665 Y. Kajitani and H. Takahashi. Rectilinear drawing of a graph on a plane with the minimum number of segments, 1989. presented at the 2nd Internat. Catania Combinatorial Conf. [kt-rdgpm-89] *Keywords:* graph drawing.

7666 J. Kajiya. Ray tracing parametric patches. *Comput. Graph.*, 16(3):245–254, 1982. [k-rtpp-82]

J. Kajiya. See also [7858].

7667 J. T. Kajiya. The rendering equation. *Comput. Graph.*, 20:143–150, 1986. [k-re-86]

A. C. Kak. See also [11392].

7668 Konstantinos G. Kakoulis and Ioannis G. Tollis. An algorithm for labeling edges of hierarchical drawings. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 169–180. Springer-Verlag, 1997. [kt-alehd-97] *Keywords:* graph drawing.

7669 K. G. Kakoulis and I. G. Tollis. On the complexity of the edge label placement problem. *Comput. Geom. Theory Appl.*, 18:1–17, 2001. [kt-celpp-01]

K. G. Kakoulis. See also [12238].

O. Kakusho. See also [9781].

7670 G. Kalai. A subexponential randomized simplex algorithm. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 475–482, 1992. [k-srsa-92]

7671 G. Kalai. Intersection patterns of convex sets. *Israel J. Math.*, 48:161–174, 1984. [k-ipcs-84]

7672 G. Kalai. Many triangulated spheres. *Discrete Comput. Geom.*, 3:1–14, 1988. [k-mts-88]

7673 G. Kalai. Polytope skeletons and paths. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 17, pages 331–344. CRC Press LLC, Boca Raton, FL, 1997. [k-psp-97]

7674 G. Kalai and D. J. Kleitman. A quasi-polynomial bound for the diameter of graphs of polyhedra. *Bull. Amer. Math. Soc.*, 26:315–316, 1992. [kk-qpbdg-92]

7675 G. Kalai and G. Ziegler, editors. *Polytopes – Combinatorics and Computation.* Birkhäuser, 2000. [kz-pcc-00]

G. Kalai. See also [539, 540].

B. Kalantari. See also [4825, 7373].

7676 I. Kalantari and G. McDonald. A data structure and an algorithm for the nearest point problem. *IEEE Trans. Softw. Eng.*, SE-9:631–634, 1983. [km-dsanp-83]

7677 Y. E. Kalay. Determining the spatial containment of a point in general polyhedra. *Comput. Graph. Image Process.*, 19:303–330, 1982. [k-dscpg-82]

7678 Y. E. Kalay. *Modeling Objects and Environments.* John Wiley & Sons, New York, NY, 1989. [k-moe-89] *Keywords:* CAD, geometric primitives, solid modeling, computational geometry.

7679 Y. E. Kalay. Vertically integrated computational geometry based on the hybrid-edge data model. Report ??, Comput.-Aided Design Graph. Lab., School Architect., State Univ. New York Buffalo, Buffalo, NY, 1985. [k-vicgb-85]

A. Kaldewaij. See also [4190].

7680 R. Kalin and N. Ramsey. A new analysis and comparison of algorithms for the planar segment intersection problem. Report ??, Dept. Elect. Engrg. Comput. Sci., Princeton Univ., Princeton, NJ, 1984. [kr-nacap-84]

7681 G. K. Kalisch and E. G. Straus. On the determination of points in a Banach space by their distances from points of a given set. *Acad. Brasil. Ci.*, 29:501–519, 1958. [ks-dpbst-58]

7682 M. Kallay. Convex hull algorithms in higher dimensions. Manuscript, ??, 1981. [k-chahd-81]

7683 M. Kallay. Convex hull made easy. *Inform. Process. Lett.*, 22:161, 1986. [k-chme-86]

7684 M. Kallay. The complexity of incremental convex hull algorithms in R^d. *Inform. Process. Lett.*, 19:197, 1984. [k-cicha-84]

7685 E. Kaltofen. Computing the irreducible real factors and components of an algebraic curve. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 79–87, 1989. [k-cirfc-89] *Cites:* acm-cad1b-84, c-qercf-75, ch-mrsp-74, c-sagcp-88, cg-stssa-83, j-ba1-74, k-ptrmb-85, k-fpait-85, k-ditpo-87, l-eaac-81, m-idp-64, r-fpade-88, s-ftatc-82, s-ndmea-54, t-iaf-84, w-ma-53, ZZZ.

7686 E. Kaltofen. Deterministic irreducibility testing of polynomials over large finite fields. *J. Symbolic Comput.*, 4:77–82, 1987. [k-ditpo-87]

7687 E. Kaltofen. Fast parallel absolute irreducibility testing. *J. Symbolic Computation 1*, ??:57–67, 1985. [k-fpait-85]

7688 E. Kaltofen. Polynomial-time reductions from multivariate to bi- and univariate integral polynomial factorization. *SIAM J. Comput.*, 14:469–489, 1985. [k-ptrmb-85]

E. Kaltofen. See also [2705].

7689 A. Kalvin, E. Schonberg, J. T. Schwartz, and Micha Sharir. Two dimensional model based boundary matching using footprints. *Internat. J. Robot. Res.*, 5(4):38–55, 1986. [ksss-tdmbb-86] *Keywords:* computer vision, curves, matchings, two-dimensional.

7690 A. D. Kalvin and R. H. Taylor. Superfaces: Polygonal mesh simplification with bounded error. *IEEE Comput. Graph. Appl.*, 16(3):64–77, May 1996. [kt-spmsb-96]

7691 B. Kalyanasundaram and K. Pruhs. A competitive analysis of algorithms for searching unknown scenes. *Comput. Geom. Theory Appl.*, 3:139–155, 1993. [kp-caasu-93] *Succeeds:* kp-cannb-92.

7692 B. Kalyanasundaram and K. Pruhs. A competitive analysis of nearest neighbor based algorithms for searching unknown scenes. In *Proc. 9th Sympos. Theoret. Aspects Comput. Sci.*, volume 577 of *Lecture Notes Comput. Sci.*, pages 147–157. Springer-Verlag, 1992. [kp-cannb-92] *Precedes:* kp-caasu-93.

7693 B. Kalyanasundaram and K. Pruhs. Constructing competitive tours from local information. *Theoret. Comput. Sci.*, 130:125–138, 1994. [kp-cctli-94] *Keywords:* mapping an unknown environment, limited distance visibility, on-line d-sweeper problem, watchman route, competitive analysis, shortest paths, on-line navigation. *Annote:* Originally appeared in ICALP 1993.

7694 Bala Kalyanasundaram and Kirk Pruhs. Online network optimization problems. In Amos Fiat and Gerhard Woeginger, editors, *Online Algorithms: The State of the Art*, volume 1442 of *Lecture Notes Comput. Sci.*, pages 268–280. Springer-Verlag, 1998. [kp-onop-98] *Comments:* chapter 8 of fw-ola-98.

Bala Kalyanasundaram. See also [1219].

7695 T. Kamada. *On Visualization of Abstract Objects and Relations.* PhD thesis, Department of Information Science, University of Tokyo, 1988. [k-vaor-88] *Keywords:* doctoral thesis, graph drawing.

7696 T. Kamada. Symmetric graph drawing by a spring algorithm and its applications to radial drawing. Technical report, Department of Information Science, University of Tokyo, 1989. [k-sgdsa-89] *Keywords:* graph drawing.

7697 T. Kamada. *Visualizing Abstract Objects and Relations.* World Scientific Series in Computer Science, 1989. [k-vaor-89] *Keywords:* graph drawing.

7698 T. Kamada and S. Kawai. An advanced treatment of hidden lines. *ACM Trans. Graph.*, 6:308–323, 1987. [kk-athl-87]

7699 T. Kamada and S. Kawai. An algorithm for drawing general undirected graphs. *Inform. Process. Lett.*, 31:7–15, 1989. [kk-adgug-89] *Keywords:* graph drawing.

7700 T. Kamada and S. Kawai. Automatic display of network structures for human understanding. Technical Report 88-007, Department of Information Science, University of Tokyo, 1988. [kk-adnsh-88] *Keywords:* graph drawing.

V. Kamakoti. See also [6226, 6227].

Y. Kambayashi. See also [711].

7701 S. Kambhampati and L. S. Davis. Multiresolution path planning for mobile robots. *Internat. J. Robot. Autom.*, RA-2(3):135–145, September 1986. [kd-mppmr-86] *Keywords:* quadtree, shortest paths.

7702 T. Kameda. On the vector representation of the reachability in planar directed graphs. *Inform. Process. Lett.*, 3(3):75–77, 1975. [k-vrrpd-75]

T. Kameda. See also [3975–3977, 13746].

7703 I. Kamel and C. Faloutsos. Hilbert R-tree: An improved R-tree using fractals. In *Proc. 20th VLDB Conference*, pages 500–510, 1994. [kf-hrtir-94]

7704 I. Kamel and C. Faloutsos. On packing R-trees. In *Proc. 2nd Internat. Conf. on Information and Knowledge Management*, pages 490–499, 1993. [kf-prt-93]

7705 I. Kamel and C. Faloutsos. Parallel R-trees. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 195–204, 1992. [kf-prt-92]

7706 E. Kamke. *Differentialgleichungen, Volume I*. B. G. Teubner, Stuttgart, 1983. [k-dv1-83]

7707 K. Kammerlander. C 900 - an advanced mobile radio telephone system with optimum frequency utilization. *IEEE Trans. Selected Areas in Communication*, 2:589–597, 1984. [k-amrts-84]

7708 R. E. van Kampen. Komplexe in euklidischen Räumen. *Abh. Math. Sem. Hamburg*, 9:72–78, 1932. Berightigung dazu, *ibid.* (1932) 152–153. [k-ker-32]

Thomas Kamphans. See also [7289].

M. Kamvysselis. See also [642].

Y. M. Kan. See also [7202].

7709 T. Kanade. A theory of origami world. *Artif. Intell.*, 13:279–311, 1980. [k-tow-80]

T. Kanade. See also [8432].

7710 S. Kanaganathan and N. B. Goldstein. Comparison of four-point adding algorithms for delaunay-type three dimensional mesh generators. *IEEE Trans. Magn.*, 27(3):3444–3451, May 1991. [kg-cfpaa-91] *Keywords:* three-dimensional tetrahedral meshes, Delaunay triangulation, Dirichlet tessellation, pascal primitives, point adding algorithms. *Annote:* Does not understand what DT is! Three of the algorithms do not give DT (and give bad meshes.). *Abstract:* Four different approaches to generating three-dimensional tetrahedral meshes were tested and compared in regard to the complexity and quality of the elements they produce as points are added into the existing coarse meshes. Points are added according to Delaunay triangulation. It was found that there is a marked difference between the different approaches and that the method suggested by D. F. Watson (1981) is the better one in terms of quality of the meshes generated, although its time complexity is a little higher than that of the other methods. 8 Refs.

7711 N. Kanamaru, T. Nishizeki, and T. Asano. Efficient enumeration of grid points in a polygon and its application to integer programming. In *Integer Programming and Combinatorial Optimization*, page ??, 1992. [kna-eegpp-92] *Precedes:* kna-eegpp-94.

7712 N. Kanamaru, T. Nishizeki, and T. Asano. Efficient enumeration of grid points in a polygon and its application to integer programming. *Internat. J. Comput. Geom. Appl.*, 4:69–85, 1994. [kna-eegpp-94] *Keywords:* convex polygon, grid point enumeration, integer programming, polygon filling. *Succeeds:* kna-eegpp-92.

7713 K. Kanatani. *Geometric Computation for Machine Vision*. Clarendon Press, Oxford, 1993. [k-gcmv-93]

7714 Y. Kanayama and G. R. DeHaan. A mathematical theory of safe path planning. Technical Report, Department of Computer Science, University of California, Santa Barbara, ?? [kd-mtspp-??]

Y. Kanayama. See also [11450].

Saroja P. Kanchi. See also [3068].

K. Kaneda. See also [7074].

7715 Atsushi Kaneko. A balanced partition of points in the plane and tree embedding problems. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 56–58, 1997. [k-bpppt-97]

7716 Paris C. Kanellakis and Franco P. Preparata, editors. *The Theory of Databases*, volume 3 of *Adv. Comput. Res.* JAI Press, Greenwich, Conn., 1986. [kp-td-86]

7717 P. C. Kanellakis, S. Ramaswamy, D. E. Vengroff, and J. S. Vitter. Indexing for data models with constraints and classes. In *Proc. 12th ACM SIGACT-SIGMOD-SIGART Conf. Princ. Database Sys.*, pages 233–243, 1993. [krvv-idmcc-93]

7718 Biliana Kaneva and J. O'Rourke. An implementation of Chen & Han's shortest paths algorithm. In *Proc. 12th Canad. Conf. Comput. Geom.*, pages 139–146, August 2000. [ko-ichspa-00] *URL:* http://cs.smith.edu/~orourke/ShortestPaths/. *Keywords:* shortest paths.

7719 A. Kanevsky. A characterization of separating pairs and triplets in a graph. *Congr. Numer.*, 74:213–232, 1990. [k-csptg-90]

7720 A. Kanevsky, R. Tamassia, G. Di Battista, and J. Chen. On-line maintenance of the four-connected components of a graph. In *Proc. Annu. IEEE Sympos. Found. Comput. Sci.*, pages 793–801, 1991. [ktdc-olmfc-91]

A. Kanevsky. See also [3068, 3423].

7721 B. S. Kang. Computer construction of the convex hull of a finite set of points in space (Chinese English summary). *J. Northwest Univ.*, 15:17–23, 1985. [k-ccchf-85]

7722 D. Kang and K. Y. Goldberg. Shape recognition by random grasping. In *Proc. IEEE Internat. Conf. Intell. Robots Syst.*, July 1992. [kg-srrg-92]

7723 Dukhyun Kang and Kenneth Y. Goldberg. Sorting parts by random grasping. *IEEE Trans. Robot. Autom.*, 11(1):146–152, February 1995. [kg-sprg-95] *Keywords:* probing, diameter probes, parallel-jaw gripper, random grasping.

M. Kang. See also [13876].

7724 Mohan Kankanhalli. *Techniques for Parallel Geometric Computations*. PhD thesis, Electrical, Computer, and Systems Engineering Dept., Rensselaer Polytechnic Institute, October 1990. [k-tpgc-90] *Keywords:* doctoral thesis, area, parallel computation, grids.

7725 Mohan Kankanhalli and Wm. Randolph Franklin. Area and perimeter computation of the union of a set of iso-rectangles in parallel. Technical Report TR92-81-0, Institute Of Systems Science, National University of Singapore, Kent Ridge, Singapore 0511, 1992. [kf-apcus-92] *Keywords:* intersection, parallel computation, grids, area.

Mohan Kankanhalli. See also [445, 5498–5501, 5504, 5508].

Mohan S. Kankanhalli. See also [5502].

7726 Ravi Kannan. Convergence of a geometric random walk. Technical report, Princeton University, February 1993. [k-cgrw-93] *Comments:* DIMACS Workshop on Randomized Algorithms for Combinatorial Optimization.

7727 R. Kannan. Improved algorithms for integer programming and related lattice problems. In *Proc. 15th Annu. ACM Sympos. Theory Comput.*, pages 193–206, 1983. [k-iaipr-83] *Precedes:* k-mcbti-87.

7728 R. Kannan. Minkowski's convex body theorem and integer programming. *Math. Oper. Res.*, 12:415–440, 1987. [k-mcbti-87] *Succeeds:* k-iaipr-83.

7729 R. Kannan. Random walks in convex sets. Manuscript, Indian Institute of Technology, New Delhi, 1992. Presented at Workshop on Approximation Algorithms. [k-rwcs-92]

7730 R. Kannan and A. Bachem. Polynomial time algorithms for computing the Smith and Hermite normal forms of an integer matrix. *SIAM J. Comput.*, 8:499–507, 1979. [kb-ptacs-79]

R. Kannan. See also [721, 2097, 3520, 4555, 4556].

7731 S. Kannan, M. Naor, and S. Rudich. Implicit representation of graphs. In *Proc. 20th ACM Sympoos. Theory. Comput.*, pages 334–343, 1988. [knr-irg-88]

7732 S. Kannan and D. Soroker. Tiling polygons with parallelograms. *Discrete Comput. Geom.*, 7:175–188, 1992. [ks-tpp-92]

S. Kannan. See also [2106, 2107].

7733 Sampath K. Kannan and Eugene W. Myers. An algorithm for locating nonoverlapping regions of maximum alignment score. In *Combinatorial Pattern Matching*, volume ?? of *Lecture Notes Comput. Sci.*, page ?? Springer-Verlag, 1993. [km-alnor-93]

7734 M. Kano. A straight-line embedding of two or more rooted trees in the plane. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 50–55, 1997. [k-sletm-97]

7735 G. Kant. A more compact visibility representation. In J. van Leeuwen, editor, *Proc. 19th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, Lecture Notes Comput. Sci. Springer-Verlag, 1993. [k-mcvr-93] *Precedes:* k-mcvr-97.

7736 G. Kant. A more compact visibility representation. *Internat. J. Comput. Geom. Appl.*, 7:197–210, 1997. [k-mcvr-97] *Succeeds:* k-mcvr-93. *Annote:* $\lfloor 3/2n \rfloor - 3) \times (n-1)$.

7737 G. Kant. A new method for planar graph drawings on a grid. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 101–110, 1992. [k-mpgdg-92]

7738 G. Kant. *Algorithms for Drawing Planar Graphs*. PhD thesis, Dept. Comput. Sci., Univ. Utrecht, Utrecht, Netherlands, 1993. [k-adpg-93] *Keywords:* doctoral thesis, graph drawing.

7739 G. Kant. An $O(n^2)$ maximal planarization algorithm based on PQ-trees. Technical Report RUU-CS-92-03, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1992. [k-ompab-92] *Keywords:* graph drawing.

7740 G. Kant. Drawing planar graphs using the canonical ordering. *Algorithmica*, 16:4–32, 1996. (special issue on Graph Drawing, edited by G. Di Battista and R. Tamassia). [k-dpguc-96] *Keywords:* graph drawing, planar, orthogonal, straight-line, polyline, convex, angular resolution. *Succeeds:* k-dpgul-92.

7741 G. Kant. Drawing planar graphs using the *lmc*-ordering. In *Proc. 33th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 101–110, 1992. [k-dpgul-92] *Keywords:* graph drawing.

7742 G. Kant. Hexagonal grid drawings. Technical Report RUU-CS-92-06, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1992. [k-hgd-92t] *Keywords:* graph drawing.

7743 Goos Kant. Hexagonal grid drawings. In *Proc. 18th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, 1992. [k-hgd-92i]

7744 G. Kant and H. L. Bodlaender. Planar graph augmentation problems. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 286–298. Springer-Verlag, 1991. [kb-pgap-92] *Keywords:* graph drawing.

7745 G. Kant and H. L. Bodlaender. Triangulating planar graphs while minimizing the maximum degree. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 258–271. Springer-Verlag, 1992. [kb-tpgwm-92] *Keywords:* graph drawing.

7746 Goos Kant and Xin He. Rectangular duals and visibility representations. In *Proc. 3rd Twente Workshop on Graphs and Combinatorial Optimization*, page ??, June 1993. [kh-rdvr-93] *Comments:* does it exist?

7747 Goos Kant and Xin He. Two algorithms for finding rectangular duals of planar graphs. In *Proc. 19th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 790 of *Lecture Notes Comput. Sci.*, pages 396–410. Springer-Verlag, 1993. [kh-tafrd-93]

7748 G. Kant, G. Liotta, R. Tamassia, and I. Tollis. Area requirement of visibility representations of trees. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 192–197, 1993. [kltt-arvrt-93] *Cites:* a-srvg-89, k-mcvr-93, o-cgc18-93, rt-rplbo-86, tt-uavrp-86, kw-wvgbr-89, w-brvgr-89, cdp-noaau-92, dett-adgab-93, dtt-cvrg-92, dtt-arsdp-92, ZZZ.

7749 G. Kant, G. Liotta, R. Tamassia, and I. G. Tollis. Area requirement of visibility representations of trees. *Inform. Process. Lett.*, 62(2):81–88, 1997. [kltt-arvrt-97] *URL:* http://www.cs.brown.edu/cgc/papers/kltt-arvrt-97.ps.gz. *Keywords:* graph drawing, visibility, tree, CGC, Brown.

7750 G. Kant, G. Liotta, R. Tamassia, and I. G. Tollis. Visibility representations of trees. Technical Report CS-96-23, Center for Geometric Computing, Dept. Computer Science, Brown Univ., 1996. [kltt-vrt-96] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-23.ps.Z. *Keywords:* graph drawing, visibility, tree, CGC, Brown.

G. Kant. See also [1983, 1984, 3276, 3277].

7751 K. Kant. Finding interferences between rectangular paths. *IEEE Trans. Comput.*, 34(11):1045–1049, 1985. [k-fibrp-85]

7752 K. Kant and S. Zucker. Toward efficient trajectory planning: The path-velocity decomposition. *Internat. J. Robot. Res.*, 5(3):72–89, 1986. [kz-tetpp-86]

7753 Kamal Kant and Steven W. Zucker. Planning collision-free trajectories in time-varying environments: a two-level hierarchy. *Visual Comput.*, 3(5):304–313, March 1988. [kz-pcftt-88] *Keywords:* robotics, trajectory planning, path planning, obstacle avoidance, velocity planning.

7754 V. Kantabutra. Motions of a short-linked robot arm in a square. *Discrete Comput. Geom.*, 7:69–76, 1992. [k-mslra-92]

7755 V. Kantabutra. Reaching a point with an unanchored robot arm in a square. *Internat. J. Comput. Geom. Appl.*, 7:539–550, 1997. [k-rpura-97]

7756 V. Kantabutra. Traveling salesman cycles are not always subgraphs of Voronoi duals. *Inform. Process. Lett.*, 16:11–12, 1983. [k-tscan-83]

7757 V. Kantabutra and S. R. Kosaraju. Algorithms for robot arm movements. In *Proc. Conf. Inform. Sci. & Sys.*, page ??, 1984. [kk-aram-84]

7758 V. Kantabutra and S. R. Kosaraju. New algorithms for multilink robot arms. *J. Comput. Syst. Sci.*, 32:136–153, February 1986. [kk-namra-86]

7759 Tapas Kanungo, David M. Mount, Nathan S. Netanyahu, Christine Piatko, Ruth Silverman, and Angela Y. Wu. The analysis of a simple k-means clustering algorithm. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 100–109, 2000. [kmnpsw-askmc-00]

7760 M.-Y. Kao, M. Fürer, X. He, and B. Raghavachari. Optimal parallel algorithms for straight-line grid embeddings of planar graphs. *SIAM J. Discrete Math.*, 7(4):632–646, 1994. [kfhr-opasl-94] *Keywords:* graph drawing, planar, straight-line, grid, parallel.

7761 M.-Y. Kao, J. H. Reif, and S. R. Tate. Searching in an unknown environment: An optimal randomized algorithm for the cow-path problem. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 441–447, 1993. [krt-sueor-93] *Precedes:* krt-sueor-96.

7762 M.-Y. Kao, J. H. Reif, and S. R. Tate. Searching in an unknown environment: An optimal randomized algorithm for the cow-path problem. *Inform. Comput.*, 133(1):63–79, 1996. [krt-sueor-96] *Succeeds:* krt-sueor-93.

7763 M.-Y. Kao and G. E. Shannon. Local reorientations, global order, and planar topology. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 286–296, 1989. [ks-lrgop-89]

M.-Y. Kao. See also [5681, 6740, 6741].

7764 Thomas Kao, David Mount, and Alan Saalfeld. Dynamic maintenance of Delaunay triangulations. In *Proc. 10th Internat. Sympos. Comput.-Assist. Cartog.*, volume 6 of *Technical Papers 1991 ACSM-ASPRS Annual Convention*, pages 219–233, 1991. [kms-dmdt-91] *Annote:* Incremental insertion and deletion of points based on [6404]. Earlier versions of the triangulation can be recovered. In a sequence of deletions and insertions, periodic rebalancing of the history graph is required. Implemented.

7765 T. C. Kao and G. D. Knott. Computing polygonal chords and the farthest visibility polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 332–336, 1990. [kk-cpcfv-90] *Cites:* as-cldsp-89, bkt-dsvp-89, cs-agpli-88, cg-vippg-89, dls-rphs-88, ea-lacvp-81, g-cvpcs-86, ghlst-ltavs-86, l-vsp-83, ll-cvpe-86, ps-cgi-85, ZZZ.

7766 T. C. Kao and D. M. Mount. An algorithm for computing compacted Voronoi diagrams defined by convex distance functions. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 104–109, 1991. [km-accvd-91] *Cites:* cd-vdbcd-85, eghsssw-irals-89, f-fapct-85, gs-ccrs-87, k-eccs-79, l-csa-72, ls-pptmc-87, lw-vdllm-80, ps-cgi-85, y-oavds-87, ZZZ.

7767 T. C. Kao and D. M. Mount. Incremental construction and dynamic maintenance of constrained Delaunay triangulations. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 170–175, 1992. [km-icdmc-92] *Cites:* agss-ltacv-89, b-amgct-89, beg-pgmg-90, c-tpca-82, c-tsplt-90i, c-cdt-89, dp-olacd-91, g-eadch-72, gs-pmgsc-85, l-vsp-83, ll-gdtpg-86, ls-tacdt-80, s-let-78, sp-htucc-92, ZZZ.

C. S. Kaplan. See also [3953].

Y. Kaplan. See also [1413, 1414].

7768 Sanjiv Kapoor. Approximate geographic neighbor tree with applications. Manuscript, IIT, New Delhi, 1997. [k-agnta-97]

7769 S. Kapoor. Dynamic maintenance of 2-d convex hulls and order decomposable problems. Technical Report MPI-I-95-1-015, Max-Planck-Institut Inform., Saarbrücken, Germany, 1995. [k-dm2dc-95]

7770 S. Kapoor. Dynamic maintenance of maxima of 2-d point sets. *SIAM J. Comput.*, 29:1858–1877, 2000. [k-dmm2d-00]

7771 S. Kapoor. Dynamic maintenance of maximas of 2-d point sets. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 140–149, 1994. [k-dmm2d-94] *Cites:* ps-cgi-85, fr-nadmm-90, hs-ompc-91, j-dmmpp-91, klp-fmsv-75, ol-mcp-81, t-ubstr-83, wl-arrcd-85, ZZZ.

7772 S. Kapoor. Efficient computation of geodesic shortest paths. In *Proc. 32nd Annu. ACM Sympos. Theory Comput.*, pages ??–??, 1999. To appear. [k-ecgsp-99]

7773 S. Kapoor. Topics in the design and analysis of combinatorial algorithms. Report 86-1297, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1986. [k-tdaca-86] *Keywords:* NP-completeness, data structuring.

7774 S. Kapoor and S. N. Maheshwari. An efficient algorithm for Euclidean shortest path with polygonal obstacles. Technical Report, IIT, New Delhi, 1994. [km-eaesp-94] *Precedes:* kmm-eaesp-97. *Annote:* Gives an $O(n + h^2 \log n)$ algorithm for shortest paths.

7775 S. Kapoor and S. N. Maheshwari. Efficient algorithms for Euclidean shortest path and visibility problems with polygonal obstacles. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 172–182, 1988. [km-eaesp-88] *Precedes:* kmm-eaesp-97. *Cites:* gh-ospqs-87, gm-osacv-87, h-fvgsp-87, lp-esppr-84, rs-spesp-85, w-cvgnl-85, ZZZ.

7776 S. Kapoor, S. N. Maheshwari, and Joseph S. B. Mitchell. An efficient algorithm for Euclidean shortest paths among polygonal obstacles in the plane. *Discrete Comput. Geom.*, 18:377–383, 1997. [kmm-eaesp-97] *Succeeds:* m-esppo-94, km-eaesp-94. *Annote:* Gives an $O(n + h^2 \log n)$ algorithm for shortest paths.

7777 S. Kapoor and P. Ramanan. Lower bounds for maximal and convex layers problems. *Algorithmica*, 4:447–459, 1989. [kr-lbmcl-89] *Keywords:* maxima, maximal depth, convex hull, convex depth, two-dimensional. *Annote:* $\Omega(n \log n)$.

7778 S. Kapoor and T. Singh. Dynamic maintenance of shortest path trees in simple polygons. In *Proc. 16th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1180 of *Lecture Notes Comput. Sci.*, pages 123–134. Springer-Verlag, 1996. [ks-dmspt-96]

7779 S. Kapoor and M. Smid. New techniques for exact and approximate dynamic closest-point problems. Technical Report MPI-I-93-159, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [ks-ntead-93] *Succeeds:* ks-ntead-.

7780 S. Kapoor and M. Smid. New techniques for exact and approximate dynamic closest-point problems. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 165–174, 1994. [ks-ntead-94] *Cites:* am-annqf-93, amnsw-oaann-94, c-racpq-88, ehh-rpldd-86, grss-rdsdc-93i, mn-dfc-90, ps-cgi-85, s-eis-92, s-dsadc-93, sss-oaolc-92, s-rpldc-91, s-mmdpsp-92a, s-ntsdc-90, v-oaann-89, y-cmstk-82, ZZZ.

7781 S. Kapoor and M. Smid. New techniques for exact and approximate dynamic closest-point problems. *SIAM J. Comput.*, 25:775–796, 1996. [ks-ntead-96]

7782 S. Kapoor and M. Smid. New techniques for exact and approximate dynamic closest-pointproblems. manuscript. [ks-ntead-] *Precedes:* ks-ntead-93.

7783 S. Kapoor and P. M. Vaidya. Fast algorithms for convex quadratic programming and multicommodity flows. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 147–159, 1986. [kv-facqp-86] *Comments:* Submitted to Math. Program.

S. Kapoor. See also [3363, 3364, 3762–3764, 11649].

7784 M. Kapovich and J. Millson. On the moduli spaces of polygons in the Euclidean plane. *J. Differential Geom.*, 42(1):133–164, 1995. http://www.math.utah.edu/~kapovich/eprints.html. [km-mspep-95]

M. M. Kapranov. See also [5842].

7785 D. Kapur. A refutational approach to geometry theorem proving. In D. Kapur and J. L. Mundy, editors, *Geometric Reasoning*. MIT Press, 1989. [k-ragtp-89]

7786 D. Kapur. Geometry theorem proving using Hilbert's Nullstellensatz. In *Proc. ACM Sympos. Symbolic and Algebraic Computation*, pages 202–208, 1986. [k-gtpuh-86]

7787 D. Kapur and J. L. Mundy, editors. *Geometric Reasoning*. MIT Press, 1989. [km-gr-89]

S. S. Kapur. See also [2820].

7788 E.-A. Karabassi, G. Papaioannou, T. Theoharis, and A. Böhm. Intersection test for collision detection in particle systems. *J. Graphics Tools*, 4(1):25–37, 1999. [kptb-itcdp-99]

7789 Vijay Karamcheti, Chen Li, Igor Pechtchanski, and Chee Yap. *The CORE Library Project*, 1.2 edition, 1999. http://www.cs.nyu.edu/exact/core/. [klpy-clp-99] *URL:* http://www.cs.nyu.edu/exact/core/.

7790 M. Karasick. Benchmarks for implementations of set-operations algorithms on polyhedral solids. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 13, 1989. [k-bisoa-89]

7791 M. Karasick. *On the Representation and Manipulation of Rigid Solids*. Ph.D. thesis, Dept. Comput. Sci., McGill Univ., Montreal, PQ, 1989. [k-rmrs-89] *Keywords:* doctoral thesis.

7792 M. Karasick, D. Lieber, and L. R. Nackman. Efficient Delaunay triangulations using rational arithmetic. Report RC 14455, IBM T. J. Watson Res. Center, Yorktown Heights, NY, March 1989. [kln-edtur-89] *Precedes:* kln-edtur-91.

7793 M. Karasick, D. Lieber, and L. R. Nackman. Efficient Delaunay triangulations using rational arithmetic. *ACM Trans. Graph.*, 10(1):71–91, January 1991. [kln-edtur-91] *Succeeds:* kln-edtur-89.

Michael Karasick. See also [12572, 12573].

7794 M. S. Karasick, D. Lieber, L. R. Nackman, and V. T. Rajan. Visualization of three-dimensional Delaunay meshes. *Algorithmica*, 19(1–2):114–128, September 1997. [klnr-vtddm-97]

M. S. Karasick. See also [7026].

M. T. Karasick. See also [7027, 7028].

7795 Y. Karasik and Micha Sharir. Optical algorithms in geometry. In *Proc. Optical Comput. Topical Meeting, Optical Society of America*, pages 164–167, 1993. [ks-oag-93]

7796 Y. B. Karasik. Constructing optically in constant time the k-level of an arrangement of lines in the plane and other related problems. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 212–218, 1994. [k-coctk-94] *Cites:* b-omt-74, e-acg-87, ed-copht-83, erk-oalla-93, ers-ufwsc-, gchhzy-otmo-92, k-oacg-91, k-oaiht-92, ks-ocg-92, ks-pgdms-93, j-icm-93, ohg-riitf-85, ZZZ.

7797 Y. B. Karasik. Formalization of heuristic tactics used by human beings in searching for the closest packing of arbitrary objects in a given domain. *Cybernetics & Systems: An International Journal*, 20(1):43–49, 1989. [k-fhtuh-89]

7798 Y. B. Karasik. Optical algorithms of computational geometry. Technical Report 199/91, The Eskenasy Institute of Computer Science, Tel Aviv Univ., Tel Aviv, Israel, 1991. [k-oacg-91]

7799 Y. B. Karasik. Optical computer vision: Some geometrical algorithms. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 207–211, 1994. [k-ocvsg-94] *Cites:* b-omt-74, ed-copht-83, fh-cfaia-82, g-vscfa-81, gchhzy-otmo-92, k-oacg-91, k-oaiht-92, ks-ocg-92, ks-pgdms-93, kr-glcd-82, ohg-riitf-85, p-lb-71, rsb-ocd-88, s-oiphv-82, s-hctoc-86, ZZZ.

7800 Y. B. Karasik. Optical filling algorithm. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 328–333, 1992. [k-ofa-92] *Cites:* ks-ocg-92, m-rtisu-86, v-sdcsf-64, wt-ommsl-83, agw-fqo-86, ca-hadla-86, gr-ssaip-88, f-ocscs-88, fl-cstds-86, p-farg-79, r-ospft-86, s-frbri-80, ZZZ.

7801 Y. B. Karasik. The optical algorithm for the inverse Hough transform. *Optical computing and processing*, 2(2):127–136, 1992. [k-oaiht-92]

7802 Y. B. Karasik and Micha Sharir. Optical computational geometry. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 232–241, 1992. [ks-ocg-92] *Cites:* ate-plcsl-89, b-gto-74, b-omt-74, br-lbceo-87, br-pcamm-87, cgl-pgd-83, cky-ommmu-88, clpp-odpfs-60, d-htrt-81, ed-copht-83, f-ocscs-88, fn-rtisa-90, g-ifo-68, get-hpfrt-89, ggsbcg-ocrot-89, gt-cghgt-84, hcy-iatwm-90, ls-mtoap-83, m-rtisu-86, ma-oaslm-89, r-asoi-53, rt-epaoc-90, sc-ctrmh-90, v-sdcsf-64, w-blsf-87, wt-ommsl-83, ZZZ.

7803 Y. B. Karasik and Micha Sharir. The power of geometric duality and Minkowski sums in optical computational geometry. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 379–388, 1993. [ks-pgdms-93] *Cites:* br-lbceo-87, br-pcamm-87, cgl-pgd-83, d-htrt-81, dh-uhtdl-72, ek-iodc-90, ghlst-ltavs-87, h-odcbl-90, iti-ieesu-92, k-fhtuh-89, k-oacg-91, ks-ocg-92, ka-oci-92, klps-ujrcf-86, l-tdoad-91, m-oca-91, ph-ddocs-92, rt-epaoc-90, ZZZ.

7804 Oliver Karch, Hartmut Noltemeier, and Knut Verbarg, editors. *Abstracts 13th European Workshop Comput. Geom.* Universität Würzburg, 1997. [knv-ewcg-97]

7805 Oliver Karch, Hartmut Noltemeier, and Thomas Wahl. Robot localization: Theory and implementation. In *Abstracts 13th European Workshop Comput. Geom.*, pages 17–19. Universität Würzburg, 1997. [knw-rlti-97]

S. Kareti. See also [11026].

7806 D. Karger, P. N. Klein, and R. E. Tarjan. A randomized linear-time algorithm to find minimum spanning trees. *J. ACM*, 42:321–328, 1995. [kkt-rltaf-95]

David Karger. See also [885].

D. R. Karger. See also [3658, 3659].

M. Karia. See also [182].

7807 H. A. Karimi. Real-time optimal-routing computation: A heuristic approach. *ITS Journal*, 3:111–127, 1996. [k-rtorc-96]

7808 H. A. Karimi and B. H. Houston. Evaluating strategies for integrating environmental models with gis: Current trends and future need. *Comput., Environ. and Urban Systems*, 20:413–425, 1996. [kh-esiem-96]

7809 A. M. Karin and A. Awwal. *Optical Computing: An Introduction*. John Wiley & Sons, New York, NY, 1992. [ka-oci-92]

7810 O. Kariv and S. L. Hakimi. An algorithmic approach to network location problems. i: The p-centers. *SIAM J. Appl. Math.*, 37:513–538, 1979. [kh-aanlp-79]

J. Karkazis. See also [2129].

7811 W. C. Karl. *Reconstructing Objects from Projections*. PhD thesis, Dept. EECS, Massachusetts Institute of Technology, Boston, MA, February 1991. [k-rop-91] *Keywords:* doctoral thesis, probing, x-ray probes.

A. Karlin. See also [4203, 4204].

7812 A. R. Karlin and E. Upfal. Parallel hashing: An efficient implementation of shared memory. *J. ACM*, 35(4):876–892, 1988. [ku-pheis-88]

7813 H. Karloff. *Linear Programming*. Birkhäuser, Boston, 1991. [k-lp-91]

7814 H. Karloff. Online algorithms for the k-robot problem on the line. Manuscript, Univ. of Chicago, Univ. Illinois, Urbana, IL., 1989. [k-olakr-89] *Comments:* talk was the Semi-Annual Lunch, Algorithms, and Dinner Symposium.

7815 H. Karloff and Y. Mansour. On construction of k–wise independent random variables. In *Proc. Annu. ACM Sympos. Theory Comput.*, pages 564–573, 1994. [km-ckwir-94]

7816 H. Karloff, Y. Rabani, and Y. Ravid. Lower bounds for randomized k-servers and motion planning algorithms. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 278–288, 1991. [krr-lbrks-91] *Keywords:* path planning, on-line.

7817 H. Karloff and P. Raghavan. Randomized algorithms and pseudorandom numbers. *J. ACM*, 40(3):454–476, 1993. [kr-rapn-93] *Comments:* using few random bits; precedes Mulmuley's work.

H. Karloff. See also [1773, 2825, 2826].

7818 H. J. Karloff. How long can a Euclidean traveling salesman tour be? Technical Report 87-20, Dept. Comput. Sci., Univ. Chicago, Chicago, IL, 1987. [k-hlcet-87]

7819 H. J. Karloff. How long can a Euclidean traveling salesman tour be? *SIAM J. Discrete Math.*, 2:91–99, 1989. [k-hlcet-89]

Howard J. Karloff. See also [1828, 1829].

7820 R. G. Karlsson. Algorithms in a restricted universe. Report CS-84-50, Univ. Waterloo, Waterloo, ON, 1984. [k-aru-84]

7821 R. G. Karlsson. Greedy matching on a grid. *BIT*, 28:19–26, 1988. [k-gmg-88]

7822 R. G. Karlsson and J. I. Munro. Proximity on a grid. In *Proc. 2nd Sympos. Theoret. Aspects Comput. Sci.*, volume 182 of *Lecture Notes Comput. Sci.*, pages 187–196. Springer-Verlag, 1985. [km-pg-85]

7823 R. G. Karlsson, J. I. Munro, and E. L. Robertson. The nearest neighbor problem on bounded domains. In *Proc. 12th Internat. Colloq. Automata Lang. Program.*, volume 194 of *Lecture Notes Comput. Sci.*, pages 318–327. Springer-Verlag, 1985. [kmr-nnpbd-85]

7824 R. G. Karlsson and M. H. Overmars. Normalized divide-and-conquer: a scaling technique for solving multi-dimensional problems. *Inform. Process. Lett.*, 26:307–312, 1988. [ko-ndcst-88]

7825 R. G. Karlsson and M. H. Overmars. Scanline algorithms on a grid. *BIT*, 28:227–241, 1988. [ko-sag-88]

7826 N. Karmarkar. A new polynomial-time algorithm for linear programming. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 302–311, 1984. [k-nptal-84i] *Precedes:* k-nptal-84a.

7827 N. Karmarkar. A new polynomial-time algorithm for linear programming. *Combinatorica*, 4:373–395, 1984. [k-nptal-84a] *Succeeds:* k-nptal-84i.

7828 N. Karmarkar, R. Karp, R. Karp, L. Lovasz, and M. Luby. A Monte-Carlo algorithm for estimating the permanent. Technical Report TR-90-063, International Computer Science Institute, Berkeley, CA, 1990. [kkkll-mcaep-90]

7829 Zachi Karni and Craig Gotsman. Spectral compression of mesh geometry. In *Abstracts 16th European Workshop Comput. Geom.*, pages 27–30. Ben-Gurion University of the Negev, 2000. [kg-scmg-00]

7830 Gyula Károlyi. Ramsey-remainder for convex sets and the Erdős-Szekeres Theorem. In *Abstracts 14th European Workshop Comput. Geom.*, pages 107–108. Universitat Polytènica de Catalunya, Barcelona, 1998. [k-rrcse] *Cites:* ZZZ.

7831 Gyula Károlyi. Ramsey-remainder for convex sets and the Erdős-Szekeres theorem. *Discrete Appl. Math.*, 109:163–175, 2001. [k-rrcse-01] *Succeeds:* k-rrcse.

7832 G. Károlyi, J. Pach, G. Tardos, and G. Tóth. An algorithm for finding many disjoint monochromatic edges in a complete 2-colored geometric graph. In I. Bárány and K. Böröczky, editors, *Intuitive Geometry*, volume 6 of *Bolyai Soc. Math. Studies*. ??, ?? To appear. [kptt-afmdm-]

7833 Gyula Károlyi, János Pach, and Géza Tóth. Ramsey-type results for geometric graphs. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 359–365, 1996. [kpt-rtrgg-96]

7834 G. Károlyi, J. Pach, and G. Tóth. Ramsey-type results for geometric graphs, i. *Discrete Comput. Geom.*, 18:247–255, 1997. [kpt-rtrgg-97] *Succeeds:* kpt-rtrgg-96.

7835 G. Károlyi, J. Pach, G. Tóth, and P. Valtr. Ramsey-type results for geometric graphs ii. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 94–103. ACM Press, 1997. [kptv-rttgg-97] *Cites:* b-grtgs-74, bes-rtmcg-75, d-dtpos-50, elss-dgpps-73, gmpp-eptvs-91, grs-rt-90, hs-asdch-92, kpt-rtrgg-96, kptt-afmdm-, pa-cg-95, ZZZ.

7836 G. Károlyi, J. Pach, G. Tóth, and P. Valtr. Ramsey-type results for geometric graphs, ii. *Discrete Comput. Geom.*, 20:375–388, 1998. [kptv-rttgg-98] *Succeeds:* kptv-rttgg-97.

7837 R. Karp. An introduction to randomized algorithms. *Discrete Appl. Math.*, 34:165–201, 1991. [k-ira-91]

7838 R. Karp. Reducibility among combinatorical problems of computer computaions. In E. Miller and J. W. Thatcher, editors, *Complexity of Computer Computations*, pages 88–104. Plenum Press, New York, 1972. [k-racpc-72]

7839 R. Karp and S. Li. Two special cases of the assignment problem. *Discrete Math.*, 13:129–142, 1975. [kl-tscap-75]

7840 R. Karp, M. Luby, and F. Meyer auf der Heide. Efficient pram simulation on distributed machines. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 318–326, 1992. [klm-epsdm-92]

7841 R. Karp and R. Motwani. Preprocessing search trade-offs: an optimal randomized algorithm. Computer Science Division U.C. Berkeley, 1985. [km-pstoo-85]

R. Karp. See also [96,1598,7828,7828].

7842 R. M. Karp. Probabilistic analysis of partitioning algorithms for the traveling salesman problem in the plane. *Math. Oper. Res.*, 2:209–224, 1977. [k-papat-77]

7843 R. M. Karp. The probabilistic analysis of some combinatorial search algorithms. In J. F. Traub, editor, *Algorithms and Complexity: New Directions and Recent Results*, pages 1–19. Academic Press, New York, 1976. [k-pascs-76]

7844 R. M. Karp, M. Luby, and A. Marchetti-Spaccamela. A probabilistic analysis of multidimensional bin-packing problems. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 289–299, 1984. [klm-pambp-84]

7845 R. M. Karp, R. Motwani, and P. Raghavan. Deferred data structuring. *SIAM J. Comput.*, 17:883–902, 1988. [kmr-dds-88] *Succeeds:* mr-ddsqd-86.

7846 R. M. Karp and V. Ramachandran. A survey of parallel algorithms for shared-memory machines. Technical Report UCB/CSD 88/408, University of California, Berkeley, 1988. [kr-spasm-88t] *Precedes:* kr-pasmm-90.

7847 R. M. Karp and V. Ramachandran. Parallel algorithms for shared memory machines. In J. van Leeuwen, editor, *Handbook of Theoretical Computer Science*, pages 869–941. Elsevier/The MIT Press, Amsterdam, 1990. [kr-pasmm-90] *Succeeds:* kr-spasm-88t.

7848 R. M. Karp, A. Sahay, E. Santos, and K. E. Schauser. Optimal broadcast and summation in the LogP model. In *Proc. 5th ACM Sympos. Parallel Algorithms Architect.*, pages 142–153, 1993. [ksss-obslm-93]

7849 R. M. Karp and A. Wigderson. A fast parallel algorithm for the maximal independent set problem. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 86–109, 1984. [kw-fpami-84]

R. M. Karp. See also [103, 474, 507, 3647, 4794, 7084].

7850 M. Karpinski and A. Zelikovsky. Further improvements of Steiner tree approximations. Report MPI-I-94-158, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [kz-fista-94]

Marek Karpinski. See also [1776, 6280, 6281].

K. Karplus. See also [4336, 4337].

7851 A. V. Karzanov. Exact complexity bound for a max-flow algorithm applied to "representatives". In *Voprosy Kibernetiki (Proc. of the Seminar on Combinatorial Mathematics)*, pages 66–70, 1973. [k-ecbmf-73]

7852 K. Kasahara. *Creative Origami*. Japan Publications, 1967. [k-co-67]

7853 K. Kasahara. *Origami for the Connoisseur*. Japan Publications, 1978. [kt-oc-78]

7854 K. Kasahara. *Origami Omnibus*. Japan Publications, 1988. [k-oo-88]

7855 R. L. Kashyap and B. J. Oommen. A geometrical approach to polygonal dissimilarity and the classification of closed boundaries. In *Proc. 6th IEEE Internat. Conf. Pattern Recogn.*, pages 472–481, 1982. [ko-gapdc-82]

R. L. Kashyap. See also [3125, 8229, 10288, 11025].

S. Kasif. See also [6745, 9990, 11553, 11554].

7856 E. A. Kasimatis. Dissections of regular polygons into triangles of equal areas. *Discrete Comput. Geom.*, 4:375–381, 1989. [k-drpte-89]

7857 D. T. Kasper. An algorithm for determining the position of a point relative to a polygon. Report ??, Advanced Products Lab., Hughes Support Syst., Long Beach, CA, 1985. [k-adppr-85]

M. Kass. See also [6264].

S. Kassam. See also [8238].

H. Kästner. See also [5846].

R. Kasturi. See also [5335].

7858 T. Kat and J. Kajiya. Ray tracing complex scenes. *Comput. Graph.*, ??:269–278, 1986. [kk-rtcs-86]

7859 M. Katachalski and A. Meir. On empty triangles determined by points in the plane. *Acta Math. Hungar.*, 51:323–328, 1988. [km-etdpp-88]

7860 J. Katajainen. On the worst case of a minimal spanning tree algorithm for Euclidean space. *BIT*, 23:2–8, 1982. [k-wcmst-82]

7861 J. Katajainen. The region approach for computing relative neighborhood graphs in the L_p metric. Report ??, Dept. Math. Sci., Univ. Turku, Turku, Finland, 1985. [k-racrn-85]

7862 J. Katajainen. The region approach for computing relative neighborhood graphs in the L_p metric. *Computing*, 40:147–161, 1988. [k-racrn-88]

7863 Jyrki Katajainen and Markku Koppinen. Constructing Delaunay triangulations by merging buckets in quadtree order. *Annales Societatis Mathematicae Polonae, Series IV, Fundamenta Informaticae*, 11(3):275–288, 1988. [kk-cdtmb-88] *Abstract:* Recently R. A. Dwyer [Algorithmica 2, 137 - 151 (1987; Zbl. 631.68043)] presented an algorithm which constructs a Delaunay triangulation for a planar set of N sites in O(N log log N) expected time and O(N log N) worst-case-time. We show that a slight modification of his algorithm preserves the worst-case running time, but has only O(N) average running time. The method is a hybrid which combines the cell techniques with the divide-and-conquer algorithm of Leonidas J. Guibas and J. Stolfi [ACM Trans. Graphics 4, 74 - 123 (1985; Zbl. 586.68059)]. First a square grid of size about sqrt(N) by sqrt(N) is placed on the set of sites. The grid forms about N cells (buckets), each of which is implemented as a list of the sites which fall into the corresponding square of the grid. A Delaunay triangulation of the generally rather few sites within each cell is constructed with the Guibas & Stolfi algorithm. Then the triangulations are merged, four by four, in a quadtree-like order.

7864 J. Katajainen, O. Nevalainen, and J. Teuhola. A linear expected-time algorithm for computing planar relative neighbourhood graphs. *Inform. Process. Lett.*, 25:77–86, 1987. [knt-letac-87]

J. Katajainen. See also [2481, 4201, 4202, 5029, 5312, 8738, 10111].

7865 J. Katakjainen and M. Koppinen. Constructing Delaunay triangulations by merging buckets in quad-tree order. Unpublished Manuscript, 1987. [kk-cdtmb-87]

7866 Norio Katayama and Shin'ichi Satoh. The SR-tree: An index structure for high-dimensional nearest neighbor queries. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 369–380, 1997. [ks-stish-97] *Keywords:* nearest neighbor, R-trees, bounding volume hierarchies. *Abstract:* Recently, similarity queries on feature vectors have been widely used to perform content-based retrieval of images. To apply this technique to large databases, it is required to develop multidimensional index structures supporting nearest neighbor queries efficiently. The SS-tree had been proposed for this purpose and is known to outperform other index structures such as the R*-tree and the K-D-B-tree. One of its most important features is that it employs bounding spheres rather than bounding rectangles for the shape of regions. However, we demonstrate in this paper that bounding spheres occupy much larger volume than bounding rectangles with high-dimensional data and that this reduces search efficiency. To overcome this drawback, we propose a new index structure called the SR-tree (Sphere/Rectangle-tree) which integrates bounding spheres and bounding rectangles. A region of the SR-tree is specified by the intersection of a bounding sphere and a bounding rectangle. Incorporating bounding rectangles permits neighborhoods to be partitioned into smaller regions than the SS-tree and improves the disjointness among regions. This enhances the performance on nearest neighbor queries especially for high-dimensional and non-uniform data which can be practical in actual image/video similarity indexing. We include the performance test results that verify this advantage of the SR-tree and show that the SR-tree outperforms both the SS-tree and the R*-tree.

7867 M. Katchalski. A conjecture of grünbaum on common transversals. *Math. Scan.*, 59:192–198, 1986. [k-cgct-86]

7868 M. Katchalski. Thin sets and common transversals. *J. Geom.*, 14:103–107, 1980. [k-tsct-80]

7869 M. Katchalski, T. Lewis, and A. Liu. Geometric permutations and common transversals. *Discrete Comput. Geom.*, 1:371–377, 1986. [kll-gpct-86]

7870 M. Katchalski, T. Lewis, and A. Liu. Geometric permutations of disjoint translates of convex sets. *Discrete Math.*, 65:249–259, 1987. [kll-gpdt-87]

7871 M. Katchalski, T. Lewis, and A. Liu. The different ways of stabbing disjoint convex sets. *Discrete Comput. Geom.*, 7:197–206, 1992. [kll-dwsdc-92]

7872 M. Katchalski, T. Lewis, and J. Zaks. Geometric permutations for convex sets. *Discrete Math.*, 54:271–284, 1985. [klz-gpcs-85]

7873 M. Katchalski and A. Liu. A problem of geometry in R^n. *Proc. Amer. Math. Soc.*, 75:284–288, 1979. [kl-pgr-79]

7874 M. Katchalski and D. Nashtir. On a conjecture of Danzer and Grünbaum. In *Proc. Amer. Math. Soc.* 1996. [kn-cdg-96]

M. Katchalski. See also [535, 541, 542, 5988, 7106].

Philip Katner. See also [3987].

K. Kato. See also [7361, 7362, 13745].

Y. Kato. See also [7412].

7875 N. Katoh and T. Ibaraki. A parametric characterization and an ε-approximation scheme for the minimization of a quasiconcave program. *Discrete Appl. Math.*, 17:39–66, 1987. [ki-pceas-87]

7876 N. Katoh and T. Ibaraki. On the total number of pivots required for certain parametric combinatorial optimization problems. Working Paper 71, Institute of Economic Research, Kobe University, Kobe, Japan, 1983. [ki-tnprc-83]

7877 N. Katoh and K. Iwano. Finding k best distances of n points in the plane. Technical report, Kobe Univ., Kobe, Japan, 1991. [ki-fkbdn-91]

7878 N. Katoh and K. Iwano. Finding k farthest pairs and k closest/farthest bichromatic pairs for points in the plane. *Internat. J. Comput. Geom. Appl.*, 5:37–51, 1995. [ki-fkfpk-95] *Keywords:* k farthest pairs, k closest/farthest bichromatic pairs, higher order Voronoi diagrams. *Succeeds:* ki-fkfpk-92.

7879 N. Katoh and K. Iwano. Finding k farthest pairs and k closest pairs/farthest bichromatic pairs for points in the plane. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 320–329, 1992. [ki-fkfpk-92] *Precedes:* ki-fkfpk-95. *Cites:* aass-sdp-90, aiks-fkpmd-91, bfprt-tbs-73, c-ntcos-85, ce-iacko-87, c-narsc-87, dd-ekdnp-91, ds-ekldn-92, ddg-fsp-83, e-esaa-86, fj-csrxm-82, k-osps-83, l-knnvd-82, lt-apst-80, ps-cgi-85, s-lisps-89, s-sisie-91, hss-pgcrm-87, s-mmdpsl-90t, v-oaann-89, ZZZ.

7880 Naoki Katoh and Takeshi Tokuyama. Notes on computing peaks in k-levels and parametric spanning trees. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 241–248, 2001. [kt-ncpkp-01]

7881 N. Katoh, T. Tokuyama, and K. Iwano. On minimum and maximum spanning trees of linearly moving points. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 396–405, 1992. [kti-mmstl-92]

7882 N. Katoh, T. Tokuyama, and K. Iwano. On minimum and maximum spanning trees of linearly moving points. *Discrete Comput. Geom.*, 13:161–176, 1995. [kti-mmstl-95]

N. Katoh. See also [292, 293, 367, 926–930, 964, 971, 972, 3710, 6706, 7284, 7375, 7377].

7883 G. Katona and E. Szemerédi. On a problem in a graph theory. *Studia Scientiarium Mathematicarum Hungarica*, 2:23–28, 1967. [ks-pgt-67]

H. P. Katseff. See also [1300].

7884 M. Katz. Diameter-extremal subsets of spheres. *Discrete Comput. Geom.*, 4:117–137, 1989. [k-dess-89]

7885 Matthew Katz and Franck Nielsen. On piercing sets of objects. Rapport de recherche 2874, INRIA, 1996. [kn-pso-96-t] *URL:* http://www.inria.fr/rrrt/rr-2874.html. *Abstract:* A set of objects is k-pierceable if there exists a set of k poin ts such that each object is pierced by (contains) at least one of these points. Finding the smallest integer k such that a set is k-pierceable is NP-complete. In this technical report, we present efficient algorithms for findi ng a piercing set (i.e., a set of k points as above) for several classes of convex objects and small values of k. In some of the cases, our algorithms imply known as well as new Helly-type theorems, thus adding to previous results of Danzer and Grünbaum who studied the case of axis-parallel boxes. The problems studied here are related to the collection of optimization problems in which one seeks the smallest scaling factor of a centrally symmetric convex object K, so that a set of points can be covered by k congruent homothets of K.

Matthew Katz. See also [185, 1714, 4034].

7886 M. D. Katz. *Geometric retrieval: data structures and computational complexity*. Ph.D. thesis, Dept. Inform. Comput. Sci., Univ. California Irvine, Irvine, CA, 1985. [k-grdsc-85] *Keywords:* doctoral thesis.

7887 M. D. Katz and D. J. Volper. Data structures for retrieval on square grids. *SIAM J. Comput.*, 15:919–931, 1986. [kv-dsrsq-86]

7888 M. J. Katz. 3-D vertical ray shooting and 2-D point enclosure, range searching, and arc shooting amidst convex fat objects. *Comput. Geom. Theory Appl.* to appear. [k-3vrs2-??] *Succeeds:* k-3vrs2-95.

7889 M. J. Katz. 3-D vertical ray shooting and 2-D point enclosure, range searching, and arc shooting amidst convex fat objects. Research Report 2583, INRIA, BP93, 06902 Sophia-Antipolis, France, 1995. [k-3vrs2-95]

7890 M. J. Katz. *Geometric Optimization via Expanders and Visibility of Fat Objects in Three Dimensions: Two Studies in Computational Geometry*. Ph.D. thesis, Tel-Aviv University, Tel-Aviv, Israel, 1994. [k-] *Keywords:* doctoral thesis.

7891 M. J. Katz. Improved algorithms in geometric optimization via expanders. In *Proc. 3rd Israel Symposium on Theory of Computing and Systems*, pages 78–87, 1995. [k-iagoe-95]

7892 Matthew J. Katz, Klara Kedem, and Michael Segal. Constrained square center problems. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 95–106. Springer-Verlag, 1998. [kks-cscp-98] *Precedes:* kks-dr2cp-00.

7893 M. J. Katz, K. Kedem, and M. Segal. Discrete rectilinear 2-center problems. *Comput. Geom. Theory Appl.*, 15:203–214, 2000. [kks-dr2cp-00] *Succeeds:* kks-cscp-98.

7894 Matthew J. Katz, Klara Kedem, and Michael Segal. Improved algorithms for placing undesirable facilities. In *Abstracts 15th European Workshop Comput. Geom.*, pages 39–42. INRIA Sophia-Antipolis, 1999. [kks-iapuf-99]

7895 M. J. Katz and F. Nielsen. On piercing sets of objects. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 113–121, 1996. [kn-pso-96-i] *Cites:* a-httgl-94, bglr-epcpa-93, c-ghscp-79, cm-ltdao-93, dg-ipbr-82, dgk-htir-63, fpt-opcpa-81, gw-hcg-93a, hd-kgde-60, h-aascv-82, k-racpc-72, kn-cdg-96, kn-pso-t, m-apcad-83, msw-sblp-92, s-nlap2-96, sw-rpppp-96, ZZZ.

7896 Matthew J. Katz, Frank Nielsen, and Micheal Segal. Shooter location through piercing sets. In *Abstracts 16th European Workshop Comput. Geom.*, pages 55–58. Ben-Gurion University of the Negev, 2000. [kns-sltps-00]

7897 M. J. Katz, M. H. Overmars, and Micha Sharir. Efficient hidden surface removal for objects with small union size. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 31–40, 1991. [kos-ehsro-91] *Keywords:* hidden surface removal. *Cites:* as-anspt-91, b-hsrr-90, bo-arcgi-79, bo-hsrap-90, cegpsss-ccclr-90, cs-vppt-89, d-qbhle-86, g-pahle-87i, gao-isost-90, go-nasch-87, klps-ujrcf-86, ms-rcibt-88, mpssw-ftdlm-90, m-wcohs-87, m-eahsr-89, n-flsah-85, os-oshsr-89, os-itosh-89, os-mvm-91, py-bpahs-89, ps-cgi-85, pvy-cavsi-90, rs-eoshs-88i, so-sosah-92, s-tsbhl-81, sss-cthsa-74, ZZZ.

7898 M. J. Katz, M. H. Overmars, and Micha Sharir. Efficient hidden surface removal for objects with small union size. *Comput. Geom. Theory Appl.*, 2:223–234, 1992. [kos-ehsro-92] *Keywords:* hidden surface removal.

7899 M. J. Katz and Micha Sharir. An expander-based approach to geometric optimization. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 198–207, 1993. [ks-ebago-93] *Cites:* aass-sdp-90, aest-cscpp-91, am-rsps-92, as-pglp-90, ast-apsgo-92, am-dptnp-96, as-pm-92, cegs-dwclp-92, csw-qoubs-92, cw-qorss-89, cs-arscg-89, c-sdsno-87, csss-otass-89, dmn-rass-92, hw-ensrq-87, hs-ftp-91, ks-osse-, lps-rg-88, m-egtcc-88, m-roass-91, m-ept-92, m-rsehc-92, ms-datdd-93, m-apcad-83, st-epcp-91, v-pcp-75, ZZZ.

7900 M. J. Katz and Micha Sharir. An expander-based approach to geometric optimization. *SIAM J. Comput.*, 26:1384–1408, 1997. [ks-ebago-97] *Succeeds:* ks-ebago-93.

7901 M. J. Katz and M. Sharir. Optimal slope selection via expanders. Manuscript, ??, ?? [ks-osse-] *Precedes:* ks-osse-93i.

7902 M. J. Katz and Micha Sharir. Optimal slope selection via expanders. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 139–144, 1993. [ks-osse-93i] *Succeeds:* ks-osse-. *Cites:* as-pm-92, am-dptnp-92, cegs-dwclp-92, c-sdsno-87, csss-oss-88, dmn-rass-92, e-acg-87, ks-ebago-93, lps-eerc-86, m-egtcc-88, m-roass-91, m-cha-91, m-apcad-83, ZZZ.

7903 M. J. Katz and Micha Sharir. Optimal slope selection via expanders. *Inform. Process. Lett.*, 47:115–122, 1993. [ks-osse-93]

7904 M. J. Katz and K. R. Varadarajan. A tight bound on the number of geometric permutations of convex fat objects in $\Re^d$. Dept. Comput. Sci., Ben-Gurion University of the Negev, Israel, 1999. [kv-tbngp-99]

M. J. Katz. See also [186, 187, 1599, 1600, 1715, 2735, 4035, 4806–4810].

7905 S. Katz and T. W. Sederberg. Genus of the intersection curve of two rational surface patches. *Comput. Aided Geom. Design*, 5:253–258, ?? [ks-gictr-??]

7906 S. Kauffman. An algorithmic approach to intelligent robot mobility. *Robotics Age*, 5(3):38–47, 1983. [k-aairm-83]

7907 Pierre Kauffmann and Jean-Claude Spehner. Sweeping along a polygonal line to construct a Delaunay diagram. In *Abstracts 15th European Workshop Comput. Geom.*, pages 153–155. INRIA Sophia-Antipolis, 1999. [ks-saplc-99]

Pierre Kauffmann. See also [82].

7908 A. Kaufman, D. Cohen, and R. Yagel. Volumetric graphics. *IEEE Computer*, 26(7):51–64, 1993. [kcy-vg-93]

A. Kaufman. See also [6736, 13884].

7909 A. E. Kaufman. *Volume Visualization*. IEEE Computer Society Press, Los Alamitos, CA, 1990. [k-vv-90] *ISBN:* 908186-9020-8.

A. E. Kaufman. See also [10755, 12208, 12212].

7910 L. Kaufman and P. J. Rousseeuw. *Finding Groups in Data: An Introduction to Cluster Analysis*. John Wiley & Sons, 1990. [kr-fgdic-90]

7911 W. J. Kaufmann III and L. L. Smarr. *Supercomputing and the transformation of science*. Scientific American Library, New York, NY, 1993. [ks-sts-93]

7912 M. Kaufmann, S. Gao, and K. Thulasiraman. On Steiner minimal tree in grid graphs and its application to VLSI routing. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 351–359. Springer-Verlag, 1994. [kgt-smtgg-94]

7913 Michael Kaufmann and Gerhard Klär. A faster algorithm for edge-disjoint paths in planar graphs. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 336–348. Springer-Verlag, 1991. [kk-faedp-91]

7914 M. Kaufmann and K. Mehlhorn. Local routing of two-terminal nets is easy. Report A84/12, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1984. [km-lrttn-84]

7915 M. Kaufmann and K. Mehlhorn. Routing through a generalized switchbox. *J. Algorithms*, 7:510–531, 1986. [km-rtgs-86]

M. Kaufmann. See also [576, 577, 1992, 5372–5374, 5417–5425, 5743–5746, 7045].

7916 K. Kaugars, J. Reinfelds, and A. Brazma. A simple algorithm for drawing large graphs on small screens. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 278–281. Springer-Verlag, 1995. [krb-sadlg-95] *Keywords:* graph drawing, system, fisheye view.

7917 A. Kaul and R. Farouki. Computing Minkowski sums of plane curves. *Internat. J. Comput. Geom. Appl.*, 5:413–432, 1995. [kf-cmspc-95] *Keywords:* Minkowski sums, plane curves, convolutions, Gauss maps, shape design, configuration space.

7918 A. Kaul and M. A. O'Connor. Computing Minkowski sums of regular polyhedra. Report RC 18891 (82557) 5/12/93, IBM T.J. Watson Research Center, Yorktown Heights, NY 10598, 1993. [ko-cmsrp-93]

7919 A. Kaul, M. A. O'Connor, and V. Srinivasan. Computing Minkowski sums of regular polygons. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 74–77, August 1991. [kos-cmsrp-91i] *Cites:* bo-arcgi-79, dhks-isccd-90, g-ctfsr-86, g-cp-67, grs-kfcg-83, gs-lncg-83, kos-cmsrp-91t, klps-ujrcf-86, m-rsig-75, ps-cgi-85, s-iamm-82, ZZZ.

7920 A. Kaul, M. A. O'Connor, and V. Srinivasan. Computing Minkowski sums of regular polygons. Report RC 18523 (80982) 11/13/93, IBM T.J. Watson Research Center, Yorktown Heights, NY 10598, 1992. [kos-cmsrp-91t]

7921 A. Kaul and J. Rossignac. Solid-interpolating deformations: construction and animation of PIPs. In *Proc. Eurographics '91*, pages 493–505, 1991. [kr-sidc-92] *Comments:* use of Minkowski sums for animation.

J. Kavanagh. See also [4968].

L. Kavazza. See also [2250].

7922 L. Kavraki. *Random Networks in Configuration Space for Fast Path Planning*. PhD thesis, Stanford Univ., Stanford, CA, 1995. [k-rncsf-95] *Keywords:* doctoral thesis.

7923 L. Kavraki and J.-C. Latombe. Complexity of partitioning a planar assembly. Technical Report STAN-CS-93-1467, Department of Computer Science, Stanford University, 1993. [kl-cppa-93t] *Precedes:* klw-cap-93.

7924 L. Kavraki, J.-C. Latombe, and R. Wilson. On the complexity of assembly partitioning. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 12–17, 1993. [klw-cap-93] *Succeeds:* kl-cppa-93t. *Cites:* acm-mpoap-89, gj-cigtn-79, m-camap-91, kl-cppa-93t, n-pa-88, pss-stsps-88, ss-pmp1c-83, ss-otcbt-93, t-mss-85, w-fap-92, hr-s-83, wll-cpa-92, ZZZ.

L. Kavraki. See also [5265].

7925 L. E. Kavraki and M. N. Kolountzakis. Partitioning a planar assembly into two connected components is NP-complete. *Inform. Process. Lett.*, 55(3):159–165, 1995. [kk-ppatc-95] *Keywords:* polygons, assembly, robotics, planning, NP-hardness.

7926 L. E. Kavraki, J.-C. Latombe, R. Motwani, and P. Raghavan. Randomized query processing in robot path planning. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 353–362, 1995. [klmr-rqprp-95]

7927 L. E. Kavraki, P. Švestka, J.-C. Latombe, and M. H. Overmars. Probabilistic roadmaps for path planning in high dimensional configuration spaces. *IEEE Trans. Robot. Autom.*, 12:566–580, 1996. [kslo-prpph-96]

Lydia E. Kavraki. See also [188, 1443, 5266, 5267, 6582, 7152].

Y. Kawada. See also [7432].

Kimio Kawaguchi. See also [3044, 3081–3083].

7928 F. Kawahata. *Fantasy Origami*. Gallery Origami House, Tokyo, Japan, 1995. [k-fo-95]

7929 F. Kawahata. The technique to fold free angles of formative art 'origami'. In *Proc. 2nd Internat. Meeting on Origami Science and Scientific Origami*, 1994. [k-tffaf-94]

S. Kawai. See also [7698–7700].

7930 T. Kawasaki. On the relation between mountain-creases and valley-creases of a flat origami. In H. Huzita, editor, *Origami Science and Technology*, pages 229–237. 1989. [k-rbmcv-89]

D. C. Kay. See also [2414, 6359].

R. Kay. See also [1352]

R. Kaye. See also [4482].

7931 Y. Ke. An efficient algorithm for link-distance problems. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 69–78, 1989. [k-ealdp-89] *Keywords:* motion planning, visibility, polygonal chains. *Cites:* cg-vippg-85, dls-oaclc-88, egs-oplms-86, gh-ospqs-87, ghlst-ltavs-86, k-ealdp-88, k-pvawv-89, k-twvsp-87, kr-wvpsp-87, lpsssstwy-clcsp-87, gjpt-tsp-78, s-ltaml-86, s-mlppr-87, tv-otats-88, ZZZ.

7932 Y. Ke. An efficient algorithm for link distance problems inside a simple polygon. Technical Report JHU-87/28, Dept. of Computer Science, Johns Hopkins Univ., 1988. [k-ealdp-88]

7933 Y. Ke. Detecting the weak visibility of a simple polygon and related problems. Manuscript, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1988. [k-dwvsp-88]

7934 Y. Ke. *Polygon visibility algorithms for weak visibility and link distance problems*. Ph.D. thesis, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1989. [k-pvawv-89] *Keywords:* doctoral thesis.

7935 Y. Ke. Testing the weak visibility of a simple polygon and related problems. Technical Report 27, Department of Computer Science, The Johns Hopkins University, 1987. [k-twvsp-87]

7936 Y. Ke and J. O'Rourke. An algorithm for moving a ladder in three dimensions. Technical Report JHU-87/17, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, September 1987. [ko-amltd-87] *Keywords:* motion planning, three-dimensional, lower bounds, cell complexes. *Precedes:* ko-mltdu-87.

7937 Y. Ke and J. O'Rourke. An $O(n^6 \log n)$ algorithm for moving a ladder in three dimensions. Technical Report, Johns Hopkins Univ., Baltimore, MD, May 1987. [ko-oamlt-87]

7938 Y. Ke and J. O'Rourke. Computing the kernel of a point set in a polygon. *Visual Comput.* [ko-ckpsp-] *Keywords:* visibility, points, polygons, kernel. *Comments:* submitted. *Succeeds:* ko-ckpsp-89.

7939 Y. Ke and J. O'Rourke. Computing the kernel of a point set in a polygon. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 135–146. Springer-Verlag, 1989. [ko-ckpsp-89] *Keywords:* visibility, points, polygons, kernel. *Precedes:* ko-ckpsp-.

7940 Y. Ke and J. O'Rourke. Lower bounds on moving a ladder in two and three dimensions. Technical Report, Johns Hopkins Univ., Baltimore, MD, May 1987. [ko-lbmlt-87t]

7941 Y. Ke and J. O'Rourke. Lower bounds on moving a ladder in two and three dimensions. *Discrete Comput. Geom.*, 3:197–218, 1987. [ko-lbmlt-87a]

7942 Y. Ke and J. O'Rourke. Lower bounds on moving a ladder in two and three dimensions. *Discrete Comput. Geom.*, 3:197–217, 1988. [ko-lbmlt-88] *Keywords:* motion planning, two-dimensional, three-dimensional, lower bounds, cell complexes. *Succeeds:* ko-mltdu-87.

7943 Y. Ke and J. O'Rourke. Moving a ladder in three dimensions: upper and lower bounds. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 136–145, 1987. [ko-mltdu-87] *Keywords:* motion planning, three-dimensional, lower bounds, cell complexes. *Succeeds:* ko-amltd-87. *Precedes:* ko-lbmlt-88. *Cites:* c-emscc-87, eos-calha-86, ko-lbmlt-87t, ko-oamlt-87, ls-esmpa-85, o-lbml-85, osy-gvdl1-84, osy-gvdl2-84, osy-rnamp-83, ss-pmp1c-83, ss-pmp5c-84, ss-nempa-86, ZZZ.

7944 Y. Ke and J. O'Rourke. Weak visibility problems for a set of points in a simple polygon. Technical report, Department of Computer Science, The Johns Hopkins University, 1987. [kr-wvpsp-87]

Y. Ke. See also [3983, 7610].

7945 P. Kearney. On NeST representations. manuscript. [k-nr-]

P. Kearney. See also [6731, 6732].

G. Kedem. See also [4882].

7946 Klara Kedem, editor. *Abstracts 16th European Workshop Comput. Geom.* Ben-Gurion University of the Negev, 2000. [k-ewcg-00]

7947 K. Kedem and D. Cohen. Efficient bitmap resemblance under translations. *Internat. J. Comput. Geom. Appl.*, 7:57–84, 1997. [kc-ebrut-97]

7948 K. Kedem, R. Livne, J. Pach, and Micha Sharir. On the union of Jordan regions and collision-free translational motion amidst polygonal obstacles. *Discrete Comput. Geom.*, 1:59–71, 1986. [klps-ujrcf-86] *Keywords:* motion planning, two-dimensional, Jordan curves. *Succeeds:* ks-eapcf-85.

7949 K. Kedem and Micha Sharir. An automatic motion planning system for a convex polygonal mobile robot in 2-d polygonal space. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 329–340, 1988. [ks-ampsc-88] *Precedes:* ks-ampsc-90. *Cites:* ass-sulbl-87, a-sdcgp-85, bz-stdfp-86, bl-sacsf-83, hs-ndssg-86, hss-pgcrm-87, ksss-tdmbb-86, klps-ujrcf-86, ks-eapcf-85, ls-esmpa-87, ls-pptmc-87, ls-ncfcc-87, l-smpag-86, l-dpppa-87, l-acirm-87, ls-ppspm-87, oy-rmpmd-85, osy-gvdl-86, osy-gvdl-87, o-lbml-85, ss-pmp1c-83, ss-mprga-86, ss-nempa-87, y-amp-87, ZZZ.

7950 K. Kedem and Micha Sharir. An automatic motion planning system for a convex polygonal mobile robot in 2-d polygonal space. In I. J. Cox and G. T. Wilfong, editors, *Autonomous Robot Vehicles*, pages 349–362. Springer-Verlag, New York, NY, 1990. [ks-ampsc-90] *Keywords:* motion planning, robotics, implementing algorithms. *Succeeds:* ks-ampsc-88.

7951 K. Kedem and Micha Sharir. An efficient algorithm for planning collision-free translational motion of a convex polygonal object in 2-dimensional space amidst polygonal obstacles. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 75–80, 1985. [ks-eapcf-85] *Keywords:* motion planning, convex objects, two-dimensional. *Precedes:* ks-empac-90. *Cites:* b-egc-66, bo-arcgi-79, gk-shfmp-70, grs-kfcg-83, k-osps-83, ls-esmpa-84, lw-apcfp-79, np-psaig-82, oy-rmpmd-85, osy-gvdl1-84, osy-gvdl2-84, oww-fabmo-82, ss-pmp1c-83, ss-spps-86, w-cvgnl-84, ZZZ.

7952 K. Kedem and Micha Sharir. An efficient motion planning algorithm for a convex rigid polygonal object in 2-dimensional polygonal space. *Discrete Comput. Geom.*, 5:43–75, 1990. [ks-empac-90] *Keywords:* motion planning, convex objects, Davenport-Schinzel sequences, two-dimensional. *Succeeds:* ks-eapcf-85.

7953 K. Kedem, Micha Sharir, and S. Toledo. On critical orientations in the Kedem-Sharir motion planning algorithm for a convex polygon in the plane. Technical Report 273/93, Department of Computer Science, Tel-Aviv University, 1993. [kst-coksm-93t] *Precedes:* kst-coksm-93i. *Annote:* Fixes bug in Kedem-Sharir algorithm.

7954 K. Kedem, Micha Sharir, and S. Toledo. On critical orientations in the Kedem-Sharir motion planning algorithm for a convex polygon in the plane. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 204–209, 1993. [kst-coksm-93i] *Succeeds:* kst-coksm-93t. *Precedes:* kst-coksm-97.

7955 K. Kedem, Micha Sharir, and S. Toledo. On critical orientations in the Kedem-Sharir motion planning algorithm for a convex polygon in the plane. *Discrete Comput. Geom.*, 17:227–240, 1997. [kst-coksm-97] *Succeeds:* kst-coksm-93i.

7956 Klara Kedem and Yana Yarmovski. Curve based stereo matching using the minimum Hausdorff distance. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C15–C18, 1996. [ky-cbsmu-96] *Cites:* af-ersmg-87, a-avmrs-91, ct-lsm3d-93, hkr-ciuhd-93, hks-uevsi-93, sp-simc-90, ZZZ.

K. Kedem. See also [760–762, 773–775, 789, 790, 1888, 3152, 3157–3167, 4030–4032, 5979–5981, 7250–7257, 7892–7894, 11555, 11931, 11932, 12074].

Z. M. Kedem. See also [1077, 5433, 5635, 5636].

D. M. Keenan. See also [6272].

S. Keerthi. See also [3804].

7957 S. S. Keerthi, N. K. Sancheti, and A. Dattasharma. Transversality theorem: A useful tool for establishing genericity. In *Proc. IEEE Conf. on Decision and Control*, 1992. [ksd-ttute-92]

7958 S. Sathiya Keerthi and K. Sridharan. Measures of intensity of collision between convex objects and their efficient computation. In *Proceedings of the International Symposium on Intelligent Robotics, Bangalore, India*, pages 266–275, January 1991. [ks-micco-91]

7959 S. S. Keerthi and K. Sridharan. On computing depth of collision in two dimensions. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 19–25, 1991. [ks-cdctd-91] *Cites:* gpwz-eaes-91, bhh-fgavt-81, dk-ladsc-85, gjk-fpcdb-88, cc-dmtdb-86, bl-pmcpp-85, ds-splif-90, grs-kfcg-83, l-spcsa-83, cd-icott-87, r-ca-70, k-smsm-55, cg-vippg-85, ks-micco-91, ZZZ.

7960 S. S. Keerthi and K. Sridharan. Solution of parametrized linear inequalities by fourier elimination and its applications. *J. Optim. Theory Appl.*, 65, April 1990. [ds-splif-90]

S. S. Keerthi. See also [3805, 3806, 5949, 5950, 11616].

7961 N. Kehtarnavaz and R. J. P. de Figueiredo. A framework for surface reconstruction from 3-d contours. *Comput. Vision Graph. Image Process.*, 42:32–47, 1988. [kf-fsr3d-88]

7962 N. Kehtarnavaz, L. R. Simar, and R. J. P. de Figueiredo. Syntactic/semantic technique for surface reconstruction from cross- sectional contours. *Comput. Vision Graph. Image Process.*, 42(3):399–409, June 1988. [ksf-sstsr-88] *Keywords:* syntactic/semantic technique, surface reconstruction, cross-sectional contours, weighted levenshtein graph. *Annote:* Breaks contours into "syntactic" components, matches and triangulates between each piece. *Abstract:* Surface reconstruction from cross-sectional contours has become increasingly important in medicine. In this paper, a surface reconstruction technique has been developed to improve the conventional triangulation techniques by taking into account local shape characteristics of the surface being reconstructed. The technique involves a syntactic/semantic contour representation which allows a similarity relation, based on the weighted Levenshtein graph, to be established between adjacent contours. This similarity relation is then employed as a guide to form the surface by triangulating similar substructures. (Author abstract) 11 refs.

7963 J. M. Keil. Approximating the complete Euclidean graph. In *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 208–213. Springer-Verlag, 1988. [k-aceg-88] *Keywords:* geometric graphs, path planning.

7964 J. M. Keil. Computational geometry on the integer grid. M.Sc. thesis, Dept. Comput. Sci., Univ. British Columbia, Vancouver, BC, 1980. [k-cgig-80] *Keywords:* master thesis, priority search trees, bucketing, design of algorithms, data structuring, sorting, convex hull, intersection. *Precedes:* kk-cgig-81.

7965 J. M. Keil. Covering orthogonal polygons with non-piercing rectangles. *Internat. J. Comput. Geom. Appl.*, 7:473–484, 1997. [k-copnp-97]

7966 J. M. Keil. Decomposing a polygon into simpler components. *SIAM J. Comput.*, 14:799–817, 1985. [k-dpsc-85] *Keywords:* dynamic programming, convex, polygons, star-shaped, partition, decomposition.

7967 J. M. Keil. *Decomposing Polygons into Simpler Components.* PhD thesis, Dept. Comput. Sci., Univ. Toronto, Toronto, ON, 1983. [k-dpsc-83] *Keywords:* doctoral thesis.

7968 J. M. Keil. Minimally covering a horizontally convex orthogonal polygon. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 43–51, 1986. [k-mchco-86] *Keywords:* covering, polygons, convex, star-shaped. *Cites:* a-agpiv-84, acyb-idcat-80, cd-dpicp-79, c-cgc-79, eow-sgrag-84, fk-acrri-84, g-dpcp-83, g-dpcp-83, kkk-tgrfw-83, k-dpsc-83, k-dpsc-85, ks-mdpo-85, l-pnrh-82, lllmp-tddo2-79, mw-sprag-84, m-snpcs-79, mf-diasp-82, ostt-mprr-83, o-aprag-83, os-snhpd-83, s-oadrp-82, s-rcg-84, sl-tssp-80, ZZZ.

7969 J. Mark Keil. Polygon decomposition. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 491–518. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [k-pd-00] *Annote:* Chapter 11 of su-hcg-00.

7970 J. Mark Keil, editor. *Proc. 6th Canad. Conf. Comput. Geom.*, Saskatoon, SK, August 1994. Dept. Comput. Sci., Univ. Saskatchewan. [k-p6ccc-94] *Comments:* C$40 cheque or money order payable to Univ. Saskatchewan, includes postage.

7971 J. M. Keil and C. A. Gutwin. Classes of graphs which approximate the complete Euclidean graph. *Discrete Comput. Geom.*, 7:13–28, 1992. [kg-cgwac-92]

7972 J. M. Keil and C. A. Gutwin. The Delaunay triangulation closely approximates the complete Euclidean graph. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 47–56. Springer-Verlag, 1989. [kg-dtcac-89] *Keywords:* geometric graphs, Delaunay triangulations.

7973 J. M. Keil and D. G. Kirkpatrick. Computational geometry on the integer grid. In *Proc. 19th Allerton Conf. Commun. Control Comput.*, pages 41–50, 1981. [kk-cgig-81] *Keywords:* priority search trees, bucketing, design of algorithms, data structuring, sorting, convex hull, intersection. *Succeeds:* k-cgig-80.

7974 J. M. Keil and J.-R. Sack. Minimum decompositions of polygonal objects. In G. T. Toussaint, editor, *Computational Geometry*, pages 197–216. North-Holland, Amsterdam, Netherlands, 1985. [ks-mdpo-85] *Keywords:* survey paper, convex, polygons, star-shaped, partition, decomposition, covering.

7975 J. Mark Keil and Godfried T. Toussaint. Detecting and computing intersections of convex chains. manuscript in preparation, 1991. [kt-dcicc-91u] *Succeeds:* kt-dcicc-91i.

J. M. Keil. See also [963, 1079, 1080, 2647, 4867, 5436, 12419].

7976 M. Keil. A simple algorithm for determining the envelope of a set of lines. Technical Report 91-1, University of Saskatchewan, 1991. [k-sades-91t]

7977 M. Keil. A simple algorithm for determining the envelope of a set of lines. *Inform. Process. Lett.*, 39:121–124, 1991. [k-sades-91a]

7978 M. Keil. Computing a subgraph of the minimum weight triangulation. *Comput. Geom. Theory Appl.*, 4:13–26, 1994. [k-csmwt-94]

7979 M. Keil, D. M. Mount, and S. K. Wismath. Visibility stabs and depth-first spiralling on line segments in output sensitive time. *Internat. J. Comput. Geom. Appl.*, 10:535–552, 2000. [kmw-vsdfs-00]

7980 M. Keil and G. Toussaint. Detecting and computing intersections of convex chains. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 7–10, 1991. [kt-dcicc-91i]

7981 M. Keil and S. Wismath. Computing the visibility polygons of the endpoints of a set of line segments in output sensitive time. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 39–45, 1992. [kw-cvpes-92] *Cites:* aaghi-vdp-86, c-tsplt-91a, h-fvgsp-87, gmosacv-87, ow-nmcvg-88, v-dmvg-91, w-cvgnl-85, w-cfvgs-92, ZZZ.

Mark Keil. See also [1587, 1887, 5870].

D. A. Keim. See also [1663–1665].

7982 D. M. Keirsey and Joseph S. B. Mitchell. Planning strategic paths through variable terrain data. In *Proc. SPIE Applications of Artificial Intelligence*, volume 485, pages 172–179, 1984. [km-psptv-84]

7983 D. M. Keirsey, Joseph S. B. Mitchell, D. W. Payton, and E. P. Preyss. Multilevel path planning for autonomous vehicles. In *Proc. SPIE Applications of Artificial Intelligence*, volume 485, pages 133–137, 1984. [kmpp-mppav-84]

D. M. Keirsey. See also [9739].

7984 T. Keleti. The mountain climbers' problem. *Proc. Amer. Math. Soc.*, 117(1):89–97, 1993. [k-mcp-93]

A. Keller. See also [6670].

7985 W. Keller-Gehrig. Fast algorithms for the characteristic polynomial. *Theoret. Comput. Sci.*, 36:309–317, 1985. [k-facp-85]

R. M. Keller. See also [2607].

7986 J. L. Kelley and I. Namioka. *Linear Topological Spaces*. Van Nostrand, Princeton, NJ, 1963. [kn-lts-63]

7987 J. L. Kelley and I. Namioka. *Linear Topological Spaces*. Springer-Verlag, 1976. [kn-lts-76]

S. Kelley. See also [11444].

K. Kells. See also [9942].

7988 D. Kelly. Fundamentals of planar ordered sets. *Discrete Math.*, 63:197–216, 1987. [k-fpos-87] *Keywords:* graph drawing.

7989 D. Kelly. The 3-irreducible partially ordred sets. *Canad. J. Math.*, 24(2):367–383, 1977. [k-3ipos-77]

7990 D. Kelly and I. Rival. Planar lattices. *Canad. J. Math.*, 27(3):636–665, 1975. [kr-pl-75] *Keywords:* graph drawing.

D. Kelly. See also [4573, 4577, 6537].

7991 D. G. Kelly. Some results on random linear programs. *Methods of Operations Research*, 40:351–355, 1981. [k-srrlp-81]

7992 L. Kelly and W. Moser. On the number of ordinary lines determined by n points. *Canad. J. Math.*, 10:210–219, 1958. [km-noldn-58]

7993 L. M. Kelly. A resolution of the Sylvester-Gallai problem of J.-P. Serre. *Discrete Comput. Geom.*, 1:101–104, 1986. [k-rsgpj-86]

L. M. Kelly. See also [2280].

7994 P. Kelly and M. Weiss. *Geometry and Convexity: A Study in Mathematical Methods*. John Wiley & Sons, New York, NY, 1979. [kw-gcsmm-79]

R. B. Kemp. See also [9055].

7995 Alfred Bray Kempe. *How to Draw a Straight Line; a Lecture on Linkages*. Macmillan & co., 1877. [k-hdsl-1877] *Location:* London.

7996 Alfred Bray Kempe. On a general method of describing plane curves of the nth degree by linkwork. *Proc. London Math. Soc.*, 7:213–216, 1876. [k-gmdpc-1876]

7997 N. G. Kendall and P. A. P. Moran. *Geometrical Probability*. Hafner, New York, NY, 1963. [km-gp-63]

W. S. Kendall. See also [12557, 12558].

7998 K. Kendig. *Elementary Algebraic Geometry*. Springer-Verlag, 1977. [k-eag-77]

J. W. Kenelly. See also [6684].

7999 N. C. Kenkel, W. D. Hoskins, and J. A. Hoskins. Edge effects in the use of area polygons to study competition. *Ecology*, 70(1):272–274, 1989. [khh-eeuap-89] *Annote:* Points out that if we take sample of points contained some region, and calculate the Voronoi polygons, then to avoid edge effects it is necessary to exclude the polygons which potentially could be made smaller by points outside the region. (These are not necessarily adjacent to the boundary.) Simulation shows that for 500 points in a square 0.77 of the polygons can be kept.

O. Kennard. See also [1845].

J. T. Kent. See also [9194].

8000 C. Kenyon and R. Kenyon. How to take short cuts. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 250–255, 1991. [kk-htsc-91] *Cites:* j-rstsp-90, ZZZ.

8001 C. Kenyon and R. Kenyon. How to take short cuts. *Discrete Comput. Geom.*, 8:251–264, 1992. [kk-htsc-92]

8002 C. Kenyon and R. Kenyon. Tiling a polygon with rectangles. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 610–619, 1992. [kk-tpr-92]

8003 C. Kenyon and W. P. Thurston. Rotation distance using flows. Manuscript, ??, ?? [kt-rduf-??]

C. Kenyon. See also [3910].

8004 C. M. Kenyon and J. S. Vitter. Maximum queue size and hashing with lazy deletion. In *Proceedings of the 20th Annual Symposium on the Interface of Computing Science and Statistics*, pages 743–748, 1988. [kv-mqshl-88] *Precedes:* kv-mqshl-91.

8005 C. M. Kenyon and J. S. Vitter. Maximum queue size and hashing with lazy deletion. *Algorithmica*, 6:597–619, 1991. [kv-mqshl-91] *Succeeds:* kv-mqshl-88.

8006 C. M. Kenyon-Mathieu and J. S. Vitter. General methods for the analysis of the maximum size of dynamic data structures. In *Proc. 16th Internat. Colloq. Automata Lang. Program.*, volume 372 of *Lecture Notes Comput. Sci.*, pages 473–487. Springer-Verlag, 1989. [kv-gmams-89] *Precedes:* kv-gmams-91.

8007 C. M. Kenyon-Mathieu and J. S. Vitter. General methods for the analysis of the maximum size of dynamic data structures. *SIAM J. Comput.*, 20:807–823, 1991. [kv-gmams-91] *Succeeds:* kv-gmams-89.

R. Kenyon. See also [8000–8002].

8008 E. Keppel. Approximating complex surfaces by triangulation of contour lines. *IBM J. Res. Develop.*, 19:2–11, 1975. [k-acstc-75]

J. Kerbosch. See also [2462].

Y. L. Kergosien. See also [12163].

8009 J. P. Kermode and D. Weaire. 2D-froth — A program for the investigation of 2-dimensional froths. *Computer Physics Communications*, 60(1):75–109, 1990. [kw-2dfpi-90] *Annote:* Basic circumcircle algorithm for DT and get VD from that.

8010 W. Kern and A. Wanka. On a problem about covering lines by squares. *Discrete Comput. Geom.*, 5:77–82, 1990. [kw-pacls-90]

B. Kernigham. See also [1644].

8011 B. W. Kernighan and S. Lin. An efficient heuristic procedure for partitioning graphs. *Bell Syst. Tech. J.*, 49(2):291–307, 1970. [kl-ehppg-70]

8012 M. L. Kersten and P. van Emde Boas. Local optimizations of quad trees. Report IR-51, Univ. Amsterdam, Amsterdam, Netherlands, 1979. [ke-loqt-79]

C. Keskin. See also [5601].

8013 J. Ketonen and R. Solovay. Rapidly growing Ramsey functions. *Annals of Math.*, 113:267–314, 1981. [ks-rgrf-81]

8014 Lutz Kettner. Contour-edge based polyhedron visualization. In *Abstracts 16th European Workshop Comput. Geom.*, pages 77–80. Ben-Gurion University of the Negev, 2000. [k-cebpv-00]

8015 L. Kettner. Designing a data structure for polyhedral surfaces. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 146–154, 1998. [k-ddsps-98]

8016 L. Kettner. Using generic programming for designing a data structure for polyhedral surfaces. *Comput. Geom. Theory Appl.*, 13:65–90, 1999. [k-ugpdd-99]

8017 Lutz Kettner, Andrea Mantler, Jack Snoeyink, Bettina Speckmann, and Fumihiko Takeuchi. Bounded-degree pseudotriangulations of points. In *Abstracts 17th European Workshop Comput. Geom.*, pages 19–22. Freie Universität Berlin, 2001. [kmsst-bdptp-01]

Lutz Kettner. See also [5100–5102, 6887].

8018 J. Keyser, S. Krishnan, and D. Manocha. Efficient and accurate B-rep generation of low degree sculptured solids using exact arithmetic. In *Proceedings of ACM Solid Modeling*, 1997. To appear. [kkm-sabrg-97]

8019 J. Keyser, S. Krishnan, and D. Manocha. Efficient B-rep generation of low degree sculptured solids using exact arithmetic. Technical Report 40, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, 1996. [kkm-ebrgl-96]

John Keyser. See also [7003].

8020 L. Khachiyan. Complexity of polytope volume computation. Report 90-59, DIMACS, Rutgers Univ., New Brunswick, NJ, 1990. [k-cpvc-90] *Keywords:* approximation, volume, convex. *Precedes:* k-cpvc-93.

8021 L. Khachiyan. Complexity of polytope volume computation. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 91–101. Springer-Verlag, 1993. [k-cpvc-93] *Keywords:* survey paper, approximation, volume, convex polytopes. *Succeeds:* k-cpvc-90.

8022 L. G. Khachiyan. An inequality for the volume of inscribed ellipsoids. *Discrete Comput. Geom.*, 5:219–222, 1990. [k-ivie-90]

8023 L. G. Khachiyan. Polynomial algorithm in linear programming. *U.S.S.R. Comput. Math. and Math. Phys.*, 20:53–72, 1980. [k-palp-80]

8024 S. Khanna, R. Motwani, and F. F. Yao. Approximation algorithms for the largest common subtree problem. Technical Report STAN-CS-95-1545, Dept. Comput. Sci., Stanford Univ., Stanford, CA, 1995. [kmy-aalcs-95]

8025 Sanjeev Khanna, S. Muthukrishnan, and Mike Paterson. On approximating rectangle tiling and packing. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 384–393, 1998. [kmp-artp-98]

S. Khanna. See also [284, 285].

M. Khatib. See also [7491].

8026 O. Khatib. Real-time obstacle avoidance for manipulators and mobile robots. *Internat. J. Robot. Res.*, 5:90–98, 1985. [k-rtoam-85]

A. A. Khokhar. See also [3889].

M. Khoshnevisan. See also [3224].

P. Khosla. See also [1367, 13285].

8027 A. G. Khovanskiĭ. *Fewnomials*. American Mathematical Society, Providence, RI, 1991. [k-f-91]

8028 S. Khuller and Y. Matias. A simple randomized sieve algorithm for the closest-pair problem. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 130–134, 1991. [km-srsac-91] *Precedes:* km-srsac-95. *Cites:* b-mdc-80, b-lbact-83, bs-dcms-76, c-faann-83, clr-ia-90, fks-sstwc-84, hns-psscp-88, m-iaca-89, ps-cgi-85, r-pa-76, sh-cpp-75, v-oaann-89, ZZZ.

8029 S. Khuller and Y. Matias. A simple randomized sieve algorithm for the closest-pair problem. *Inform. Comput.*, 118:34–37, 1995. [km-srsac-95] *Succeeds:* km-srsac-91.

8030 S. Khuller and Joseph S. B. Mitchell. On a triangle counting problem. *Inform. Process. Lett.*, 33(6):319–321, 1990. [km-tcp-90] *Keywords:* range query, counting.

8031 S. Khuller, B. Raghavachari, and N. Young. Low-degree spanning trees of small weight. *SIAM J. Comput.*, 25:355–368, 1996. [kry-ldsts-96]

8032 S. Khuller and Y. J. Sussmann. The capacitated k-center problem. In *Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 152–166. Springer-Verlag, 1996. [ks-ckcp-96]

S. Khuller. See also [274, 791–793, 1930, 5588, 6480].

8033 T. Kiang. Random fragmentation in 2 and 3 dimensions. *Z. Astrophys.*, 64:433–439, 1966. [k-rf23d-66]

8034 J. Kiefer. Sequential minimax search for a maximum. In *Proc. Amer. Math. Soc.*, volume 4, pages 502–506, 1955. [k-smsm-55]

D. H. Kieronska. See also [4249].

8035 H. A. Kierstead and W. T. Trotter. An extremal problem in recursive combinatorics. *Congr. Numer.*, 33:143–153, 1981. [kt-eprc-81]

H. Kieselwetter. See also [4838].

H. Kikuchi. See also [6947].

K. Kilakos. See also [5078, 5079].

8036 C. Kim. Digital convexity, straightness, and convex polygons. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-4:618–626, 1982. [k-dcscp-82]

8037 C. E. Kim. A linear time convex hull algorithm for simple polygons. Report TR-956, Univ. Maryland, Dept. Comput. Sci., Baltimore, MD, 1980. [k-ltcha-80]

8038 C. E. Kim and T. Anderson. Digital disks. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-6(5):639–645, 1984. [ka-dd-84] *Succeeds:* ka-dddcm-84.

8039 C. E. Kim and T. Anderson. Digital disks and a digital compactness measure. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 117–124, 1984. [ka-dddcm-84] *Precedes:* ka-dd-84.

8040 C. E. Kim and A. Rosenfeld. Digital straight lines and convexity of digital regions. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-4:149–153, 1982. [kr-dslcd-82] *Succeeds:* kr-dsc-81.

8041 C. E. Kim and A. Rosenfeld. Digital straightness and convexity. In *Proc. 13th Annu. ACM Sympos. Theory Comput.*, pages 80–89, 1981. [kr-dsc-81] *Precedes:* kr-dslcd-82.

8042 C. E. Kim and A. Rosenfeld. On the convexity of digital regions. In *Proc. 5th IEEE Internat. Conf. Pattern Recogn.*, pages 1010–1015, 1980. [kr-cdr-80]

C. E. Kim. See also [5553, 5554, 8363].

8043 D. Kim, L. J. Guibas, and S. Shin. Fast collision detection among multiple moving spheres. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 373–375, 1997. [kgs-fcdmm-97] *Cites:* b-cscnp-90, bgh-dsmd-97, fls-flp-63, glm-othsr-96, h-rarb-88, ho-smhsr-94, h-apstc-96, l-mmbc-66, m-pbpsm-96, mw-cdrca-88, ob-dtdos-79, r-pstmc-83, r-fhsdb-87, s-parud-90, st-smops-92, t-icdmg-90, hafg-ecpmm-95, wg-udbvh-92, wl-arrcd-85, ZZZ.

D. H. Kim. See also [3232].

8044 D. S. Kim, I. K. Hwang, and B. J. Park. Representing the Voronoi diagram of a simple polygon using rational quadratic beziér curves. *Comput. Aided Design*, 27(8):605–614, August 1995. [khp-rvdsp-95]

Jae-Hoon Kim. See also [8648].

Jong-Soo Kim. See also [2776].

J. Y. Kim. See also [13506].

K. H. Kim. See also [6482].

M. Kim. See also [1264].

M.-S. Kim. See also [1265–1272, 4849, 4850].

S. D. Kim. See also [1295].

8045 S. H. Kim, S. Y. Shin, and K. Y. Chwa. Efficient algorithms for solving diagonal visibility problems in a simple polygon. *Internat. J. Comput. Geom. Appl.*, 5:433–458, 1995. [ksc-easdv-95] *Keywords:* visibility, polygon, weak visibility, guard diagonal.

8046 S. K. Kim. A parallel algorithm for finding a maximum clique of a set of circular-arcs of a circle. Technical report, Univ. Washington, 1989. [k-pafmc-89]

8047 Sung Kwon Kim. Simple algorithms for orthogonal upward drawings of binary and ternary trees. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 115–120, 1995. [k-saoud-95]

8048 S. K. Kim and C. S. Shin. Computing the optimal bridge between two polygons. Research report TCSC-99-14, HKUST, 1999. [ks-cobbt-99] *Precedes:* ks-cobbt-01.

8049 S. K. Kim and C.-S. Shin. Computing the optimal bridge between two polygons. *Theory of Computing Systems*, 34:337–354, 2001. [ks-cobbt-01] *Succeeds:* ks-cobbt-99.

8050 S. K. Kim, C.-S. Shin, and T.-C. Yang. Labeling a rectilinear map with sliding labels. *Internat. J. Comput. Geom. Appl.*, 11:167–179, 2001. [ksy-lrmsl-01]

8051 S. K. Kim, C.-S. Shin, and T.-C. Yang. Placing two disks in a convex polygon. *Inform. Process. Lett.*, 73:33–39, 2000. [ksy-ptdcp-00]

S. K. Kim. See also [12156, 12157].

8052 Y. Kim and J. Aggarwal. Rectangular parallelepiped coding for solid modeling. *Internat. J. Robot. Autom.*, ??:77–85, 1986. [ka-rpcsm-86]

Y. Kim. See also [11708].

8053 D. Kimelman, B. Leban, T. Roth, and D. Zernik. Reduction of visual complexity in dynamic graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 218–225. Springer-Verlag, 1995. [klrz-rvcdg-95] *Keywords:* graph drawing, software visualization, system.

8054 D. Kimelman and G. Sangudi. Program visualization by integration of advanced compiler technology with configurable views. In J. J. Dongarra and B. Tourancheau, editors, *Proc. CNRS-NSF Collaboration Workshop on Environments and Tools for Parallel Scientific Computing, Saint Hilaire du Touvert, France*, pages 73–84. Elsevier Science, September, 1992. [ks-pviac-92] *Keywords:* graph drawing.

D. Kimelman. See also [10679].

B. B. Kimia. See also [11648].

8055 R. Kimmel, A. Amir, and A. M. Bruckstein. Finding shortest paths on graph surfaces. Technical Report CIS 9301, Technion IIT, Haifa, Israel, January 1993. [kab-fspgs-93]

8056 R. Kimmel and A. M. Bruckstein. Shape offsets via level sets. Technical report, Technion IIT, Haifa, Israel, July 1992. [kb-sols-92]

8057 R. Kimmel and A. M. Bruckstein. Shape offsets via level sets. *Comput. Aided Design*, 25(3):154–162, March 1993. [kb-sols-93]

8058 R. Kimmel and A. M. Bruckstein. Subpixel distance maps and weighted distance transforms. Technical Report CIS 9314, Technion IIT, Haifa, Israel, April 1993. [kb-spdmw-93]

8059 R. Kimmel and G. Sapiro. Shortening three dimensional curves via two dimensional flows. Technical Report CIS 9315, Technion IIT, Haifa, Israel, April 1993. [ks-stdct-93]

8060 R. Kimmel and J. A. Sethian. Fast Voronoi diagrams on triangulated surfaces. In *Abstracts 16th European Workshop Comput. Geom.*, pages 1–4. Ben-Gurion University of the Negev, 2000. [ks-fvdts-00]

R. Kimmel. See also [11648].

F. Kimura. See also [3229, 10013].

8061 J. Kincses. On polytopes cut by flats. *Discrete Comput. Geom.*, 14:287–294, 1995. [k-opcbf-95]

8062 M. Kindl, M. Shing, and N. Rowe. A stochastic approach to the weighted-region problem, I: The design of the path annealing algorithm. Technical report, Computer Science, U.S. Naval Postgraduate School, Monterey, CA, 1991. [ksr-sawrp1-91]

8063 M. Kindl, M. Shing, and N. Rowe. A stochastic approach to the weighted-region problem, II: Performance enhancement techniques and experimental results. Technical report, Computer Science, U.S. Naval Postgraduate School, Monterey, CA, 1991. [ksr-sawrp2-91]

D. King. See also [12704].

8064 V. King, S. Rao, and R. E. Tarjan. A faster deterministic maximum flow algorithm. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 157–164, 1992. [krt-fdmfa-92]

E. Kinnen. See also [3309].

8065 C. Kinsey. *Topology of Surfaces*. Springer-Verlag, New York, NY, 1993. [k-ts-93]

G. H. Kirby. See also [4251].

8066 Rob Kirby. Problems in low-dimensional topology. In *Geometric Topology: Proceedings of the 1993 Georgia International Topology Conference*, volume 2.2 of *AMS/IP Studies in Advanced Mathematics*, pages 35–473. American Mathematical Society and International Press, 1997. http://www.math.berkeley.edu/~kirby/problems.ps.gz. [k-pldt-97]

8067 R. C. Kirby and L. C. Siebenmann. Some basic theorems about topological manifolds. In *Foundational Essays on Topological Manifolds, Smoothings, and Triangulations*, Ann. Math. Studies, pages 79–152. Princeton University Press, Princeton, NJ, 1977. [ks-sbtat-77]

8068 P. Kirchberger. Über tschebyschefsche annäherungsmethoden. *Math. Ann.*, 57:509–540, 1903. [k-ta-03]

8069 David Kirk, editor. *Graphics Gems III*. Academic Press, Boston, MA, 1992. [k-gg3-92]

8070 D. Kirk and L. Lim. A dual-mode routing algorithm for an autonomous roving vehicle. *IEEE Trans. Aerosp. Electron. Syst.*, 6(3):290–294, 1970. [kl-dmraa-70] *Comments:* Oldest paper found on shortest paths among obstacles in the plane.

D. Kirk. See also [899, 1190].

8071 D. Kirkpatrick, S. Kosaraju, B. Mishra, and C. Yap. Quantitative Steinitz's theorems with applications to multifinger grasping. Technical Report 460, New York University, New York, NY, 1989. [kkmy-qstam-89]

8072 D. Kirkpatrick, B. Mishra, and C. K. Yap. Quantitative Steinitz's theorems with applications to multifingered grasping. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, pages 341–351, 1990. [kmy-qstam-90] *Precedes:* kmy-qstam-92.

8073 D. Kirkpatrick, B. Mishra, and C.-K. Yap. Quantitative Steinitz's theorems with applications to multifingered grasping. *Discrete Comput. Geom.*, 7:295–318, 1992. [kmy-qstam-92] *Succeeds:* kmy-qstam-90.

8074 David Kirkpatrick and Jack Snoeyink. Computing common tangents without a separating line. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 183–193. Springer-Verlag, 1995. [ks-cctws-95]

8075 D. Kirkpatrick and J. Snoeyink. Computing constrained shortest segments: Butterfly wingspans in logarithmic time. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 163–168, 1993. [ks-ccssb-93] *Cites:* bt-cst-91a, bcetsu-csts-91, bet-cwb-91, dk-fdpi-83, e-cedbt-85, ghs-citds-91, ks-tpscv-93, ol-mcp-81, ps-cgi-85, ZZZ.

8076 D. Kirkpatrick and J. Snoeyink. Tentative prune-and-search for computing fixed-points with applications to geometric computation. *Fundam. Inform.*, 22:353–370, 1995. [ks-tpscf-95]

8077 D. Kirkpatrick and J. Snoeyink. Tentative prune-and-search for computing Voronoi vertices. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 133–142, 1993. [ks-tpscv-93] *Cites:* bet-cwb-91, c-oaitd-89t, dk-fdpi-83, dk-dsppu-90, e-cedbt-85, em-feptd-85, e-dtdlp-91, ghs-citds-91, km-accvd-91, k-osps-83, ls-pptmc-87, m-spai3-91, mks-avdpt-93, m-ddlpc-91i, ol-mcp-81, ps-cgi-85, y-oavds-87, ZZZ.

8078 David Kirkpatrick, Jack Snoeyink, and Bettina Speckmann. Kinetic collision detection for simple polygons. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 322–330, 2000. [kss-kcdsp-00]

8079 D. Kirkpatrick and S. Wismath. Determining bar-representability for ordered weighted graphs. *Comput. Geom. Theory Appl.*, 6:99–122, 1996. [kw-dbrow-96]

D. Kirkpatrick. See also [973, 1887, 1889, 2308, 2320, 2432, 4264, 4265, 9343–9346].

8080 D. G. Kirkpatrick. A note on Delaunay and optimal triangulations. *Inform. Process. Lett.*, 10(3):127–128, 1980. [k-ndot-80] *Keywords:* triangulations, Delaunay triangulations, worst-case analysis.

8081 D. G. Kirkpatrick. An upper bound for sorting integers in restricted ranges. In *Proc. 18th Allerton Conf. Commun. Control Comput.*, 1980. [k-ubsir-80]

8082 D. G. Kirkpatrick. Efficient computation of continuous skeletons. In *Proc. 20th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 18–27, 1979. [k-eccs-79] *Keywords:* design of algorithms, Voronoi diagrams, merging, generalized Voronoi diagrams, minimum spanning trees.

8083 D. G. Kirkpatrick. Establishing order in planar subdivisions. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 316–321, 1987. [k-eops-87] *Keywords:* data structuring, construction, plane graph representation, subdivisions. *Precedes:* k-eops-88. *Cites:* ahu-daca-74, b-prcv-75, b-lbact-83, dl-ccvsp-79, egs-oplms-86, e-ga-79, f-slrpg-48, grs-kfcg-83, gs-pmgsc-83, ht-ept-74, k-osps-83, k-ss-73, lp-lppsi-77, lec-aptg-67, mp-fitcp-78, ps-dtram-80, ps-cgi-85, t-dfslg-72, tv-otats-86, ZZZ.

8084 D. G. Kirkpatrick. Establishing order in planar subdivisions. *Discrete Comput. Geom.*, 3:267–280, 1988. [k-eops-88] *Keywords:* data structuring, construction, plane graph representation, subdivisions. *Succeeds:* k-eops-87.

8085 D. G. Kirkpatrick. On the absence of local characterizations of minimum weight triangulations. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 16, 1989. [k-alcmw-89]

8086 D. G. Kirkpatrick. Optimal search in planar subdivisions. Technical Report 81-13, Dept. Comput. Sci., Univ. British Columbia, Vancouver, BC, 1981. [k-osps-81]

8087 D. G. Kirkpatrick. Optimal search in planar subdivisions. *SIAM J. Comput.*, 12(1):28–35, 1983. [k-osps-83] *Keywords:* data structuring, searching, subdivisions, plane graph representation, hierarchical representations.

8088 D. G. Kirkpatrick, M. M. Klawe, and R. E. Tarjan. Polygon triangulation in $O(n \log \log n)$ time with simple data structures. Technical Report 90-17, Dept. Comput. Sci., Univ. British Columbia, Vancouver, BC, June 1990. [kkt-ptots-90t] *Precedes:* kkt-ptots-90i.

8089 D. G. Kirkpatrick, M. M. Klawe, and R. E. Tarjan. Polygon triangulation in $O(n \log \log n)$ time with simple data structures. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 34–43, 1990. [kkt-ptots-90i] *Succeeds:* kkt-ptots-90t. *Cites:* bt-ladts-86, c-tpca-82, ci-tsc-84, c-ept-90, ctv-flvat-88i, egs-oplms-86, ffr-pscaa-83, fm-tspep-84, fntv-sltjs-88, ghlst-ltavs-87, gjpt-tsp-78, hm-ftsp-83, hmrt-sjslt-86, kk-cgig-81, k-osps-83, l-srvdd-81, ltl-mpsrp-89, tv-otats-88, t-prgc-80, t-cgm-86, t-ocspt-88, t-cm-88, ta-chapi-82, ZZZ.

8090 D. G. Kirkpatrick and J. D. Radke. A framework for computational morphology. In G. T. Toussaint, editor, *Computational Geometry*, pages 217–248. North-Holland, Amsterdam, Netherlands, 1985. [kr-fcm-85] *Keywords:* design of algorithms, construction, pattern recognition, shape.

8091 D. G. Kirkpatrick and R. Seidel. Output-size sensitive algorithms for finding maximal vectors. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 89–96, 1985. [ks-ossaf-85] *Keywords:* domination, divide-and-conquer, output dependent. *Cites:* ahu-daca-74, b-lbact-83, bs-dclet-78, bkst-anmsv-78, gbt-srtgp-84, ks-upcha-82t, ZZZ.

8092 D. G. Kirkpatrick and R. Seidel. The ultimate planar convex hull algorithm? In *Proc. 20th Allerton Conf. Commun. Control Comput.*, pages 35–42, 1982. [ks-upcha-82] *Precedes:* ks-upcha-86.

8093 D. G. Kirkpatrick and R. Seidel. The ultimate planar convex hull algorithm? *SIAM J. Comput.*, 15:287–299, 1986. [ks-upcha-86] *Keywords:* designing algorithms, convex hull, two-dimensional, divide-and-conquer, output-dependent, lower bounds, linear programming. *Succeeds:* ks-upcha-82. *Annote:* $O(n \log h)$ time.

8094 D. G. Kirkpatrick and R. Seidel. The ultimate planar convex hull algorithm. Technical Report 83-577, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, October 1982. [ks-upcha-82t]

8095 D. G. Kirkpatrick and S. K. Wismath. Weighted visibility graphs of bars and related flow problems. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 325–334. Springer-Verlag, 1989. [kw-wvgbr-89] *Succeeds:* w-cblsg-85.

D. G. Kirkpatrick. See also [69, 1945, 2433, 3698–3703, 4294–4298, 4717, 4718, 6215, 6216, 7973, 9199].

8096 S. Kirkpatrick, C. D. Gelatt, and M. P. Vecchi. Optimization by simulated annealing. *Science*, 220:671–680, 1983. [kgv-osa-83]

S. Kirkpatrick. See also [3743].

8097 L. M. Kirousis. Effectively labeling planar projections of polyhedra. Technical Report 89.08.88, Univ. of Patras, Greece, 1989. [k-elppp-89] *Keywords:* polyhedron, labeling, 2-dimensional image of a polyhedron.

8098 L. M. Kirousis and C. H. Papadimitriou. The complexity of recognizing polyhedral scenes. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 175–185, 1985. [kp-crps-85] *Precedes:* kp-crps-88.

8099 L. M. Kirousis and C. H. Papadimitriou. The complexity of recognizing polyhedral scenes. *J. Comput. Syst. Sci.*, 37:14–38, 1988. [kp-crps-88] *Succeeds:* kp-crps-85.

Carsten Kirstein. See also [13457].

8100 N. Kiryai, Y. Eldar, and A. M. Bruckstein. A probabilistic Hough transform. *Pattern Recogn.*, 24(4):303–316, 1991. [keb-pht-91]

8101 N. Kiryati and A. M. Bruckstein. What's in a set of points. Technical Report 605, Israel Inst. of Tech., Haifa, Israel, January 1990. [kb-wsp-90]

8102 L. Kish. *Survey Sampling*. John Wiley & Sons, New York, NY, 1965. [k-ss-65]

8103 E. Kishon, T. Hastie, and H. Wolfson. 3-d curve matching using splines. *J. Robot. Syst.*, 8:723–743, 1991. [khw-3dcmu-91]

8104 L. Kitchen and A. Rosenfeld. Gray level corner detection. *Pattern Rec. Lett.*, 1:95–102, 1982. [kr-glcd-82]

8105 N. Kitsios and A. Tsakalidis. Space reduction and an extension for a hidden line elimination algorithm. *Comput. Geom. Theory Appl.*, 6:397–404, 1996. [kt-srehl-96]

J. Kittler. See also [4007].

Y. Kiyokane. See also [10034].

T. Kiyono. See also [7285].

8106 M. S. Klamkin and A. Liu. Polyominoes on the infinite checkerboard. *J. Combin. Theory Ser. A*, 28:7–16, 1980. [kl-pic-80]

G. A. Klanderman. See also [7258].

8107 A. Klapper. A lower bound on the complexity of the convex hull problem for simple polyhedra. *Inform. Process. Lett.*, 25:159–161, 1987. [k-lbcch-87]

A. Klapper. See also [1536].

Gerhard Klär. See also [7913].

8108 D. A. Klarner. Polyominoes. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 12, pages 225–242. CRC Press LLC, Boca Raton, FL, 1997. [k-p-97]

E. Klassen. See also [12227].

8109 R. Victor Klassen. Intersecting parametric cubic curves by midpoint subdivision. In Paul Heckbert, editor, *Graphics Gems IV*, pages 261–277. Academic Press, Boston, MA, 1994. [k-ipccm-94] *Keywords:* Bezier curve, curve intersection, curve subdivision. *Annote:* Provides code to find the intersection points of planar cubic curves. Contains C++ code.

8110 Gunnar W. Klau and Petra Mutzel. Optimal compaction of orthogonal grid drawings. Technical Report MPI-I-98-1-031, Max Planck Institut für Informatik, Saarbrücken, Germany, December 1998. [km-ocogd-98] *URL:* http://data.mpi-sb.mpg.de/internet/reports.nsf/NumberView/1998-1-031.

8111 G. W. Klau and P. Mutzel. Optimal compaction of orthogonal grid drawings. In G. Cornuejols, R. E. Burkard, and G. J. Woeginger, editors, *Integer Programming and Combinatorial Optimization*, volume 1610 of *Lecture Notes Comput. Sci.*, pages 304–319. Springer-Verlag, 1999. [km-ocogd-99]

8112 Gunnar W. Klau and Petra Mutzel. Quasi-orthogonal drawing of planar graphs. Technical Report MPI-I-98-1-013, Max Planck Institut für Informatik, Saarbrücken, Germany, 1998. [km-qodpg-98]

8113 M. Klawe. A simple linear time algorithm for concave one-dimensional dynamic programming. Technical Report 89-16, Univ. Britisch Columbia, Vancouver, BC, 1989. [k-sltac-89]

8114 M. Klawe and D. Kleitman. An almost linear time algorithm for generalized matrix. Technical Report RJ6275, IBM Almaden Research Center, 1988. [kk-altag-88]

8115 M. Klawe, M. Paterson, and N. Pippenger. Inversions with $n2^{1+\Omega(1+\sqrt{\log n})}$ transpositions at the median. unpublished manuscript, 1982. [kpp-nrvu-82]

8116 M. M. Klawe. Superlinear bounds on matrix searching. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 485–493, 1990. [k-sbms-90]

8117 M. M. Klawe and D. J. Kleitman. An almost linear time algorithm for generalized matrix searching. *SIAM J. Discrete Math.*, 3(1):81–97, 1990. [kk-altag-90]

M. M. Klawe. See also [294–298, 7661, 8088, 8089].

8118 M. Klazar. A general upper bound in extremal theory of sequences. *Comment. Math. Univ. Carol.*, 33:737–746, 1992. [k-gubet-92]

8119 M. Klazar. A linear upper bound in extremal theory of sequences. *J. Combin. Theory Ser. A*, 68:454–464, 1994. [k-lubet-94]

8120 M. Klazar. *Combinatorial Aspects of Davenport–Schinzel Sequences*. Ph.D. thesis, Department of Applied Mathematics, Charles University, Prague, Czech Republic, 1995. [k-cadss-95] *Keywords:* doctoral thesis.

8121 M. Klazar. Two results on a partial ordering of finite sequences. *Comment. Math. Univ. Carol.*, 34:667–675, 1993. [k-trpo-93]

8122 M. Klazar and P. Valtr. Generalized Davenport–Schinzel sequences. *Combinatorica*, 14:463–476, 1994. [kv-gdss-94]

M. Klazar. See also [84].

8123 G. Klebe and T. Mietzener. A fast and efficient method to generate biologically relevant conformations. *J. Computer Aided Molecular Design*, 8:583–606, 1994. [km-femgb-94]

8124 V. Klee. A linear-time algorithm that finds all local minima among triangles containing a given convex polygon. In *Proc. 5th Sympos. Operations Res.*, page ??, 1980. [k-ltatf-80]

8125 V. Klee. Can the measure of $\bigcup_1^n [a_i, b_i]$ be computed in less than $O(n \log n)$ steps? *Amer. Math. Monthly*, 84:284–285, 1977. [k-cmbbc-77] *Precedes:* oy-nubkm-88.

8126 V. Klee. Convex polytopes and linear programming. In *Proc. IBM Sci. Comput. Symp.: Combinatorial Problems*, pages 123–158. IBM, 1966. [k-cplp-66]

8127 Victor Klee. Facet-centroids and volume minimization. *Studia Scientiarum Mathematicarum Hungarica*, 21:143–147, 1986. Fejes Tóth Festschrift. [k-fcvm-86]

8128 Victor Klee. Is every polygonal region illuminable from some point? *Amer. Math. Monthly*, 76:180, 1969. [k-iepri-69]

8129 V. Klee. On the complexity of d-dimensional Voronoi diagrams. *Archiv der Mathematik*, 34:75–80, 1980. [k-cddvd-80]

8130 V. Klee. Polytope pairs and their relationship to linear programming. *Acta Math.*, 133:1–25, 1974. [k-pptrl-74]

8131 V. Klee. The critical set of a convex body. *Amer. J. Math.*, 75:178–188, 1953. [k-cscb-53]

8132 V. Klee. *Viewers Manual to accompany the film shapes of the futur e - some unsolved problems in geometry, Part II: Three Dimensions*. Modern Learning Aids, 1972. [k-vmafs-72]

8133 V. Klee and P. Kleinschmidt. Geometry of the Gass-Saaty parametric cost LP algorithm. *Discrete Comput. Geom.*, 5:13–26, 1990. [kk-ggspc-90]

8134 V. Klee and P. Kleinschmidt. The d-steps conjecture and its relatives. *Math. Oper. Res.*, 12:718–755, 1987. [kk-dscir-87]

8135 V. Klee and M. C. Laskowski. Finding the smallest triangles containing a given convex polygon. *J. Algorithms*, 6:359–375, 1985. [kl-fstcg-85]

8136 V. Klee, T. Lewis, and B. von Hohenbalken. Apollonius revisited: Supporting spheres for sundered systems. *Discrete Comput. Geom.*, 18:385–395, 1997. [klh-arsss-97] *Cites:* g-sih-69, ks-dpbst-58, s-scpe-80.

8137 V. Klee and G. J. Minty. How good is the simplex algorithm? In O. Shisha, editor, *Inequalities III*, pages 159–175. Academic Press, 1972. [km-hgisa-72]

8138 Victor Klee and Stan Wagon. *Old and New Unsolved Problems in Plane Geometry*. Mathematical Association of America, 1991. [kw-onupp-91]

8139 V. Klee and D. Walkup. The d-step conjecture for polyhedra of dimension $d < 6$. *Acta Math.*, 133:53–78, ?? [kw-dscpd-??]

V. Klee. See also [3722, 3740, 6294, 6297–6302, 6544].

V. L. Klee. See also [2255].

8140 S. Kleiman and D. Laksov. Schubert calculus. *Amer. Math. Monthly*, 79:1061–1082, 1972. [kl-sc-72]

8141 F. Klein. *Elementary Mathematics from an Advanced Standpoint: Geometry*. Macmillan, New York, NY, 1939. [k-emasg-39]

L. Klein. See also [778].

8142 Philip Klein and Robert E. Tarjan. A randomized linear-time algorithm for finding minimum spanning trees. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, 1994. [kt-rltaf-94]

Philip Klein. See also [885].

8143 P. N. Klein and J. H. Reif. An efficient parallel algorithm for planarity. *J. Comput. Syst. Sci.*, 37(2):190–246, 1988. [kr-epap-88] *Keywords:* graph drawing.

8144 P. N. Klein and S. Sairam. A parallel randomized approximation scheme for shortest paths. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 750–758, 1992. [ks-prass-92]

8145 P. N. Klein and S. Subramanian. A fully dynamic approximation scheme for all-pairs shortest paths in planar graphs. In *Proc. 1993 Workshop Algorithms Data Struct.*, pages 442–451, 1993. [ks-fdasa-93]

P. N. Klein. See also [7806].

8146 Rolf Klein. Abstract Voronoi diagrams and their applications. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 148–157. Springer-Verlag, 1988. [k-avdta-88] *Comments:* extended abstract. *Succeeds:* k-vdmm-87. *Annote:* 4th Intern. Workshop Comput. Geom.

8147 Rolf Klein. *Algorithmische Geometrie*. Addison-Wesley, Bonn, 1997. [k-ag-97] *URL:* http://www.oldenbourg.de/cgi-bin/rotitel?T=24382. *Keywords:* textbook, in German.

8148 Rolf Klein. Combinatorial properties of abstract Voronoi diagrams. In M. Nagl, editor, *Proc. Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 411 of *Lecture Notes Comput. Sci.*, pages 356–369. Springer-Verlag, 1989. [k-cpavd-89]

8149 Rolf Klein. *Concrete and Abstract Voronoi Diagrams*, volume 400 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1989. [k-cavd-89] *ISBN:* 3-540-52055-4. *Keywords:* book.

8150 Rolf Klein. Das Sweep-Verfahren. In Thomas Ottmann, editor, *Prinzipien des Algorithmenentwurfs*, pages 67–89. Spektrum Akademischer Verlag, 1998. [k-dsv-98] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/sweep.pdf. *Cites:* b-oafsi-95, b-pp-85, bo-arcgi-79, ce-oails-92, hns-psscp-88, k-ag-97, m-mdscg-84, ps-vvasq-91, ZZZ. *Annote:* The book comes with a CD-ROM which contains, for each chapter, a lecture held by the author of that chapter.

8151 Rolf Klein. Direct dominance of points. Technical Report 154, Institut für Angewandte Informatik und Formale Beschreibungsverfahren, Universität Karlsruhe, 1985. [k-ddp-85]

8152 Rolf Klein. Moving along a street. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 123–140. Springer-Verlag, 1991. [k-mas-91] *Precedes:* k-wusbd-91. *Annote:* 7th Intern. Workshop Comput. Geom.

8153 Rolf Klein. Voronoi diagrams in the Moscow metric. Technical Report 7, Inst. Inform., Univ. Freiburg, 1987. [k-vdmm-87] *Precedes:* k-vdmm-89.

8154 Rolf Klein. Voronoi diagrams in the moscow metric. In *Proc. Graph-Theoretic Concepts in Computer Science. Proceedings.*, volume 344 of *Lecture Notes Comput. Sci.*, pages 434–441. Springer-Verlag, 1989. [k-vdmm-89] *Succeeds:* k-vdmm-87.

8155 Rolf Klein. Walking an unknown street with bounded detour. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 304–313, 1991. [k-wusbd-91] *Succeeds:* k-mas-91. *Precedes:* k-wusbd-92t.

8156 Rolf Klein. Walking an unknown street with bounded detour. Technical Report 122, Department of Computer Science, FernUniversität Hagen, Germany, 1992. [k-wusbd-92t] *Succeeds:* k-wusbd-91. *Precedes:* k-wusbd-92.

8157 Rolf Klein. Walking an unknown street with bounded detour. *Comput. Geom. Theory Appl.*, 1:325–351, 1992. [k-wusbd-92] *Succeeds:* k-wusbd-92t.

8158 Rolf Klein and Andrzej Lingas. A linear-time randomized algorithm for the bounded Voronoi diagram of a simple polygon. Technical Report 150, Department of Computer Science, FernUniversität Hagen, Germany, 1993. [kl-ltrab-93t] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr150.pdf. *Succeeds:* lk-ltrab-91. *Precedes:* kl-ltrab-93.

8159 Rolf Klein and Andrzej Lingas. A linear-time randomized algorithm for the bounded Voronoi diagram of a simple polygon. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 124–132, 1993. [kl-ltrab-93] *Succeeds:* kl-ltrab-93t. *Precedes:* kl-ltrab-96. *Cites:* agss-ltacv-89, a-vds-88, c-tsplt-90i, c-bvdcp-86, c-cdt-87, dl-cvdrp-91, k-cavd-89, kl-mpsp-92, kl-cgdts-92, ll-gdtpg-86, l-hmdp-87, ll-fagt-90, l-vdbsd-89, ps-cgi-85, s-cdtvd-88, s-sfira-91, ws-oacdt-87, ZZZ.

8160 Rolf Klein and Andrzej Lingas. A linear-time randomized algorithm for the bounded Voronoi diagram of a simple polygon. *Internat. J. Comput. Geom. Appl.*, 6:263–278, 1996. [kl-ltrab-96] *Succeeds:* kl-ltrab-93.

8161 Rolf Klein and Andrzej Lingas. A note on generalizations of Chew's algorithm for the Voronoi diagram of a convex polygon. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 370–374, 1993. [kl-ngcav-93] *Cites:* a-vds-88, c-bvdcp-86, d-rysoa-92, dl-cvdrp-91, e-acg-87, gs-pmgsc-85, kl-ltrab-93, k-eccs-79, k-cavd-89, kl-havdl-93, ps-cgi-85, ya-mpce-89, s-barga-91, agss-ltacv-89, ZZZ.

8162 Rolf Klein and Andrzej Lingas. Fast skeleton construction. In *Proc. 3rd Annu. European Sympos. Algorithms*, volume 979 of *Lecture Notes Comput. Sci.*, pages 582–595. Springer-Verlag, 1995. [kl-fsc-95]

8163 Rolf Klein and Andrzej Lingas. Hamiltonian abstract Voronoi diagrams in linear time. manuscript, 1993. [kl-havdl-93] *Precedes:* kl-havdl-94c.

8164 Rolf Klein and Andrzej Lingas. Hamiltonian abstract Voronoi diagrams in linear time. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 11–19. Springer-Verlag, 1994. [kl-havdl-94] *Succeeds:* kl-havdl-94c.

8165 Rolf Klein and Andrzej Lingas. Hamiltonian abstract Voronoi diagrams in linear time. In *Abstracts 10th European Workshop Comput. Geom.*, pages 1–4. Universidad de Cantabria, Santander, 1994. [kl-havdl-94c] *Succeeds:* kl-havdl-93. *Precedes:* kl-havdl-94.

8166 Rolf Klein and Andrzej Lingas. Manhattonian proximity in a simple polygon. Technical Report 124, Department of Computer Science, FernUniversität Hagen, Germany, 1992. [kl-mpsp-92t] *Precedes:* kl-mpsp-92.

8167 Rolf Klein and Andrzej Lingas. Manhattonian proximity in a simple polygon. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 312–319, 1992. [kl-mpsp-92] *Succeeds:* kl-mpsp-92t. *Precedes:* kl-mpsp-95. *Cites:* agss-ltacv-89, a-gvdps-87, a-vds-88, c-tsplt-90i, c-cdt-87, cf-shvd-91, dk-bsbav-91, dl-cvdrp-91, egs-oplms-86, f-savd-87, k-cavd-89, kmm-cavd2-90, l-hmdp-87, ll-fagt-90, l-vdbsd-89, lk-ltrab-91, ps-cgi-85, s-cdtvd-88, s-mplbc-85, sh-cpp-75, ws-oacdt-87, ZZZ.

8168 Rolf Klein and Andrzej Lingas. Manhattonian proximity in a simple polygon. *Internat. J. Comput. Geom. Appl.*, 5:53–74, 1995. [kl-mpsp-95] *Keywords:* Voronoi diagram, simple polygon, computational geometry. *Succeeds:* kl-mpsp-92.

8169 Rolf Klein and Andrzej Lingas. On computing the generalized Delaunay triangulation of a simple polygon. Manuscript, Lund University, Lund, Sweden, 1992. [kl-cgdts-92]

8170 Rolf Klein and Lihong Ma. Wrapping ellipses around a convex skeleton. Technical Report 132, Fachbereich Informatik, FernUniversität Hagen, Germany, 1992. [km-weacs-92] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr132.pdf. *Precedes:* km-weacs-95.

8171 Rolf Klein and Lihong Ma. Wrapping ellipses around a convex skeleton. *Internat. J. Comput. Math.*, 55:173–181, 1995. [km-weacs-95] *Succeeds:* km-weacs-92.

8172 Rolf Klein, Kurt Mehlhorn, and Stefan Meiser. On the construction of abstract Voronoi diagrams. In J. Buchmann, H. Ganzinger, and W. J. Paul, editors, *Festschrift zum 60. Geburtstag von Günter Hotz*, Teubner-Texte zur Informatik, pages 283–308. B. G. Teubner, 1992. [kmm-cavd-92]

8173 Rolf Klein, Kurt Mehlhorn, and Stefan Meiser. On the construction of abstract Voronoi diagrams II. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 138–154. Springer-Verlag, 1990. [kmm-cavd2-90] *Precedes:* kmm-ricav-93.

8174 Rolf Klein, Kurt Mehlhorn, and Stefan Meiser. Randomized incremental construction of abstract Voronoi diagrams. Technical Report MPI-I-93-105, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [kmm-ricav-93] *Succeeds:* kmm-cavd2-90. *Precedes:* kmm-ricav-93a.

8175 Rolf Klein, Kurt Mehlhorn, and Stefan Meiser. Randomized incremental construction of abstract Voronoi diagrams. *Comput. Geom. Theory Appl.*, 3(3):157–184, 1993. [kmm-ricav-93a] *Succeeds:* kmm-ricav-93.

8176 Rolf Klein, Otto Nurmi, Thomas Ottmann, and Derick Wood. A dynamic fixed windowing problem. Report CS-87-56, Data Struct. Group, Dept. Comput. Sci., Univ. Waterloo, Waterloo, ON, 1987. [know-dfwp-87] *Precedes:* know-odsfw-86.

8177 Rolf Klein, Otto Nurmi, Thomas Ottmann, and Derick Wood. A dynamic fixed windowing problem. *Algorithmica*, 4:535–550, 1989. [know-dfwp-89] *Keywords:* points, range searching, polygons, two-dimensional, dynamizing data structures, priority search trees. *Succeeds:* know-odsfw-86.

8178 Rolf Klein, Otto Nurmi, Thomas Ottmann, and Derick Wood. Optimal dynamic solutions for fixed windowing problems. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 109–115, 1986. [know-odsfw-86] *Succeeds:* know-dfwp-87. *Precedes:* know-dfwp-89. *Cites:* asss-moacp-85, b-sbbtd-72, bs-dspls-80, ce-oscpr-85, g-dcopi-84, m-pst-85, m-pst-85, o-ddds-83, ol-tgmdd-81, t-ubstr-83, lw-ddsp-80, ZZZ.

8179 Rolf Klein, Raimond Seidel, and Seth Teller, editors. *Computational Geometry*, volume 168 of *Dagstuhl-Seminar-Report*. Internat. Begegnungs- und Forschungszentrum für Informatik, Schloss Dagstuhl, Germany, 1997. [kst-cg-97] *URL:* ftp://ftp.dagstuhl.de/pub/Reports/97/9707.ps.gz.

8180 Rolf Klein and Derick Wood. A tight upper bound for the length of AVL trees. *Theoret. Comput. Sci.*, 72:251–264, 1990. [kw-tubla-90]

8181 Rolf Klein and Derick Wood. On binary trees. In *Information Processing 89, 11th World Computer Congress*, pages 449–454, 1989. [kw-bt-89]

8182 Rolf Klein and Derick Wood. On the maximum path length of AVL-trees. In *Proc. 13th Colloquium on Trees in Algebra and Programming*, volume 299 of *Lecture Notes Comput. Sci.*, pages 16–27. Springer-Verlag, 1988. [kw-mplat-88]

8183 Rolf Klein and Derick Wood. On the path length of binary trees. In *Proc. 3rd International Conference on Foundations of Data Organization and Algorithms*, volume 367 of *Lecture Notes Comput. Sci.*, pages 128–136. Springer-Verlag, 1989. [kw-plbt-89p] *Precedes:* kw-plbt-89.

8184 Rolf Klein and Derick Wood. On the path length of binary trees. *J. ACM*, 36(2):280–289, 1989. [kw-plbt-89] *Succeeds:* kw-plbt-89p.

8185 Rolf Klein and Derick Wood. Voronoi diagrams based on general metrics in the plane. In R. Cori and M. Wirsing, editors, *Proc. 5th Sympos. Theoret. Aspects Comput. Sci.*, volume 294 of *Lecture Notes Comput. Sci.*, pages 281–291. Springer-Verlag, 1988. [kw-vdbgm-88]

Rolf Klein. See also [34–40, 369–372, 670, 1110, 1111, 3911–3916, 6136, 6941, 6942, 7036–7044, 7289–7318, 8859].

S. T. Klein. See also [2256].

W. Klein. See also [13762].

8186 J. Kleinberg. Two algorithms for nearest-neighbor search in high dimension. In *Proc. 29th Annu. ACM Sympos. Theory Comput.*, pages 599–608, 1997. [k-tanns-97]

8187 Jon Kleinberg, Christos Papadimitriou, and Prabhakar Raghavan. Segmentation problems. In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, pages 473–482, 1998. [kpr-sp-98]

Jon Kleinberg. See also [1758].

8188 Jon Michael Kleinberg. On-line algorithms for robot navigation and server problems. Master's thesis, MIT, Dept. of Electr. Engineering and Comp. Science, 1994. [k-olarn-94] *Keywords:* master thesis.

8189 Jon M. Kleinberg. On-line search in a simple polygon. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 8–15, 1994. [k-olssp-94] *Comments:* Contains, among other things, a 2.83-competitive algorithm for searching in streets (but not 1.62-competitive as said in the abstract).

8190 J. M. Kleinberg. The localization problem for mobile robots. In *Proc. 35th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 521–531, 1994. [k-lpmr-94]

J. M. Kleinberg. See also [3157, 3158, 7251–7253, 7259].

P. Kleinschmidt. See also [6273, 8133, 8134].

D. Kleitman. See also [532, 543, 5514, 5515, 5680, 7661, 8114].

D. J. Kleitman. See also [533, 544, 545, 844, 845, 2606, 2777, 4456, 5988, 7674, 8117].

8191 K. S. Klenk. Rectilinear shortest path queries among weighted obstacles. Master's thesis, University of Notre Dame, November 1994. [k-rspqw-94] *Keywords:* master thesis.

K. S. Klenk. See also [1021, 3046, 3053–3057].

8192 R. Klette. On the approximation of convex hulls of finite grid point sets. *Pattern Recogn. Lett.*, 2:19–22, 1983. [k-achfg-83]

8193 R. Klette and E. V. Krishnamurthy. Algorithms for testing convexity of digital polygons. *Comput. Graph. Image Process.*, 16:177–184, 1981. [kk-atcdp-81]

R. Klette. See also [7185, 13292].

8194 K. Klimaszewski and T. Sederberg. Faster ray-tracing using adaptive grids. *IEEE Comput. Graph. Appl.*, ??:42–51, jan-feb 1997. [ks-frtua-97]

K. S. Klimaszewski. See also [7074].

G. Klincsek. See also [3307].

8195 G. T. Klincsek. Minimal triangulations of polygonal domains. *Discrete Math.*, 9:121–123, 1980. [k-mtpd-80]

8196 W. Klingenberg. *Eine Vorlesung über Differentialgeometrie*. Springer-Verlag, Berlin, 1973. [k-vd-73]

8197 A. Klinger and C. R. Dyer. Experiments on pictures using regular decompositions. *Comput. Graph. Image Process.*, 5:68–105, 1976. [kd-epurd-76]

A. Klinger. See also [12806].

Bettina Klinz. See also [2594].

8198 D. A. Klip. The completeness issue of the zero curve tracing algorithm for the isolation of the zeros of an analytic function defined on a disk. Report ??, Dept. Comput. Inform. Sci., Univ. Alabama Birmingham, Birmingham, AL, 1985. [k-cizct-85]

8199 J. Klosowski, M. Held, Joseph S. B. Mitchell, K. Zikan, and H. Sowizral. Efficient collision detection using bounding volume hierarchies of k-DOPs. *IEEE Trans. Visualizat. Comput. Graph.*, 4(1):21–36, 1998. [khmsz-ecdubv-98] *Succeeds:* hkm-rtcdm-96.

J. Klosowski. See also [6801].

J. T. Klosowski. See also [3175, 6802–6805].

M. Klugerman. See also [844, 845].

J. W. Klumper. See also [6310].

Christian Knauer. See also [591, 592, 2403, 2404].

8200 Petra Knieper and Anand Srivastav. Sequential and parallel construction of $(1/r)$-approximations. In *Abstracts 12th European Workshop Comput. Geom.*, pages 123–125. Universität Münster, 1996. [ks-spc1a-96] *Cites:* ZZZ.

8201 A. Knight. Implementation of algorithms in a computational geometry workbench. Master's thesis, School Comput. Sci., Carleton Univ., Ottawa, ON, April 1990. [k-iacgw-90] *Keywords:* master thesis.

8202 A. Knight, J. May, M. McAffer, T. Nguyen, and J.-R. Sack. A workbench for computational geometry (wocg). In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, page 370, 1990. [kmmns-cgw-90] *Cites:* ZZZ.

A. Knight. See also [4968, 4969, 6012].

L. Knipping. See also [189, 13416].

O. Knop. See also [9524].

8203 G. Knott and H. Flanders. Problem 84-1: determine if a polygon is clockwise or counterclockwise. *J. Algorithms*, 5:591, 1984. [kf-p841d-84]

8204 G. Knott and E. Jou. A program to determine whether two line segments intersect. Technical Report CAR-TR-306, CS-TR-1884, DCR-86-05557, Dept. Comput. Sci., Univ. Maryland College Park, College Park, MD, August 1987. [kj-pdwtl-87]

G. D. Knott. See also [7765].

8205 D. Knuth. *The art of computer programming.* Addison-Wesley, 1973. [k-acp-73]

D. Knuth. See also [6403].

8206 Donald E. Knuth. *Axioms and Hulls*, volume 606 of *Lecture Notes Comput. Sci.* Springer-Verlag, Heidelberg, Germany, 1992. [k-ah-92]

8207 D. E. Knuth. Computer drawn flowcharts. *Commun. ACM*, 6, 1963. [k-cdf-63] *Keywords:* graph drawing.

8208 D. E. Knuth. *Fundamental Algorithms*, volume 1 of *The Art of Computer Programming*. Addison-Wesley, Reading, MA, 1st edition, 1968. [k-fa-68]

8209 D. E. Knuth. *Fundamental Algorithms*, volume 1 of *The Art of Computer Programming*. Addison-Wesley, Reading, MA, 2nd edition, 1973. [k-fa-73]

8210 D. E. Knuth. *Fundamental Algorithms*, volume 1 of *The Art of Computer Programming*. Addison-Wesley, Reading, MA, 3rd edition, 1997. [k-fa-97]

8211 D. E. Knuth. Semantics of context-free languages. *Math. Syst. Theory*, 2:127–145, 1968. [k-scfl-68]

8212 D. E. Knuth. *Seminumerical Algorithms*, volume 2 of *The Art of Computer Programming*. Addison-Wesley, Reading, MA, 1st edition, 1969. [k-sa-69]

8213 D. E. Knuth. *Seminumerical Algorithms*, volume 2 of *The Art of Computer Programming*. Addison-Wesley, Reading, MA, 2nd edition, 1981. [k-sa-81]

8214 D. E. Knuth. *Seminumerical Algorithms*, volume 2 of *The Art of Computer Programming*. Addison-Wesley, Reading, MA, 3rd edition, 1998. [k-sa-98]

8215 D. E. Knuth. *Sorting and Searching*, volume 3 of *The Art of Computer Programming*. Addison-Wesley, Reading, MA, 1973. [k-ss-73]

8216 D. E. Knuth. *The Stanford GraphBase: A Platform for Combinatorial Computing.* Addison-Wesley, Reading, MA, 1993. [k-sg-93]

8217 D. E. Knuth and A. Raghunathan. The problem of compatible representatives. *SIAM J. Discrete Math.*, 5:422–427, 1992. [kr-pcr-92]

D. E. Knuth. See also [6237, 6238, 6261, 6404, 6405, 7593].

K. Ko. See also [3250].

8218 K.-I. Ko. *Complexity Theory of Real Functions*. Birkhäuser, Boston, 1991. [k-ctrf-91]

8219 M. T. Ko and Y. T. Ching. A linear time algorithm for the weighted rectilinear 2-center problem. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 75–82, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [kc-ltawr-89]

8220 M. T. Ko and Y. T. Ching. Linear time algorithms for the weighted tailored 2-partition problem and the weighted rectilinear 2-center problem under L_∞-distance. *Discrete Appl. Math.*, 40:397–410, 1992. [kc-ltawt-92]

8221 M. T. Ko and R. C. T. Lee. On weighted rectilinear 2-center and 3-center problems. *Inform. Sci.*, 54:169–190, 1991. [kl-wrccp-91]

8222 M. T. Ko, R. C. T. Lee, and J. S. Chang. An optimal approximation algorithm for the rectilinear m-center problem. *Algorithmica*, 5:341–352, 1990. [klc-oaarm-90]

8223 M. T. Ko, R. C. T. Lee, and J. S. Chang. Rectilinear m-center problem. In *Proc. National Computer Symp.*, pages 325–329, 1987. [klc-rmcp-87]

M. T. Ko. See also [3219, 6964].

K. Kobayashi. See also [6632].

8224 S. Kobayashi. On conjugate and cut loci. In S. S. Chern, editor, *Studies in Global Geometry and Analysis*, pages 96–122. Mathematical Association of America, 1967. [k-ccl-67] *Keywords:* shortest paths.

8225 L. Kobbelt. A fast dot-product algorithm with minimal rounding errors. *Computing*, 52:355–369, 1994. [k-fdpam-94]

8226 L. Kobbelt. Iterative Berechnung metrischer Eigenschaften. Master's thesis, Universität Karlsruhe, Karlsruhe, Germany, ?? Thesis. [k-ibme-] *Keywords:* master thesis.

8227 L. Kobbelt. Robust and efficient evaluation of functionals on parametric surfaces. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 376–378, 1997. [k-reefp-97] *Cites:* b-wdwnb-90, bs-aulbr-66, bs-nqe-67, d-fptea-71, g-igar-96, f-pcg-93, f-riga-96, fv-eeacg-93, k-ibme-, k-fdpam-94, km-catp-81, p-pfpan-92, s-apfpa-96, s-aeqes-82, s-eidnm-83, s-acmi-71, ts-cggps-80, ZZZ.

8228 L. Kobbelt, S. Campagna, J. Vorsatz, and H.-P. Seidel. Interactive multi-resolution modeling on arbitrary meshes. In *Proc. SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, pages 105–114, July 1998. [kcvs-imrma-98]

L. Kobbelt. See also [2668].

J. Kobler. See also [895].

S. Kobourov. See also [4486, 4487].

8229 M. W. Koch and R. L. Kashyap. Matching polygon fragments. *Pattern Recogn. Lett.*, 10:297–308, 1989. [kk-mpf-89] *Keywords:* shape matching.

P. Koch. See also [890].

R. Kochar. See also [501, 502].

8230 P. Kochevar. An application of multivariate B-splines to computer-aided geometric design. *Rocky Mountain J. Math.*, 14(1):159–175, 1984. [k-ambsc-84]

8231 D. E. Koditschek. Exact robot navigation by means of potential functions: some topological considerations. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1–6, 1987. [k-ernmp-87]

8232 P. Koebe. Kontaktprobleme der konformen Abbildung. *Ber. Verh. Sächs. Akademie der Wissenschaften Leipzig, Math.-Phys. Klasse*, 88:141–164, 1936. [k-kdka-36]

8233 J. Koenderink. *Solid Shape*. MIT Press, 1989. [k-ss-89]

8234 J. J. Koenderink and A. J. van Doorn. The internal representation of solid shape with respect to vision. *Biological Cybernetics*, 32:211–216, 1979. [kd-irssr-79]

8235 J. J. Koenderink and A. J. van Doorn. The singularities of the visual mapping. *Biological Cybernetics*, 24:51–59, 1976. [kd-svm-76]

T. F. Koetzle. See also [67, 1845].

P. Kofakis. See also [2207].

8236 H. Koike. An application of three dimensional visualization to object-oriented programming. In *Proc. Advanced Visual Interfaces*, volume 36 of *World Scientific Series in Computer Science*, pages 180–192, 1992. [k-atdvo-92] *Keywords:* graph drawing.

8237 P. Koistinen, M. Tamminen, and H. Samet. Viewing solid models by bintree conversion. In C. E. Vandoni, editor, *Proceedings of the EUROGRAPHICS'85 Conference*, pages 147–157, Amsterdam, 1985. North-Holland. [kts-vsmbc-85]

8238 V. Koivune and S. Kassam. Nearest neighbor filters for multivariate data. In *IEEE Workshop on Nonlinear Signal and Image Processing*, 1995. [kk-nnfmd-95]

I. Kojima. See also [10249]

I. Kokubo. See also [4627].

C. Kolb. See also [10757].

A. Kolen. See also [2784].

8239 M. Kolinek. A polynomial-time linear decision tree for the traveling salesman problem and other NP-complete problems. *Discrete Comput. Geom.*, 2:37–48, 1987. [k-ptldt-87]

8240 I. Kolingerová. 3d-line clipping algorithms – a comparative study. *Visual Comput.*, 11(2):96–104, 1994. [k-3dlca-94]

J. G. Kollias. See also [2623].

V. J. Kollias. See also [2623].

8241 Ivana Kollingerova. Creating convex hulls in E^2 using dual representation. In *Winter School of Computer Graphics and CAD Systems 94*, pages 158–167, Pilsen, Czech Republic, January 1994. University of West Bohemia. [k-ccheu-94] *Comments:* $O(n \log h)$ 2D convex hull algorithm using duality mapping.

8242 S. Kolliopoulos and S. Rao. A nearly linear-time approximation scheme for the Euclidean k-median problem. In *Proc. 7th Annu. European Sympos. Algorithms*, pages 378–389, 1999. [kr-nltas-99]

Peter Köllner. See also [7299].

R. K. Kolluri. See also [645–647].

M. N. Kolountzakis. See also [7925].

8243 Vladlen Koltun. Almost tight upper bounds for vertical decompositions in four dimensions. In *Proc. 42nd Annu. IEEE Sympos. Found. Comput. Sci.*, 2001. [k-atubv-01]

8244 Vladlen Koltun. Intersection searching problems in general settings. In *Abstracts 17th European Workshop Comput. Geom.*, pages 89–92. Freie Universität Berlin, 2001. [k-ispgs-01]

8245 D. Kölzow, A. Kuba, and A. Volčič. An algorithm for reconstructing convex bodies from their projections. *Discrete Comput. Geom.*, 4:205–237, 1989. [kkv-arcbt-89]

8246 P. Komjáth. A simplified construction of nonlinear Davenport–Schinzel sequences. *J. Combin. Theory Ser. A*, 49:262–267, 1988. [k-scnds-88]

8247 P. Komjáth. Set theoretic constructions in Euclidean spaces. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 303–325. Springer-Verlag, 1993. [k-stces-93] *Keywords:* survey paper, axiom of choice, decomposition, coloring, continuum hypothesis, Hilbert space, paradoxical sets.

P. Komjáth. See also [4994, 6564].

8248 J. Komlós, J. Pach, and G. Woeginger. Almost tight bounds for ϵ-nets. *Discrete Comput. Geom.*, 7:163–173, 1992. [kpw-atben-92] *Succeeds:* pw-snben-90.

8249 J. Komlos and M. T. Shing. Probabilistic partitioning algorithms for the rectilinear Steiner tree problem. *Networks*, 15:413–423, 1985. [ks-ppars-85]

J. Komlos. See also [389–393, 5567, 5568].

C. M. Kong. See also [1168].

R. Kong. See also [3709].

8250 T. Y. Kong, D. M. Mount, and A. W. Roscoe. The decomposition of a rectangle into rectangles of minimal perimeter. *SIAM J. Comput.*, 17:1215–1231, 1988. [kmr-drrmp-88]

8251 T. Y. Kong, D. M. Mount, and M. Werman. The decomposition of a square into rectangles of minimal perimeter. *Discrete Appl. Math.*, 16:239–243, 1987. [kmw-dsrmp-87]

T. Y. Kong. See also [13489].

8252 Julius König. *Einleitung in die allgemeine Theorie der algebraischen Größen*. B. G. Teubner, Leipzig, 1903. [k-eidat-03]

Goran Konjevod. See also [5794].

Jochen Könnemann. See also [2614].

K. Konstantinides. See also [1927].

8253 S. B. Konyagin and K. A. Savastyanov. Estimation of the number of vertices of a convex integral polyhedron in terms of its volume. *Functional Anal. Appl.*, 18:13–15, 1984. [ks-envci-84]

8254 W. L. G. Koontz and K. Fukunaga. A nonparametric valley-seeking technique for clustering analysis. *IEEE Trans. Comput.*, C-21:171–178, 1972. [kf-nvstc-72]

8255 W. L. G. Koontz, P. M. Narendra, and K. Fukunaga. A graph-theoretical approach to non-parametric cluster analysis. *IEEE Trans. Comput.*, C-25:936–944, 1976. [knf-gtanp-76]

8256 A. A. Kooshesh. *Structuring Techniques for Path and Visibility Problems*. Ph.D. thesis, University of New Mexico, Albuquerque, NM 87131, 1992. [k-stpvp-92] *Keywords:* doctoral thesis.

8257 A. A. Kooshesh and B. M. E. Moret. Folding a simple polygons: a paradigm for computational geometry. In *Proc. ACM Comput. Science Conf.*, pages 114–118, 1995. [km-fsp-95]

8258 A. A. Kooshesh and B. M. E. Moret. Folding triangulated simple polygons: structural and algorithmic results. In *Proc. 3rd Int'l Conf. on Information and Computing*, volume 497 of *Lecture Notes Comput. Sci.*, pages 102–110. Springer-Verlag, 1991. [km-ftsps-91]

8259 A. A. Kooshesh and B. M. E. Moret. Three-coloring the vertices of a triangulated simple polygon. *Pattern Recogn.*, 25:443, 1992. [km-tcvts-92]

8260 A. A. Kooshesh, B. M. E. Moret, and L. A. Székely. Improved bounds for the prison yard problem. *Congr. Numer.*, 76:145–149, 1990. [kms-ibpyp-90]

P. A. Koparkar. See also [9090].

8261 R. J. Kopec. An alternate method for the construction of Thiessen polygons. *Professional Geographer*, 14:24–26, 1963. [k-amctp-63]

8262 J. Koplowitz and D. Jouppi. A more efficient convex hull algorithm. *Inform. Process. Lett.*, 7:56–57, 1978. [kj-mecha-78]

8263 Manfred Kopp and Michael Gervautz. XOR-drawing with guaranteed contrast. In Paul Heckbert, editor, *Graphics Gems IV*, pages 413–414. Academic Press, Boston, MA, 1994. [kg-xdgc-94] *Keywords:* cursor. *Annote:* Gives simple guidelines for the choice of write mask when drawing cursors and other graphics with exclusive-OR on multi-bit frame buffers.

8264 R. Koppe. Automatische abbildung eines planaren graphen in die ebene mit beliebig vorgebbaren orten der knotenbilder. *Computing*, 20:61–73, 1978. [k-aapge-78]

G. Koppelman. See also [5062, 13494].

8265 R. Kopperman, P. R. Meyer, and R. G. Wilson. A Jordan surface theorem for three-dimensional digital spaces. *Discrete Comput. Geom.*, 6:155–161, 1991. [kmw-jsttd-91]

M. Koppinen. See also [7863, 7865].

I. Koren. See also [13629, 13630].

8266 J. U. Korien. Solid modeling requirements for robotic applications. Technical report, IBM T. J. Watson Res. Center, Yorktown Heights, NY, ?? [k-smrra-]

8267 Flip Korn, Nikolaos Sidiropoulos, Christos Faloutsos, Eliot Siegel, and Zenon Protopapa. Fast nearest neighbor search in medical image database. In *Proc. 22nd VLDB Conference*, pages 215–226, 1996. [ksfsp-fnnsm-96]

8268 N. M. Korneenko. Voronoi diagrams: applications and generalizations: a survey. In *Geometrical Problems of Image Processing, Proc. 5th Workshop, Georgenthal, March 11–15, 1991*, volume 4 of *Research in Informatics*, pages 136–146, Berlin, Germany, 1991. Akademie-Verlag. [k-vdags-91] *Keywords:* Voronoi diagram, generalized Voronoi diagram, bibliography. *Annote:* Partly classified bibliography.

8269 N. M. Korneenko and H. Martini. Approximating finite weighted point sets by hyperplanes. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 276–286. Springer-Verlag, 1990. [km-afwps-90]

8270 N. M. Korneenko and H. Martini. Hyperplane approximation and related topics. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 135–161. Springer-Verlag, Heidelberg, 1993. [km-hart-93] *Keywords:* survey paper, hyperplane approximation/fitting.

8271 N. M. Korneenko and N. N. Metelskij. On lattice points in polyhedral cross-sections. *Discrete Comput. Geom.*, 10(1):95–99, 1993. [km-lppcs-93] *Keywords:* convex polyhedron, integer points.

N. M. Korneenko. See also [10193].

Friederike Körner. See also [7527, 7623].

8272 P. Kornerup and D. Matula. Finite precision rational arithmetic: An arithmetic unit. *IEEE Trans. Comput.*, C-32(4), April 1983. [km-fpraa-83]

8273 M. Korp. Geradlinig begrenztes Suchen. M.Sc. thesis, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1983. [k-gbs-83] *Keywords:* master thesis.

8274 B. Korte, H. J. Prömel, and A. Steger. Steiner trees in VLSI-layout. In B. Korte, L. Lovász, H. J. Prömel, and A. Schrijver, editors, *Paths, Flows and VLSI-Layout*. Springer-Verlag, 1990. [kps-stvl-90]

8275 B. Korte and J. Vygen. *Combinatorial Optimization, Theory and Algorithms*, volume 21 of *Algorithms and Combinatorics*. Springer-Verlag, Berlin, 2000. [kv-cota-00]

8276 Ulrich H. Kortenkamp and Jürgen Richter-Gebert. Dynamic geometry I: The problem of continuity. In *Abstracts 15th European Workshop Comput. Geom.*, pages 51–53. INRIA Sophia-Antipolis, 1999. [kr-dgipc-99]

8277 Ulrich H. Kortenkamp and Jürgen Richter-Gebert. Dynamic geometry II: Applications. In *Abstracts 15th European Workshop Comput. Geom.*, pages 109–111. INRIA Sophia-Antipolis, 1999. [kr-dgiia-99]

G. Kortsarz. See also [1345].

8278 P. Kortum and S. Geisler. Implementation of a foveated image coding system for image bandwidth reduction. In *Human Visions and Electronic Imaging*, volume 2657 of *Proc. SPIE*, pages 350–360. SPIE, 1996. [kg-ifics-96]

S. P. Koruthu. See also [11666].

8279 G. Kós and J. Törőcsik. Convex disks can cover their shadow. *Discrete Comput. Geom.*, 5:529–531, 1990. [kt-cdcct-90]

8280 C. Kosak and J. Marks. A parallel genetic algorithm for network-diagram layout. In *Proc. 4th Internat. Conf. on Genetic Algorithms*, 1991. [km-pgand-91] *Keywords:* graph drawing.

8281 C. Kosak, J. Marks, and S. Shieber. Automating the layout of network diagrams with specified visual organization. *IEEE Trans. Syst. Man Cybern.*, 24(3):440–454, 1994. [kms-alnds-94] *Keywords:* graph drawing.

S. Kosaraju. See also [8071].

8282 S. R. Kosaraju. An optimal RAM implementation of catenable min double-ended queues. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 195–203, 1994. [k-oricm-94]

8283 S. R. Kosaraju. Localized search in sorted lists. In *Proc. 13th Annu. ACM Sympos. Theory Comput.*, pages 62–69, 1981. [k-lssl-81]

8284 S. R. Kosaraju. On a multidimensional search problem. In *Proc. 11th Annu. ACM Sympos. Theory Comput.*, pages 67–73, 1979. [k-msp-79]

8285 S. R. Kosaraju and M. J. Atallah. Optimal simulations between meshed-connected arrays of processors. *J. ACM*, ??:635–650, July 1988. [ka-osbmc-88]

8286 S. R. Kosaraju and A. L. Delcher. Optimal parallel evaluation of tree-structured computations by raking. In *Proc. AWOC 88*, volume 319 of *Lecture Notes Comput. Sci.*, pages 101–110. Springer-Verlag, 1988. [kd-opets-88]

8287 S. R. Kosaraju, A. A. Schäffer, and L. G. Biesecker. Approximation algorithms for a genetic diagnostics problem. Research Report, Center for Geometric Computing, Johns Hopkins Univ., 1997. [ksb-aagdp-97]

S. R. Kosaraju. See also [122, 123, 175, 1031, 1042–1048, 2657–2660, 2811, 6138, 6173, 6174, 7757, 7758, 10397].

P. Kossowki. See also [3207].

E. G. Kostov. See also [4829].

Vladimir Kostov. See also [2160].

8288 G. Köthe. *Topological Vector Spaces I*. Springer-Verlag, 1969. [k-tvsl-69]

Y. Kotidis. See also [11445].

8289 N. Koudas and K. C. Sevcik. Size separation spatial join. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 324–335, 1997. [ks-sssj-97]

N. Koudas. See also [11997].

E. Koustsoupias. See also [6809].

8290 N. Kouta and J. O'Rourke. Fast algorithms for polygon decomposition. Report JHU82-10, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1982. [ko-fapd-82]

8291 E. Koutsofios and S. North. Drawing graphs with *dot*, 1993. *dot* user's manual. ftp.research.bell-labs.com/dist/drawdag/. [kn-dgd-93] *Keywords:* graph drawing.

8292 E. Koutsofios and S. North. Drawing graphs with *dot*. Technical report, AT&T Bell Laboratories, Murray Hill, NJ., 1995. Available from http://www.research.bell-labs.com/dist/drawdag. [kn-dgd-95] *Keywords:* graph drawing, system.

E. Koutsofios. See also [4289, 5738, 5739, 10187].

8293 A. Koutsou. A geometric reasoning system for moving an object while maintaining contact with others. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 67–74, 1985. [k-grsmo-85] *Cites:* hw-moc-84, hw-rmomp-84, k-srspm-84, lw-apcfp-79, m-cfccc-79, m-hct-78, p-smtsr-79, rt-mfcsg-78, ZZZ.

8294 A. Koutsou. A spatial reasoning system for parts mating operations. Working Paper 173, Dept. Artif. Intell., Univ. Edinburgh, Edingburgh, Scotland, October 1984. [k-srspm-84]

8295 A. Koutsou. Object exploration using a parallel-jaw gripper. Technical Report MS-CIS-88-48, Grasp Lab, Univ. Pennsylvania, 1988. [k-oeupj-88]

8296 E. Koutsoupias, C. H. Papadimitriou, and M. Sideri. On the optimal bisection of a polygon. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 198–202, 1990. [kps-obp-90] *Precedes:* kps-obp-92. *Cites:* ps-bwgg-90, ps-coac-82, ZZZ.

8297 Elias Koutsoupias, Christos H. Papadimitriou, and Martha Sideri. On the optimal bisection of a polygon. *ORSA J. Comput.*, 4(4):435–438, 1992. [kps-obp-92] *Succeeds:* kps-obp-90. *Annote:* Special issue on computational geometry; J. Mitchell and J. Karel Lenstra, eds.

E. Koutsoupias. See also [6278].

8298 T. Kővári, V. T. S ós, and P. Turán. On a problem of K. Zarankiewicz. *Colloq. Math.*, 3:50–57, 1954. [kst-pkz-54]

J. Kowalcyk. See also [5883].

Miroslaw Kowaluk. See also [3230, 7497–7505].

K. Koyamada. See also [7417].

8299 D. Kozen and C. K. Yap. Algebraic cell decomposition in NC. Manuscript, ??, ?? [ky-acdn-??]

D. Kozen. See also [1603, 2108].

8300 B. van de Kraats. Approximation of polygons with applications to circuit layout. Report INF/SC-94-39, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1994. [k-apacl-94]

Berto van de Kraats. See also [8338].

D. B. Krafft. See also [7096].

D. Kraft. See also [7085].

8301 M. R. Kramer and J. van Leeuwen. The complexity of wire-routing and finding minimum area layouts for arbitrary VLSI circuits. In Franco P. Preparata, editor, *VLSI Theory*, volume 2 of *Adv. Comput. Res.*, pages 129–146. JAI Press, Greenwich, Conn., 1984. [kl-cwrfm-84] *Keywords:* graph drawing.

D. Kramlich. See also [11139].

8302 E. Kranakis, D. Krizanc, and L. Meertens. Link length of rectilinear watchman tours in grids. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 328–331, 1990. [kkm-llrwt-90] *Cites:* cn-owr-86, dls-oaclc-89, g-sncpg-77, h-ragp-90, lpsssstwy-clcsp-87, n-gwg-86, o-agta-87, s-pptld-86, s-agfnp-87, s-mlppr-87, ZZZ.

8303 E. Kranakis, D. Krizanc, and J. Urrutia. On the number of directions in visibility representations of graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 167–176. Springer-Verlag, 1995. [kku-ndvrg-95] *Keywords:* graph drawing, visibility.

8304 E. Kranakis and M. Picchiola. Visibility in integer lattices. In Preparation, 1990. [kp-vil-90]

8305 Evangelos Kranakis and Michel Pocchiola. Art gallery problems in integer lattice systems. In *Abstracts 8th European Workshop Comput. Geom.*, page 29. Utrecht University, 1992. [kp-agpil-92]

8306 E. Kranakis and M. Pocchiola. Camera placement in integer lattices. *Discrete Comput. Geom.*, 12(1):91–104, July 1994. [kp-cpil-94] *Keywords: Succeeds:* kp-evpil-90.

8307 E. Kranakis and M. Pocchiola. Counting problems relating to a Dirichlet's theorem. *Comput. Geom. Theory Appl.*, 4(6):309–325, December 1994. [kp-cprdt-94] *Succeeds:* kp-evpil-90.

8308 E. Kranakis and M. Pocchiola. Enumeration and visibility problems in integer lattices. Technical Report 13, LIENS, December 1989. [kp-evpil-89]

8309 E. Kranakis and M. Pocchiola. Enumeration and visibility problems in integer lattices. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 261–270, 1990. [kp-evpil-90] *Cites:* a-srcg-74, a-iant-76, bz-gi-88, cegsw-ccbac-88t, e-acg-87, e-irpnn-62, hs-pvnlp-71, hw-itn-79, k-sipan-59, k-sa-81, kp-evpil-89, kp-vil-90, m-pepfs-85, n-nt-83, n-edlde-48, o-agta-87, r-lent-64, r-??-60, r-svp-66, so-wcoac-86, st-epdg-83, ZZZ.

8310 Evangelos Kranakis and Anthony Spatharis. Almost optimal on-line search in unknown streets. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 93–99, 1997. [ks-aools-97]

8311 Evangelos Kranakis and Jorge Urrutia. Isomorphic triangulations with small number of Steiner points. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 291–296, 1995. [ku-itsns-95]

E. Kranakis. See also [2300, 3676–3678, 5230].

8312 E. Kranankis, D. Krizanc, A. Maheshwari, M. Noy, J.-R. Sack, and J. Urrutia. Stage-graph representations. *Discrete Applied Mathematic*, 75(1):71–80, 1997. [kkmnsu-sgr-97]

E. Kranankis. See also [1520, 1521].

Hannes Krasser. See also [368, 373, 374].

8313 J. Kratochvíl, editor. *Graph Drawing (Proc. GD '99)*, volume 1731 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1999. [k-gd-99]

8314 J. Kratochvil, A. Lubiw, and J. Nešetřil. Non-crossing subgraphs in topological layouts. *SIAM J. Discrete Math.*, 4:223–244, 1991. [kln-ncstl-91]

8315 J. Kratochvíl and J. Matoušek. Intersection graphs of segments. *J. Combin. Theory Ser. B*, 35(2):317–339, 1994. [km-igs-94]

8316 J. Kratochvíl and J. Matoušek. String graphs requiring huge representations. *J. Combin. Theory Ser. B*, 31(1):1–4, 1991. [km-sgrhr-91] *Comments:* Shows that there are n-vertex graphs representable as intersection graphs of curves in the plane, such that in any representation some 2 curves cross exponentially many times.

8317 J. Kratochvil and J. Nešetřil. Independend set and clique problems in intersection-defined classes of graphs. *Comment. Math. Univ. Carol.*, 31:85–93, 1990. [kn-iscpi-90]

8318 F.-L. Krause, C. Stiel, and J. Luddermann. Processing of CAD-data-conversion, verification and repair. In *Proc. 4th ACM Sympos. Solid Modeling*, 1997. To appear. [ksl-pcdcv-97]

8319 D. Kravets and J. K. Park. Selection and sorting in totally monotone arrays. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 494–502, 1990. [kp-sstma-90]

D. Kravets. See also [274, 299, 300, 3157, 3158].

A. Krawczyk. See also [3284].

M. Kreeb. See also [11741].

8320 M. G. Krein and A. A. Nudel'man. *The Markov moment problem and extremal problems.* American Mathematical Society, 1977. [kn-mmpep-77]

Ch. Kreitz. See also [13435].

8321 M. J. van Kreveld. *New Results on Data Structures in Computational Geometry.* Ph.D. dissertation, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1992. [k-nrdsc-92] *Keywords:* doctoral thesis.

8322 M. J. van Kreveld and M. T. de Berg. Finding squares and rectangles in sets of points. *BIT*, 31:202–219, 1991. [kb-fsrsp-91]

8323 M. J. van Kreveld and M. H. Overmars. Concatenable segment trees. Technical Report RUU-CS-88-36, Computer Science Department, Univ. of Utrecht, Utrecht, Netherlands, 1988. [ko-cst-88]

8324 Marc J. van Kreveld and Mark H. Overmars. Concatenable structures for decomposable problems. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 15. Universität Siegen, 1990. [ko-csdp-90]

8325 M. J. van Kreveld and M. H. Overmars. Divided *k*-d trees. *Algorithmica*, 6:840–858, 1991. [ko-dkdt-91]

8326 M. J. van Kreveld, M. H. Overmars, and P. K. Agarwal. Intersection queries in sets of disks. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 393–403. Springer-Verlag, 1990. [koa-iqsd-90i]

M. J. van Kreveld. See also [10486, 10502].

8327 M. van Kreveld. Algorithms for triangulated terrains. In *Proc. XXIV-th SOFSEM*, number 1338 in Lecture Notes Comput. Sci., pages 19–36. Springer-Verlag, 1997. [k-att-97]

8328 M. van Kreveld. Digital elevation models and TIN algorithms. In M. van Kreveld, J. Nievergelt, T. Roos, and P. Widmayer, editors, *Algorithmic Foundations of Geographic Information Systems*, number 1340 in Lecture Notes Comput. Sci., pages 37–78. Springer-Verlag, 1997. [k-demta-97]

8329 M. van Kreveld. Efficient methods for isoline extraction from a digital elevation model based on triangulated irregular networks. In *Proc. 6th Internat. Sympos. Spatial Data Handling*, pages 835–847. Taylor & Francis, 1994. to appear in: *Int. J. on GIS.* [k-emied-94] *Keywords:* isolines, contours, interval tree, polyhedral terrains.

8330 M. van Kreveld. Efficient methods for isoline extraction from a TIN. *Internat. J. of GIS*, 10:523–540, 1996. [k-emiet-96]

8331 M. van Kreveld. On fat partitioning, fat covering and the union size of polygons. Technical Report SOCS-93.2, School of Computer Science, McGill University, 1993. [k-fpfcu-93t] *Precedes:* k-fpfcu-98, k-fpfcu-93.

8332 Marc van Kreveld. On fat partitioning, fat covering, and the union size of polygons. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 452–463. Springer-Verlag, 1993. [k-fpfcu-93] *Succeeds:* k-fpfcu-93t. *Precedes:* k-fpfcu-98.

8333 Marc van Kreveld. On fat partitioning, fat covering, and the union size of polygons. *Comput. Geom. Theory Appl.*, 9(4):197–210, 1998. [k-fpfcu-98] *Succeeds:* k-fpfcu-93t, k-fpfcu-93.

8334 M. van Kreveld. On quality paths in polyhedral terrains. In *Proc. IGIS'94: Geographic Information Systems*, volume 884 of *Lecture Notes Comput. Sci.*, pages 113–122. Springer-Verlag, 1994. [k-qppt-94] *Keywords:* shortest paths, polyhedral terrains.

8335 M. van Kreveld. The power of parallel projection. Report RUU-CS-92-17, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1992. [k-ppp-92]

8336 M. van Kreveld. The power of parallel projection. *Inform. Process. Lett.*, 46:185–191, 1993. [k-ppp-93] *Succeeds:* k-ppp-92.

8337 M. van Kreveld. Variations on sweep algorithms: efficient computation of extended viewsheds and classifications. In *Proc. 7th Internat. Sympos. Spatial Data Handling*, pages 13A.15–13A.27, 1996. [k-vsaec-96]

8338 Marc van Kreveld, Berto van de Kraats, and Mark Overmars. Printed circuit board simplification: Simplifying subdivisions in practice. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C30–C31, 1995. [kko-pcbss-95] *Keywords:* polygon simplification, decimation. *Cites:* abb-amps-91, bks-nass-95, be-mgot-95, cmwms-feps-93, elosu-scqp-92, ghms-apsml-93, h-patmn-93, k-apacl-94, ZZZ.

8339 M. van Kreveld, R. van Oostrum, C. Bajaj, V. Pascucci, and D. Schikore. Contour trees and small seed sets for isosurface traversal. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 212–220, 1997. [kobps-ctsss-97] *Cites:* amo-nftaa-93, afh-tdie3-81, bps-fiii-96, bcd-auhsm-95, cmps-oieiv-96, bk-tawfg-93, db-dcghs-94, fm-scmgt-67, gc-sontr-86, h-dt-76, hb-mpaic-94, ik-aipue-95, kk-ettfe-94, lsj-noiea-96, m-mt-63, ps-cgi-85, r-slpsd-46, sk-crgac-91, skk-scbmt-91, sc-aipta-86, tisku-aeccp-95, k-emiet-96, w-cgads-92, wv-ofig-92, ZZZ.

8340 M. van Kreveld, R. van Oostrum, and J. Snoeyink. Efficient settlement selection for interactive display. In *Proc. Auto-Carto 13: ACSM/ASPRS Annual Convention Technical Papers*, pages 287–296, 1997. [kos-essid-97]

8341 M. van Kreveld and M. Overmars. Union-copy structures and dynamic segment trees. *J. ACM*, 40:635–652, 1993. [ko-ucsds-93] *Keywords:* union-find, data structures, dynamic segment trees.

8342 M. van Kreveld, M. Overmars, and P. K. Agarwal. Intersection queries in sets of disks. Technical Report 90-26, DIMACS, Rutgers Univ., 1990. [koa-iqsd-90t]

8343 M. van Kreveld, M. Overmars, and P. K. Agarwal. Intersection queries in sets of disks. *BIT*, 32:268–279, 1992. [koa-iqsd-92] *Keywords:* disks, partition trees, intersection. *Succeeds:* koa-iqsd-90i.

8344 M. van Kreveld, J. Snoeyink, and S. Whitesides. Folding rulers inside triangles. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 1–6, 1993. [ksw-frit-93] *Cites:* hjw-mp2dl-84, hjw-mra2d-85, jp-crmpq-85, k-mslra-92, kk-namra-86, lw-tpio-91, lw-rltm-92, lw-rcpce-95, w-aigpl-92, ZZZ.

8345 M. van Kreveld, J. Snoeyink, and S. Whitesides. Folding rulers inside triangles. *Discrete Comput. Geom.*, 15:265–285, 1996. [ksw-frit-96] *Keywords:* rulers, linkages, reconfiguration. *Succeeds:* ksw-frit-93.

M. van Kreveld. See also [189–198, 1688, 1689, 1692, 1709–1713, 1716–1735, 1744, 2294–2296, 2321, 2322, 5088, 5089, 12338, 12339, 12570, 13844].

8346 H.-P. Kriegel, T. Brinkhoff, and R. Schneider. The combination of spatial access methods and computational geometry in geographic database systems. In *Proc. 2rd Sympos. Advances in Spatial Databases*, number 525 in Lecture Notes Comput. Sci., pages 5–21, 1991. [kbs-csamc-91]

8347 H.-P. Kriegel, R. Mannss, and M. H. Overmars. The inverted file tree machine: efficient multi-key retrieval for VLSI. Report RUU-CS-85-8, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1985. [kmo-iftme-85]

8348 H.-P. Kriegel and M. Schiwietz. Eine effiziente und robuste Indexstruktur für große Mengen polygonaler Objekte. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 16. Universität Siegen, 1990. [ks-erigm-90]

8349 H.-P. Kriegel and B. Seeger. Multidimensional order preserving linear hashing with partial expansions. In *Proc. Intl. Conf. on Database Theory*, volume 243 of *Lecture Notes Comput. Sci.*, pages 203–220. Springer-Verlag, 1986. [ks-moplh-86]

8350 H. P. Kriegel and V. K. Vaishnavi. A nearly optimal dynamic tree structure for partial-match queries with time-varying access frequencies. In *Proc. 1981 Conf. Inform. Sci. Systems*, page ??, Baltimore, MD, 1981. Johns Hopkins Univ. [kv-nodts-81]

8351 H. P. Kriegel and V. K. Vaishnavi. Weighted multidimensional *b*-trees used as nearly optimal dynamic dictionaries. In *Proc. 10th Internat. Sympos. Math. Found. Comput. Sci.*, volume 118 of *Lecture Notes Comput. Sci.*, pages 410–417. Springer-Verlag, 1981. [kv-wmbtu-81]

H. P. Kriegel. See also [1566, 1663–1665, 2448, 2449, 6509, 6510, 6762, 11757, 11926, 13146].

Klaus Kriegel. See also [4804, 5204, 6532–6535, 7036–7050].

David Kriegman. See also [11012, 11013].

8352 D. J. Kriegman. Computing stable poses of piecewise smooth objects. *CVGIP: Image Understanding*, 55(2), March 1992. [k-cspps-92]

8353 G. A. Kriezis. *Algorithms for Rational Spline Surface Intersections*. Ph.D. thesis, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1990. [k-arssi-90] *Keywords:* doctoral thesis.

8354 G. A. Kriezis and N. M. Patrikalakis. Rational polynomial surface intersections. In G. A. Gabriele, editor, *Proc. 17th ASME Design Automation Conference*, volume II, pages 43–53, 1991. [kp-rpsi-91]

8355 G. A. Kriezis, N. M. Patrikalakis, and F.-E. Wolter. Topological and differential equation methods for surface intersections. *Comput. Aided Design*, 24(1):41–55, 1992. [kpw-tdems-92]

8356 G. A. Kriezis, P. V. Prakash, and N. M. Patrikalakis. A method for intersecting algebraic surfaces with rational polynomial patches. *Comput. Aided Design*, 22(10):645–654, 1990. [kpp-miasr-90]

G. A. Kriezis. See also [10661, 10666–10668, 10673].

V. S. Krikun. See also [9549].

8357 J. Kripac. A mechanism for persistently naming topological entities in history-based parametric solid models. In *Proc. 3rd ACM Symposium on Solid Modeling and Applications*, May 1995. [k-mpnte-95]

G. Krishna. See also [6217].

B. Krishnamurthy. See also [399–402].

E. V. Krishnamurthy. See also [8193].

8358 R. Krishnamurthy and K.-Y. Wang. Multilevel grid files. Tech. report, IBM T. J. Watson Center, Yorktown Heights, NY, 1985. [kw-mgf-85]

8359 S. Krishnan and D. Manocha. An efficient surface intersection algorithm based on the lower dimensional formulation. Technical Report TR94-062, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, 1994. [km-esiab-94]

8360 S. Krishnan, A. Narkhede, and D. Manocha. Boole: A system to compute boolean combinations of sculptured solids. Technical Report TR95-008, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, 1994. [knm-bscbc-94]

8361 Shankar Krishnan, Atul Narkhede, and Dinesh Manocha. Representation and computation of boolean combinations of sculptured models. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C8–C9, 1995. [knm-rcbcs-95] *Keywords:* CSG. *Cites:* h-gsm-89, km-esiab-94, knm-bscbc-94, s-lpchm-90, s-sfira-91, ZZZ.

8362 S. Krishnan, A. Pattekar, M. Lin, and D. Manocha. Spherical shells: A higher order bounding volume for fast proximity queries. In *Proc. 3rd Workshop Algorithmic Found. Robot.*, page to appear, 1998. [kplm-sshob-98] *URL:* http://www.cs.unc.edu/~dm/collision.html.

S. Krishnan. See also [6201, 8018, 8019].

S. S. Krishnan. See also [6482].

8363 R. P. Krishnaswamy and C. E. Kim. Problems of posting sentries: variations of the Art Gallery Theorem. In *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 74–85. Springer-Verlag, 1988. [kk-ppsva-88]

8364 K. Krithivasan, A. Rema, S. Schirra, and P. I. Vijaykumar. Velocity planning for a robot moving along the shortest straight line path among moving obstacles. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 149–154. Carleton University Press, Ottawa, Canada, 1996. [krsv-vprma-96]

8365 K. Krithivasan and V. Srilakshmi. Minimum area polygons with two reflex angles enclosing *k* points. *Internat. J. Comput. Math.*, 78, 2001. [ks-maptr-01] *Comments:* to appear.

8366 K. Krithivasan, R. Vanisree, and A. Datta. The largest hyper-rectangle in a three dimensional orthogonal polyhedron. Report MPI-I-92-123, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [kvd-lhrtd-92]

K. Krithivasan. See also [3789–3792, 3800].

8367 M. Krivánek and J. Morávek. Clustering to minimize the sum of volumes of convex hulls of clusters is NP-complete. In L. Budach, editor, *Proc. Found. Comput. Theory*, volume 199 of *Lecture Notes Comput. Sci.*, pages 234–241. Springer-Verlag, 1985. [km-cmsvc-85]

D. Krizanc. See also [1520, 1521, 3676, 3677, 8302, 8303, 8312].

A. Krogh. See also [6899].

8368 L. Kronecker. Grundzüge einer arithmetischen Theorie der algebraischen Größe. *Crelle J.*, 92:1–122, 1882. [k-geatd-82]

G. Kronin. See also [13900].

8369 Boris Kronrod and Craig Cotsman. Efficient coding of non-triangular meshes. In *Abstracts 16th European Workshop Comput. Geom.*, pages 24–26. Ben-Gurion University of the Negev, 2000. [kc-ecntm-00]

8370 J. K. Krouse. Industry gets serious about solid modeling. *Computer Aided Engineering*, 1:22–26, 1982. [k-isasm-82]

8371 J. Krozel. *Intelligent Path Prediction for Vehicular Travel*. Ph.D. thesis, Purdue Univ., W. Lafayette, IN, May 1992. [k-ippvt-92] *Keywords:* doctoral thesis.

8372 J. Krozel and D. Andrisani. Intelligent path prediction for vehicular travel. *IEEE Trans. Syst. Man Cybern.*, 23:478–487, 1993. [ka-ippvt-93] *Keywords:* path prediction, gradient field representation, generalized cost criteria, path similarity.

8373 F. Krueger. *d-Arrangements and random polyhedra*. Ph.D. thesis, Dept. of Operations Research, Stanford University, 1985. [k-darp-85] *Keywords:* arrangements, face counting, Zaslavski's formulas, duality.

T. Krüger. See also [5725].

F. N. Krull. See also [9120].

8374 W. Krull. *Elementare und klassische Algebra vom modernen Standpunkt, Part I.* DeGruyter, Berlin, Germany, 1952. [k-eukav-52]

8375 W. Krull. *Elementare und klassische Algebra vom modernen Standpunkt, Part II.* DeGruyter, Berlin, Germany, 1959. [k-eukav-59]

D. W. Krumme. See also [3660].

8376 C. Kruskal, L. Rudolph, and M. Snir. A complexity theory of efficient parallel algorithms. *Theoret. Comput. Sci.*, 71:95–132, 1990. [krs-ctepa-90]

8377 C. P. Kruskal, L. Rudolph, and M. Snir. The power of parallel prefix. In *Proc. Internat. Conf. Parallel Process.*, pages 180–185, 1985. [krs-ppp-85]

8378 C. P. Kruskal, L. Rudolph, and M. Snir. The power of parallel prefix. *IEEE Trans. Comput.*, C-34:965–968, 1985. [krs-ppp-85a]

8379 J. B. Kruskal and J. B. Seery. Designing network diagrams. In *Proc. First General Conference on Social Graphics*, pages 22–50. U. S. Department of the Census, 1980. [ks-dnd-80] *Keywords:* graph drawing, physical simulation, force-directed.

J. B. Kruskal. See also [12114].

8380 J. B. Kruskal, Jr. On the shortest spanning subtree of a graph and the traveling salesman problem. *Proc. Amer. Math. Soc.*, 7:48–50, 1956. [k-sssgt-56]

8381 J. W. Krussel and B. F. Schaudt. A note on higher order Voronoi diagrams. *Nordic J. Comput.*, 1:268–272, 1994. [ks-nhovd-94]

8382 D. Krznaric. *Progress in Hierarchical Clustering & Minimum Weight Triangulation*. Ph.D. thesis, Department of Computer Science, Lund University, Lund, Sweden, 1997. [k-phcmw-97] *Keywords:* doctoral thesis.

8383 Drago Krznaric and Christos Levcopoulos. Computing a threaded quadtree (with links between neighbours) from the Delaunay triangulation in linear time. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 187–192, 1995. [kl-ctqlb-95]

8384 D. Krznaric and C. Levcopoulos. Computing hierarchies of clusters from the Euclidean minimum spanning tree in linear time. In *Proc. 15th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1026 of *Lecture Notes Comput. Sci.*, pages 443–455. Springer-Verlag, 1995. [kl-chcem-95]

8385 D. Krznaric and C. Levcopoulos. Fast algorithms for complete linkage clustering. *Discrete Comput. Geom.*, 19:131–145, 1998. [kl-faclc-98]

8386 Drago Krznaric and Christos Levcopoulos. The first subquadratic algorithm for complete linkage clustering. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 392–401. Springer-Verlag, 1995. [kl-fsacl-95]

8387 D. Krznaric, C. Levcopoulos, and Bengt J. Nilsson. Minimum spanning trees in *d* dimensions. In *Proc. 5th Annu. European Sympos. Algorithms*, volume 1284 of *Lecture Notes Comput. Sci.*, pages 341–349. Springer-Verlag, 1997. [kln-mstd-97] *URL:* http://www.dna.lth.se/home/Drago_Krznaric/mst.ps.

Drago Krznaric. See also [8739, 8740].

N. Ktsios. See also [2375, 2376].

8388 D. T. Kuan. Terrain map knowledge representation for spatial planning. In *The 1st IEEE Conference of Artificial Intelligence Applications*, pages 578–584, December 1984. [k-tmkrs-84] *Keywords:* feature-based planning, weighted region problem, hierarchical planning.

8389 D. T. Kuan, J. C. Zamiska, and R. A. Brooks. Natural decomposition of free space for path planning. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 168–173, March 1985. [kzb-ndfsp-85]

A. Kuba. See also [8245].

8390 L. Kučera, K. Mehlhorn, B. Preis, and E. Schwarzenecker. Exact algorithms for a geometric packing problem. In *Proc. 10th Sympos. Theoret. Aspects Comput. Sci.*, volume 665 of *Lecture Notes Comput. Sci.*, pages 317–322. Springer-Verlag, 1993. [kmps-eagpp-93]

8391 R. Kuchem, D. Wagner, and F. Wagner. Area-optimal three-layer channel routing. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 506–511, 1989. [kww-aotlc-89]

8392 R. Kuchkuda. An introduction to ray tracing. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 1039–1060. Springer-Verlag, 1988. [k-irt-88]

E. S. Kuh. See also [3708].

8393 H. Kuhn. The Hungarian method for the assignment problem. *Naval Res. Logist. Q.*, 2:83–97, 1955. [k-hmap-55]

8394 Ulrich Kühn. A randomized parallel algorithm for Voronoi diagrams based on symmetric convex distance functions. In *Abstracts 14th European Workshop Comput. Geom.*, pages 109–111. Universitat Polytènica de Catalunya, Barcelona, 1998. [k-rpavd-98]

8395 Ulrich Kühn. Computing Voronoi diagrams using convex sweep curves. In *Abstracts 12th European Workshop Comput. Geom.*, pages 41–44. Universität Münster, 1996. [k-cvduc-96]

Werner Kuhn. See also [5458, 5459, 7002].

8396 W. Kühnel and G. Lassmann. Combinatorial *d*-tori with a large symmetry group. *Discrete Comput. Geom.*, 3:169–176, 1988. [kl-cdtls-88]

W. Kühnel. See also [2415].

L. Kuklinski. See also [501, 502].

Markus Kukuk. See also [6929].

8397 G. Kulcsar. Algorithm to cover polygons by rectangles. *Comput. Aided Data Preparation Pattern Generator Cont.*, 30:161–167, 1979. [k-acpr-79]

8398 U. Kulisch and W. L. Miranker, editors. *A new approach to scientific computation*. Academic Press, New York, NY, 1983. [km-nasc-83]

8399 U. Kulisch and W. L. Miranker. *Computer Arithmetic in Theory and Practice*. Academic Press, New York, NY, 1981. [km-catp-81]

U. Kulisch. See also [6628].

8400 Prashant Kulkarni and Deba Dutta. An accurate slicing procedure for layered manufacturing. *Comput. Aided Design*, 28(9):683–697, 1996. [kd-asplm-96]

8401 S. Kuller, B. Raghavachari, and N. Young. Low-degree spanning tree of small weight. *SIAM J. Comput.*, 25, 1996. [kry-ldstsw-96]

A. Kumar. See also [900].

C. Kumar. See also [9926].

K. Kumar. See also [46, 49].

8402 P. Kumar and C. Veni Madhavan. Shortest watchman tours in weak visibility polygons. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 91–96, 1993. [kv-swtwv-93] *Cites:* p-wvrp-90, cn-swrsp-, cn-owr-88, thiacsw-91, ZZZ.

P. Kumar. See also [4104].

8403 Ravi Kumar and D. Sivakumar. Roundness estimation via random sampling. In *Proc. 10th ACM-SIAM Sympos. Discrete Algorithms*, pages 603–612, 1999. [kk-rers-99]

8404 S. Kumar, S. K. Kurtz, J. R. Banavar, and M. G. Sharma. Properties of a 3-dimensional Poisson-Voronoi tesselation: a Monte-Carlo study. *Journal Of Statistical Physics*, 67(3–4):523–551, 1992. [kkbs-p3dpv-92]

8405 S. Kumar and D. Manocha. Dynamic mesh generation for parametric surfaces. In *5th Internat. Conf. Numerical Grid Generation in Computational Fluid Dynamics and Related Fields*, 1996. [km-dmgps-96]

8406 S. Kumar and D. Manocha. Efficient rendering of trimmed NURBS surfaces. *Comput. Aided Design*, 27(7):509–521, July 1995. [km-ertns-95]

8407 S. Kumar and D. Manocha. Interactive display of large scale trimmed NURBS models. Technical Report TR94-008, Dept. Comput. Sci., Univ. North Carolina, 1994. [km-idlst-94]

8408 Suboth Kumar and Dinesh Manocha. The power of coherence: fast tessellation of surfaces. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V15–V16, 1996. [km-pcfds-96] *Cites:* c-tsplt-91a, c-farps-79, ctv-flvat-89, f-cscag-93, k-rtpp-82, km-idlst-94, km-ertns-95, km-dmgps-96, lc-rtns-93, lcwb-slmdp-80, rhd-rtrts-89, s-sfira-91, ZZZ.

8409 S. Kumar, D. Manocha, W. Garret, and M. Lin. Back-face computation of polygon clusters. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 487–488, 1997. [kmgl-bfcpc-97] *Keywords:* video review. *Cites:* bv-vbcd-95, c-hgmvs-76, c-sacg-77, dk-fdpi-82, fkn-vsgpt-80, kmgl-hbfc-96, nns-nshsp-72, sbgs-sacgi-69, sss-cthsa-74, ZZZ.

8410 S. Kumar, D. Manocha, B. Garrett, and M. Lin. Hierarchical back-face culling. In *Proc. 7th Eurographics Workshop on Rendering*, pages 231–240, 1996. [kmgl-hbfc-96]

8411 S. Kumar, D. Manocha, W. Garrett, and M. Lin. Hierarchical back-face computation. *Comput. & Graphics*, 23(5):681–692, October 1999. [kmgl-hbfc-99]

8412 S. Kumar, D. Manocha, and A. Lastra. Interactive display of large NURBS models. *IEEE Trans. on Visualization and Computer Graphics*, 2:323–336, 1996. [kml-idlnm-96]

S. Kumar. See also [1410, 1415].

8413 V. K. P. Kumar and D. I. Reisis. Image computations on meshes with multiple broadcast. *IEEE Trans. Pattern Anal. Mach. Intell.*, 11:1194–1201, 1989. [kr-icmmb-89]

P. Kundu. See also [2875].

8414 H. T. Kung, F. Luccio, and F. P. Preparata. On finding the maxima of a set of vectors. *J. ACM*, 22:469–476, 1975. [klp-fmsv-75]

H. T. Kung. See also [1645, 2428, 12901, 13769].

8415 J. P. S. Kung. Combinatorial geometries representable over $GF(3)$ and $FG(q)$, I: The number of points. *Discrete Comput. Geom.*, 5:83–95, 1990. [k-cgrgf-90]

O. Kunieda. See also [6946].

T. L. Kunii. See also [4506, 4510, 5644, 5652, 5653, 10006, 12162, 12163, 12712, 13742, 13743].

I. D. Kuntz. See also [12179].

P. Kuntz. See also [5518].

8416 Richard Kunze, Franz-Erich Wolter, and Thomas Rausch. Geodesic Voronoi diagrams on parametric surfaces. Technical Report 2, Welfen Laboratory, Universität Hannover, July 1997. [kwr-gvdps-97] *URL:* http://www-c.informatik.uni-hannover.de. *Keywords:* Voronoi diagram, parametric surface, geodesics on surfaces. *Annote:* Appeared in IEEE Computer Society Press Conference Proceedings of the Computer Graphics International 1997 conference, pp. 230–237, June 1997.

E. Kuo. See also [1792, 1793].

Y. S. Kuo. See also [13365].

Gabriel Kuper. See also [5458].

8417 G. Kuperberg and W. Kuperberg. Double-lattice packings of convex bodies in the plane. *Discrete Comput. Geom.*, 5:389–397, 1990. [kk-dlpcb-90]

8418 W. Kuperberg. DIMACS workshop on polytopes. Technical report, Rutgers University, January 1990. [k-dwp-90]

W. Kuperberg. See also [1910, 1911, 5167, 8417].

8419 Y. S. Kupitz. Extremal problems in combinatorial geometry. Aarhus University Lecture Notes Series 53, Aarhus University, Aarhus, Denmark, 1979. [k-epcg-79]

8420 Y. S. Kupitz. On a generalization of the Gallai-Sylvester theorem. *Discrete Comput. Geom.*, 7:87–106, 1992. [k-ggst-92]

8421 K. Kuratowski and A. Mostowski. *Set Theory*. North-Holland, Amsterdam, the Netherlands, 1976. [km-st-76]

8422 K. Kuroda and H. Tanemura. Limit-theorem and large deviation principle for the Voronoi tessellation generated by a Gibbs point process. *Adv. Appl. Probab.*, 24(1):45–70, 1992. [kt-ltldp-92]

8423 Y. Kurozumi and W. A. Davis. Polygonal approximation by the minimax method. *Comput. Graph. Image Process.*, 19:248–264, 1982. [kd-pamm-82]

Klaus Kursawe. See also [461].

S. K. Kurtz. See also [8404].

8424 Yoshiyuki Kusakari and Takao Nishizeki. An algorithm for finding a region with the minimum total L_1-distance from prescibed terminals. In *Proc. 8th Annu. Internat. Sympos. Algorithms Comput.*, volume 1350 of *Lecture Notes Comput. Sci.*, pages 324–333. Springer-Verlag, December 1997. [kn-afrmt-97]

8425 Y. Kusakari, H. Suzuki, and T. Nishizeki. A shortest pair of paths on the plane with obstacles and crossing areas. *Internat. J. Comput. Geom. Appl.*, 9:151–170, 1999. [ksn-spppo-99]

8426 Yoshiyuki Kusakari, Hitoshi Suzuki, and Takao Nishizeki. Finding a shortest pair of paths on the plane with obstacles and crossing areas. In *Proc. 6th Annu. Internat. Sympos. Algorithms Comput.*, volume 1004 of *Lecture Notes Comput. Sci.*, pages 42–51. Springer-Verlag, 1995. [ksn-fsppp-95]

8427 E. Kushilevitz, R. Ostrovsky, and Y. Rabani. Efficient search for approximate nearest neighbor in high dimensional spaces. In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, page to appear, 1998. [kor-esann-98]

H. Küstner. See also [5846].

8428 J. Kutcher. *Coordinated motion planning of planar linkages.* PhD thesis, Johns Hopkins University, 1992. [k-cmppl-92] *Keywords:* doctoral thesis.

8429 B. C. Kuttner, D. S. Majcher, and P. B. Snedecor. Systematic processing: An approach to fully automatic NC tool path generation. In *Proceedings of Autofact '85 Conference*, pages 18–22, November 1985. [kms-spafa-85]

L. Küttner. See also [7237].

8430 B. Kutzler and S. Stifter. Automated geometry theorem proving using Buchberger's algorithm. In *SYMSAC '86*, 1986. [ks-agtpu-86]

8431 B. Kutzler and S. Stifter. On the application of Buchberger's algorithm to automated geometry theorem proving. *J. Symbolic Comput.*, 2:409–420, 1986. [ks-abaag-86]

B. Kutzler. See also [2564].

A. Kwasnik. See also [7582].

8432 I. S. Kweon and T. Kanade. Extracting topographic terrain features from elevation maps. *CVGIP: Image Understanding*, 59:171–182, 1994. [kk-ettfe-94]

8433 K. K. Kwong. *Computer-aided parting line and parting surface generation in mould design.* PhD thesis, University of Hong Kong, Hong Kong, 1992. [k-caplp-92] *Keywords:* doctoral thesis.

J. C. Kyle, Jr. See also [13650].

8434 Y. Kyoda. A study of generating minimum weight triangulation within practical time. Master's thesis, Dept. Inform. Sci., Univ. Tokyo, Tokyo, Japan, 1996. [k-sgmwt-96] *Keywords:* master thesis.

8435 Yoshiaki Kyoda and Keiko Imai. A branch-and-cut approach for minimum weight triangulation. In *Proc. 8th Annu. Internat. Sympos. Algorithms Comput.*, volume 1350 of *Lecture Notes Comput. Sci.*, pages 384–393. Springer-Verlag, 1997. [ki-bcamw-97]

Y. Kyoda. See also [10285].

8436 L. K. Kyprianou. *Shape classification in computer aided design.* PhD thesis, Cambridge Univ., Cambridge, UK, 1980. [k-sccad-80] *Keywords:* doctoral thesis.

C. M. Kyung. See also [3237, 4916].

A. A. Kzylov. See also [5716].

M. La Porte. See also [13244].

8437 J. A. La Poutré. Alpha-algorithms for incremental planarity testing. In *Proc. 26th Annu. ACM Sympos. Theory Comput.*, pages 706–715, 1994. [l-aaipt-94] *Keywords:* graph drawing.

8438 J. A. La Poutré. *Dynamic Graph Algorithms and Data Structures.* Ph.D. thesis, Dept. Comput. Sci., Univ. Utrecht., 1991. [l-dgads-91] *Keywords:* dynamic algorithm.

8439 J. A. La Poutré. Maintenance of triconnected components of graphs. In *Automata, Languages and Programming (Proc. 19th ICALP)*, volume 623 of *Lecture Notes Comput. Sci.*, pages 354–365. Springer-Verlag, 1992. [l-mtcg-92]

8440 J. A. La Poutré. New techniques for the Union-Find problem. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 54–63, 1990. [l-ntufp-90]

8441 J. A. La Poutré and J. van Leeuwen. Maintenance of transitive closures and transitive reductions of graphs. In H. Gottler and H. J. Schneider, editors, *Graph-Theoretic Concepts in Computer Science (Proc. WG '87)*, volume 314 of *Lecture Notes Comput. Sci.*, pages 106–120. Springer-Verlag, 1988. [pl-mtctr-88]

Johannes A. La Poutré. See also [7415].

8442 P. J. M. van Laarhoven and E. H. L. Aarts. *Simulated Annealing: Theory and Practice.* Kluwer Academic Publications, 1987. [la-satp-87]

Martine Labbé. See also [3635, 6569].

8443 Jean-Marie Laborde. Some issues raised by the development of implemented dynamic geometry as with Cabri-géomètre. In *Abstracts 15th European Workshop Comput. Geom.*, pages 7–19. INRIA Sophia-Antipolis, 1999. [l-sirdi-99]

8444 Jean-Marie Laborde and Franck Bellemain. *Cabri Geometry II.* Texas Instruments, Dallas, 1993. [lb-cg2-93]

M. Laborie. See also [712].

J.-O. Lachaud. See also [1069].

R. Lacher. See also [9359].

8445 B. Lacolle, N. Szafran, and P. Valentin. Geometric modelling and algorithms for binary mixtures. *Internat. J. Comput. Geom. Appl.*, 4:243–260, 1994. [lsv-gmabm-94] *Keywords:* computational geometry, convex sets, zonotopes, separation theory.

Bernard Lacolle. See also [10089].

8446 R. E. Ladner and M. J. Fischer. Parallel prefix computation. *J. Assoc. Comput. Machinery*, 27(4):831–838, October 1980. [lf-ppc-80]

L. Laforest. See also [4059].

8447 J. Lagarias. The computational complexity of simultaneos Diophantine approximation problems. *SIAM J. Comput.*, 14:196–209, 1985. [l-ccsda-85]

8448 J. C. Lagarias, N. Prabhu, and J. A. Reeds. The parameter space of the d-step conjecture. In *Proc. 16th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1180 of *Lecture Notes Comput. Sci.*, pages 52–63. Springer-Verlag, 1996. [lpr-psdsc-96]

J. C. Lagarias. See also [3400, 11091].

8449 M. J. Lai and L. L. Schumaker. Scattered data interpolation using C^2 piecewise polynomials of degree six. In *3rd Workshop Proximity Graphs*, 1994. [ls-sdiuc-94]

8450 T.-H. Lai and S.-S. Wei. The edge Hamiltonian path problem is NP-complete for bipartite graphs. *Inform. Process. Lett.*, 46:21–26, 1993. [lw-ehppn-93]

W. Lai. See also [4578, 9688].

M. Laidacker. See also [10191].

8451 D. H. Laidlaw, W. B. Trumbore, and J. F. Hughes. Constructive solid geometry for polyhedral objects. *Comput. Graph.*, 20(4):161–170, 1986. Proc. SIGGRAPH '86. [lth-csgpo-86]

Y. Lakshman. See also [2705].

D. Laksov. See also [8140].

K.-P. Lam. See also [3109].

T. Lam. See also [2788].

T. W. Lam. See also [2790, 2791, 3249].

8452 J.-L. Lambert. Sorting the sums $(x_i + y_j)$ in $O(n^2)$ comparisons. In *Proc. 7th Sympos. Theoret. Aspects Comput. Sci.*, volume 415 of *Lecture Notes Comput. Sci.*, pages 195–206. Springer-Verlag, 1990. [l-ssxoc-90]

8453 J. L. Lambert. Sorting X + Y in $o(n^2)$ comparisons. In *Proc. 8th Sympos. Theoret. Aspects Comput. Sci.*, pages 195–206, 1991. [l-sxyoc-91]

8454 T. Lambert. *Empty-Shape Triangulation Algorithms*. Ph.D. thesis, Dept. Comput. Sci., Univ. of Manitoba, Winnipeg, MB, August 1994. [l-esta-94] *URL:* ftp://ftp.cse.unsw.edu.au/pub/users/lambert/thesis.ps.Z. *Keywords:* doctoral thesis. *Abstract:* The Delaunay triangulation of a set of sites (points in the plane) can be defined as the triangulation with the property that the circumcircle of each triangle is empty (contains no site). I generalize this to define *empty-shape triangulations*. An empty-shape triangulation is defined by a set of shapes with the property that any triangle has a unique circumscribing shape. The Delaunay triangulation is the empty-shape triangulation where the shapes consist of the set of all circles.

In this thesis I develop a taxonomy for triangulation algorithms, describe and implement a plane sweep algorithm for empty-shape triangulations, describe algorithms for constrained empty-shape triangulations and an algorithm for higher-dimensional empty-shape triangulations. I implement an algorithm for computing convex-distance-function Delaunay triangulations by extending them to empty-shape triangulations and then extracting the appropriate subtriangulation.

Two properties of the Delaunay triangulation are necessary for the correctness of the known efficient algorithms. I prove that the only triangulations with these properties are empty-shape triangulations.

I analyze, implement and measure the performance of Delaunay triangulation algorithms on random convex polygons.

There is no generally accepted definition of what a random convex polygon is. I give several operational definitions, design efficient algorithms and implement some of them.

8455 T. Lambert. Local optimization of triangulations. manuscript, 1993. [l-lot-93]

8456 T. Lambert. Local optimization of triangulations. manuscript, 1993. [l-lot-93a]

8457 T. Lambert. Systematic local flip rules are generalized Delaunay rules. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 352–357, 1993. [l-slfra-93] *Cites:* a-vdsfg-91, be-mgot-92i, b-koejk-36, d-pacdt-90, d-srbtg-87, fdfh-cgpp-90, f-skgk-20, g-itsn-86, gks-ricdv-92, gs-pmgsc-85, k-cavd-89, l-lot-93, l-gtgac-72, ls-tacdt-80, nf-scbut-83, o-dtfl-90, ba-acfem-76, s-let-78, ZZZ.

8458 T. Lambert. The Delaunay triangulation maximizes the mean inradius. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 201–206, 1994. [l-dtmmi-94] *Cites:* a-vdsfg-91, b-ras-77, be-mgot-92i, ds-oiti-89, d-iw-86, fdfh-cgpp-90, f-vddt-92, h-mg-85, j-aeg-60, l-lot-93, ba-acfem-76, d-srbtg-87, ls-agt-, o-dtfl-90, p-mrpdt-92, r-odtr-91, r-mrpdt-90, s-tm-87, s-let-78, w-pdcig-91, fp-jtgp-89, ZZZ.

8459 Y. Lamdan, J. T. Schwartz, and H. J. Wolfson. Object recognition by affine invariant mapping. In *Proc. IEEE Internat. Conf. Comput. Vision Pattern. Recogn.*, pages 335–344, 1988. [lsw-oraim-88]

8460 Y. Lamdan and H. J. Wolfson. Geometric hashing: a general and efficient model-based recognition scheme. In *2nd Inter. Conf. on Comput. Vision*, pages 238–249, 1988. [lw-ghgem-88]

8461 Y. Lamdan and H. J. Wolfson. On the error analysis of geometric hashing. In *Proc. IEEE Internat. Conf. Comput. Vision Pattern. Recogn.*, pages 22–27, 1991. [lw-eagh-91]

8462 Michael G. Lamoureux, Joseph D. Horton, and Bradford G. Nickerson. Dynamizing domination queries in 2–dimensions: The paper stabbing problem revisited. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 211–216, 1997. [lhn-ddq2d-97]

8463 Leslie Lamport. *A Document Preparation System Latex User's Guide and Reference Manual*. Addison-Wesley, 1986. [l-dpslu-86]

Scott H. Lamson. See also [7066].

8464 H. Lamure and D. Michelucci. Solving geometric constraints by homotopy. In *Proc. 3rd ACM Symposium on Solid Modeling and Applications*, May 1995. [lm-sgch-95]

8465 P.-T. Lan, S.-Y. Chou, L.-L. Chen, and D. Gemmill. Determining fabrication orientations for rapid prototyping with stereolithography apparatus. *Comput. Aided Design*, 29(1):53–62, January 1997. [lccg-dforp-97]

R. Lancewicki. See also [10629].

8466 G. M. Landau and U. Vishkin. Pattern matching in a digitized image. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 453–462, 1992. [lv-pmdi-92]

8467 Gad M. Landau and Uzi Vishkin. Two dimensional pattern matching in a digitized image. In *Combinatorial Pattern Matching*, volume 684 of *Lecture Notes Comput. Sci.*, pages 134–151. Springer-Verlag, 1993. [lv-tdpmd-93]

8468 S. Landau. Factoring polynomials quickly. *Notices Amer. Math. Soc.*, 34(1):3–8, 1987. [l-fpq-87]

8469 S. Landau and G. L. Miller. Solvability by radicals in polynomial time. In *Proc. 15th Annu. ACM Sympos. Theory Comput.*, pages 140–151, 1983. [lm-srpt-83] *Precedes:* lm-srpt-85.

8470 S. Landau and G. L. Miller. Solvability by radicals in polynomial time. *J. Comput. Syst. Sci.*, 30:179–208, 1985. [lm-srpt-85] *Succeeds:* lm-srpt-83.

S. Landau. See also [3605].

8471 U. M. Landau. Estimation of circular arc center and its radius. *Comput. Vision Graph. Image Process.*, 38:317–326, 1987. [l-ecacr-87]

D. Landgrebe. See also [11521].

D. J. Landridge. See also [11380].

S. Landru. See also [3606].

8472 J. Lane, B. Magedson, and M. Rarick. An efficient point in polyhedron algorithm. *Comput. Vision Graph. Image Process.*, 26:118–125, 1984. [lmr-eppa-84]

8473 J. M. Lane, L. C. Carpenter, J. T. Whitted, and J. F. Blinn. Scan line methods for displaying parametrically defined surfaces. *Commun. ACM*, 23(1):23–34, 1980. [lcwb-slmdp-80]

8474 J. M. Lane and R. Riesenfeld. Bounds on a polynomial. *BIT*, 21:112–117, 1981. [lr-bp-81]

8475 J. M. Lane and R. R. Riesenfeld. A theoretical development for the computer generation and display of piecewise polynomial surfaces. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-2(1), January 1980. [lr-tdcgd-80]

B. Lang. See also [71].

8476 Robert J. Lang. A computational algorithm for origami design. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 98–105, 1996. [l-caod-96] *Cites:* ml-osl-90, m-oe-79, l-oi-95, k-fo-95, m-po-89, k-co-67, kt-oc-78, k-oo-88, e-oaz-94, m-??-94, k-tffaf-94, k-rbmcv-89, l-maod-94, h-mfo-94, h-ccpp-76, bh-cfo-96, v-noted-84, pftv-nrc-93, g-tc-92, ZZZ.

8477 R. J. Lang. Mathematical algorithms for origami design. *Symmetry: Culture and Science*, 5(2):115–152, 1994. [l-maod-94]

8478 R. J. Lang. *Origami Insects*. Dover, 1995. [l-oi-95]

R. J. Lang. See also [9831].

8479 Serge Lang. *Analysis I*. Addison-Wesley, New York, NY, 1969. [l-a1-69]

8480 E. de Lange. *Aide géométrique à l'aménagement de satellites*. Thèse de doctorat en sciences, École Nationale Supérieure des Mines de Paris, France, 1998. [l-agas-98] *URL:* http://www-sop.inria.fr/prisme/publis/these-delange.ps.gz. *Keywords:* doctoral thesis.

Eelco de Lange. See also [2208, 2209].

8481 K. Lange, R. Ray, M. Smid, and U. Wendt. Computing large planar regions in terrains. In *Proc. 8th International Workshop on Combinatorial Image Analysis*, pages 139–151, 2001. [lrsw-clprt-01] *Comments:* Appears also in Electronic Notes in Theoretical Computer Science, Volume 46, www.elsevier.nl/locate/entcs/volume46.html.

L. H. Lange. See also [2781].

Stefan Langerman. See also [3950].

8482 Stefan Langermann. On the complexity of halfspace area queries. In *Abstracts 17th European Workshop Comput. Geom.*, pages 86–88. Freie Universität Berlin, 2001. [l-chaq-01]

8483 Elmar Langetepe. *Design and Analysis of Strategies for Autonomous Systems in Motion Planning*. PhD thesis, Department of Computer Science, FernUniversität Hagen, 2000. [l-dasas-00] *Keywords:* doctoral thesis. *Cites:* aaiklr-psac-97, aaiklr-gsac-98p, admss-esstl-95, bcr-sp-93, b-olsn-98, brs-nugt-97, bl-piss-99, bs-srsc-99, bsmm-tdm-93, cn-cvpp-99, cgglmw-m5lrm-91, cgglmw-fltim-92, cn-owr-88, c-lp-83, cg-opapp-92, cghj-lwfm-93, cfg-upg-90, dhn-lvp-97, dcd-ncaas-96, dhs-cspbg-95, di-csgs-94, di-csgs-99, bkos-cgaa-97, ew-mmcfs-99, fw-ola-98, g-sg-80, g-csg-89, gj-cigtn-79, gs-oolaw-97, hns-psmr-99, hikl-hfplf-97, hikl-hfplf-99, hikk-cslp-97, hikk-maar-98, hikk-pepns-98, hikk-pep1c-98, hikk-pep2a-98, i-mvsp-94, ik-skpcs-95, ikl-skpcs-97, ikl-sac-97, ikl-ocsws-98, ikl-ocsws-99, ikl-sgmrw-99, ikl-sac-99, ikm-hlac-93, ilss-ghtus-98, jdugg-wcpbs-74, k-wusbd-91, k-wusbd-92, k-ag-97, k-olssp-94, ks-aools-97, lp-oafkp-79, lc-tasso-99, lsksc-ncssu-97, l-oltsb-96, ls-ghtus-95, ls-serst-95, ls-gsr-96, ls-wsf-96, ls-pinos-97, ls-ecesc-98, ls-lbsgs-98, ls-ussmr-98, m-gspno-00, osh-kaoa-94, ps-cgi-85, rksi-rnut-93, r-cic-94, rs-addce-91, s-smbr-98, ss-oss-98, ss-ossus-99, s-naci-89, s-aeusf-96, st-aelup-85, th-cswrd-93, thl-tgwsp-98, ZZZ.

Elmar Langetepe. See also [38–40, 369–372, 6941, 6942, 7289, 7300–7305].

L. Langley. See also [2130].

M. A. Langston. See also [12540].

8484 P. M. Lankford. Regionalization: theory and alternative algorithms. *Geogr. Anal.*, 1:196–212, 1969. [l-rtaa-69]

8485 M. Lanthier, A. Maheshwari, and J.-R. Sack. Approximating weighted shortest paths on polyhedral surfaces. Technical Report TR-96-32, Carleton Univ., Ottawa, ON, December 1996. [lms-awspp-96]

8486 M. Lanthier, A. Maheshwari, and J.-R. Sack. Approximating weighted shortest paths on polyhedral surfaces. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 274–283, 1997. [lms-awspp-97i] *Keywords:* shortest paths, weighted region problem, discrete geodesic problem. *Cites:* hsv-aspcp-96, aaos-supa-97, ch-spp-90, c-aaspm-87, d-ntpcg-59, gh-ospqs-87, hs-pmasp-95, hlmnrs-pnm-96, lms-awspp-96, lms-awspp-97v, mmp-dgp-87, mp-wrpfs-91, ms-scg-95, m-fspcp-85, osb-spps-84, rr-ogfpp-90, ss-spps-86, va-aspp-96, ZZZ.

8487 M. Lanthier, A. Maheshwari, and J.-R. Sack. Approximating weighted shortest paths on polyhedral surfaces. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 485–486, 1997. [lms-awspp-97v] *Keywords:* video review. *Cites:* aaos-supa-97, ch-spp-90, lms-awspp-96, lms-awspp-97i, mmp-dgp-87, mp-wrpfs-91, ZZZ.

M. Lanthier. See also [472, 473, 7237–7239].

8488 C. Lantuejoul and F. Maisonneuve. Geodesic methods in quantitative image analysis. *Pattern Recogn.*, 17:177–187, 1984. [lm-gmqia-84]

8489 A. LaPaugh. *Algorithms for Integrated Circuit Layout: An Analytic Approach.* PhD thesis, Laboratory for Computer Science, MIT, 1980. [l-aicla-80] *Keywords:* doctoral thesis.

8490 G. Laporte, H. Mercure, and Y. Nobert. An exact algorithm for the asymmetrical capacitated vehicle routing problem. *Networks*, 16:47–50, 1986. [lmn-eaacv-86]

8491 D. G. Larman. Helly type properties of unions of convex sets. *Mathematica*, 15:53–59, 1968. [l-htpuc-68]

8492 D. G. Larman. Paths on polytopes. In *Proc. Lon. Math. Soc.*, volume 20, pages 161–178, 1970. [l-pp-70]

8493 D. G. Larman, J. Matoušek, J. Pach, and J. Tőrőcsik. A Ramsey-type result for planar convex sets. *Bull. London Math. Soc.*, 26:132–136, 1994. [lmpt-rtrpc-94]

D. G. Larman. See also [1380, 5096].

8494 L. Larmore and D. Hirschberg. Length-limited coding. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 310–318, 1990. [lh-llc-90]

8495 L. Larmore and T. Przytycka. Parallel construction of trees with optimal weighted path length. In *Proc. 3rd ACM Sympos. Parallel Algorithms Arch.*, pages 71–80, 1991. [lp-pctow-91]

8496 L. Larmore and B. Schieber. On-line dynamic programming with applications to prediction of RNA secondary structure. *J. Algorithms*, 12:490–515, 1991. [ls-oldpa-91]

L. Larmore. See also [1575].

8497 L. L. Larmore. An optimal algorithm with unknown time complexity for convex matrix searching. *Inform. Process. Lett.*, 36:147–151, 1990. [l-oautc-90]

8498 L. L. Larmore and B. Schieber. On-line dynamic programming with applications to the prediction of RNA secondary structure. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 503–512, 1990. [ls-oldpa-90]

L. L. Larmore. See also [714, 6951].

R. Larntz. See also [1617].

8499 L. C. Larson. *Problem-Solving Through Problems.* Springer-Verlag, New York, NY, 1983. [l-pstp-83]

8500 R. C. Larson and V. O. K. Li. Finding minimum rectilinear distance paths in the presence of barriers. *Networks*, 11:285–304, 1981. [ll-fmrdp-81]

8501 M. Las Vergnas. Convexity in oriented matroids. *J. Combin. Theory Ser. B*, 29:231–243, 1980. [l-com-80]

M. Las Vergnas. See also [2056, 2066, 3542].

M. C. Laskowski. See also [8135].

8502 H. Lass. *Vector and Tensor Analysis.* McGraw-Hill, 1950. [l-vta-50]

8503 M. Lassak and J. Zhang. An on-line potato-sack theorem. *Discrete Comput. Geom.*, 6:1–7, 1991. [lz-olpst-91]

M. Lassak. See also [6303].

8504 Dieter Lasser. Kurven- und Flächen-Verschneidungsmethoden. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 17. Universität Siegen, 1990. [l-kfv-90]

D. Lasser. See also [7130].

8505 J. B. Lasserre. An analytical expression and an algorithm for the volume of a convex polyhedron in R^n. *J. Optim. Theory Appl.*, 39:363–377, 1983. [l-aeavc-83]

G. Lassmann. See also [8396].

A. Lastra. See also [8412].

N. Lasudry. See also [9160].

8506 M. Laszlo. *Computational Geometry and Computer Graphics in C++.* Prentice Hall, Englewood Cliffs, NJ, 1996. [l-cgcgc-96] *ISBN:* 0-13-290842-5.

8507 M. J. Laszlo. *A data structure for manipulating three-dimensional subdivisions.* Ph.D. thesis, Dept. Comput. Sci., Princeton Univ., Princeton, NJ, 1987. Report CS-TR-125-87. [l-dsmtd-87] *Keywords:* doctoral thesis.

M. J. Laszlo. See also [4299, 4300].

8508 J.-C. Latombe. A fast path-planner for a car-like indoor mobile robot. In *Proc. 9th Nat. Conf. Artif. Intell.*, pages 659–665, 1991. [l-fppcl-91]

8509 J.-C. Latombe. Motion planning with uncertainty: The preimage backchaining approach. Technical Report STAN-CS-88-1196, Department of Computer Science, Stanford University, 1988. [l-mpupb-88]

8510 J.-C. Latombe. *Robot Motion Planning.* Kluwer Academic Publishers, Boston, 1991. [l-rmp-91] *Keywords:* robotics.

8511 J.-C. Latombe and R. H. Wilson. Assembly sequencing with toleranced parts. In *Proc. 3rd ACM Symposium on Solid Modeling and Applications*, 1995. [lwc-astp-95]

Jean-Claude Latombe. See also [199, 1443–1447, 5265–5267, 6018, 6389, 6390, 6582–6584, 7152, 7923, 7924, 7926, 7927, 8534, 8555, 8556, 13625, 13626, 13898].

8512 Harald Lauer, Matthias Ettrich, and Klaus Soukup. GraVis - system demonstration. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 344–349. Springer-Verlag, 1997. [les-gsd-97] *Keywords:* graph drawing.

8513 M. Lauer. Computing by homomorphic images. In B. Buchberger, G. E. Collins, and R. Loos, editors, *Computer Algebra: Symbolic and Algebraic Computation*, pages 139–168. Springer-Verlag, 1982. [l-chi-82]

C. Laugier. See also [7625].

D. Laugwitz. See also [3741].

8514 J.-P. Laumond. Connectivity of planar triangulations. *Inform. Process. Lett.*, 34(2):87–96, March 1990. [l-cpt-90]

8515 J. P. Laumond. Feasible trajectories for mobile robots with kinematic and environment constraints. In L. O. Hertzberger and F. C. A. Groen, editors, *Conference on Intelligent Autonomous Systems (Amsterdam, the Netherlands, December 8–11, 1986)*, pages 346–354. Elsevier Science Publishers, December 1986. [l-ftmrk-86]

8516 J.-P. Laumond. Finding collision-free smooth trajectories for a non-holonomic mobile robot. In *Proc. Internat. Joint Conf. Artif. Intell.*, pages 1120–1123, 1987. [l-fcfst-87]

8517 J.-P. Laumond. Obstacle growing in a nonpolygonal world. *Inform. Process. Lett.*, 25:41–50, 1987. [l-ognw-87] *Keywords:* combinatorial geometry.

8518 J.-P. Laumond and R. Alami. A geometrical approach to planning manipulation tasks in robotics. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 21, 1989. [la-gapmt-89]

8519 J.-P. Laumond, P. Jacobs, M. Taix, and R. M. Murray. A motion planner for nonholonomic mobile robots. *IEEE Trans. Robot. Autom.*, 10(5):577–593, 1994. [ljtm-mpnmr-94]

8520 J.-P. Laumond and M. H. Overmars, editors. *Algorithms for Robotic Motion and Manipulation.* A. K. Peters, Wellesley, MA, 1996. [lo-afr2-96]

8521 J.-P. Laumond and P. Souères. Metric induced by the shortest paths for a car-like robot. In *IEEE Internat. Workshop on Intelligent Robots and Systems*, 1993. [ls-mispc-93]

J.-P. Laumond. See also [2210, 2580, 2581, 3595, 3596, 7449, 7491, 12382, 12383].

8522 A. Laurentini. Inferring the shape of the real object from the object reconstructid by volume intersection. In *Proc. IEEE CVPR*, pages 280–285, June 1993. [l-isroo-93]

8523 A. Laurentini. On the minimal number of volume intersection operations necessary for reconstructing a $3D$ object. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 285–290, 1993. [l-mnvio-93] *Cites:* s-rtddi-81, ka-rpcsm-86, ca-mrsro-89, sa-agoos-87, t-impbp-87, av-gooso-89, hs-drwsv-85, sp-viosd-91, ma-vdomv-83, s-cgmvi-90, p-gom3o-87, n-coatd-88, ca-vsort-86, c-mvor-87, l-viacd-89, n-loviu-92, l-vhntc-91, l-vhsr-92, l-vhcsi-, lpr-lovi-89, l-isroo-93, ZZZ.

8524 A. Laurentini. The surveillance of the walls of an art gallery. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 223–233. Carleton University Press, Ottawa, Canada, 1996. [l-swag-96]

8525 A. Laurentini. The visual hull: a new tool for contour-based image understanding. In *Proc. 7th Scandinavian Conf. on Image Analysis*, pages 993–1002, 1991. [l-vhntc-91]

8526 A. Laurentini. The visual hull concept for silhouette-based image understanding. to appear in IEEE Trans. Pattern Anal. Machine Intell. [l-vhcsi-]

8527 A. Laurentini. The visual hull of solids of revolution. In *Proc. 11th IAPR Int. Conf. on Pattern Recognition*, pages 720–724, 1992. [l-vhsr-92]

8528 Robert Laurini and Derek Thompson. *Fundamentals of Spatial Information Systems*. Academic Press, Boston, MA, 1992. [lt-fsis-92] *ISBN:* 0-12-438380-7.

8529 C. Lautemann. Cases where the floor function doesn't help. *Bull. EATCS*, 26:159, 1985. [l-cwffd-85] *Comments:* Talk presented at the 2nd Meeting on Efficient Algorithms, Oberwolfach, West Germany (Nov. 1984).

8530 L. Lauther. 4-dimensional binary search trees as 2 means to speed up associative searches in design rule verification of integrated circuits. *J. Design Autom. Fault-Tolerant Comput.*, 2:241–247, 1978. [l-4dbst-78]

8531 S. E. Laux and B. M. Grossman. A general control volume formulation for modeling impact ionization in semiconductor transport. *IEEE Trans. Electron. Devices*, 32:2076–2081, 1985. [lg-gcvfm-85]

8532 Lavakusha et al. Volume intersection algorithms with changing directions of views. In *Proc. MIV-89*, pages 309–314, 1989. [l-viacd-89]

8533 Lavakusha, Arun K. Pujari, and P. G. Reddy. Linear octrees by volume intersection. *Comput. Vision Graph. Image Process.*, 45:371–379, March 1989. [lpr-lovi-89]

8534 S. M. LaValle, D. Lin, L. J. Guibas, J.-C. Latombe, and R. Motwani. Finding an unpredictable target in a workspace with obstacles. In *Proc. IEEE Internat. Conf. Robot. Autom.*, April 1997. To appear. [llglm-futwo-97]

8535 Steven M. LaValle, Borislav Simov, and Giora Slutzki. An algorithm for searching a polygonal region with a flashlight. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 260–269, 2000. [lss-asprf-00]

8536 David Lavender, Adrian Bowyer, James Davenport, Andrew Wallis, and John Woodwark. Voronoi diagrams of set-theoretic solid models. *IEEE Comput. Graph. Appl.*, 12(5):69–77, September 1992. [lbdww-vdsts-92]

M. A. Lavin. See also [8784].

D. Lavine. See also [1666].

L. N. Kanal and D. Lavine. See also [1667].

M. Lavine. See also [1617].

8537 E. Lawler. *Combinatorial Optimization: Networks and Matroids*. Holt, Rinehart & Winston, New York, 1976. [l-conm-76]

8538 E. L. Lawler, J. K. Lenstra, A. H. G. Rinnooy Kan, and D. B. Shmoys, editors. *The Traveling Salesman Problem*. John Wiley & Sons, New York, NY, 1985. [llrs-tsp-85] *ISBN:* 0-471-90413-9. *Keywords:* book. *Annote:* a collection of survey articles by various authors (the BIBLE on the TSP).

E. L. Lawler. See also [13149].

8539 G. Lawlor and F. Morgan. Minimizing cones and networks: immiscible fluids, norms, and calibrations. Preprint, Williams College, 1991. [lm-mcnif-91]

8540 G. Lawlor and F. Morgan. Paired calibrations applied to soapfilms, immiscible fluids, and surfaces or networks minimizing other norms. Preprint, 1991. [lm-pcasi-91]

8541 J. Lawrence. Polytope volume computation. *Math. Comput.*, 57(195):259–271, 1991. [l-pvc-91]

8542 J. Lawrence. Valuations and polarity. *Discrete Comput. Geom.*, 3:307–324, 1988. [l-vp-88]

8543 J. D. Lawrence. *A Catalog of Special Plane Curves*. Dover Publications, New York, NY, 1972. [l-cspc-72]

K. L. Lawrence. See also [1931].

8544 C. L. Lawson. C^1-compatible interpolation over a triangle. Technical Memo 33-770, Jet Propulsion Lab., California Inst. Tech., Pasadena, CA, 1976. [l-ccit-76]

8545 C. L. Lawson. C^1 surface interpolation for scattered data on a sphere. *Rocky Mountain J. Math.*, 14(1):177–202, 1984. [l-csisd-84] *Annote:* Triangulates sphere using incremental algorithm with switching. Switching rule is to make the quadrilateral convex with respect to the sphere.

8546 C. L. Lawson. Generation of a triangular grid with applications to contour plotting. Memo 299, Jet Propulsion Lab., California Inst. Tech., Pasadena, CA, 1972. [l-gtgac-72]

8547 C. L. Lawson. Integrals of $2C^1$-compatible triangular surface element. Technical Memo 33-808, Jet Propulsion Lab., California Inst. Tech., Pasadena, CA, 1976. [l-i2cts-76]

8548 Charles L. Lawson. Properties of N-dimensional triangulations. *Comput. Aided Geom. Design*, 3(4):231–246, December 1986. [l-pndt-86] *Keywords:* n-dimensional triangulation, Delaunay triangulation, Dirichlet tessellation. *Annote:* Generalizes some of the properties of 2D triangulations. *Abstract:* This paper establishes a number of mathematical results relevant to the problem of constructing a triangulation, i. e. , a simplical tessellation of the convex hull of an arbitrary finite set of points in n-space. The principal results of the present paper are (a) A set of n PLUS 2 points in n-space may be triangulated in at most 2 different ways. (b) The 'sphere test' defined in this paper selects a preferred one of these two triangulations. (c) A set of parameters is defined that permits the characterization and enumeration of all sets of n PLUS 2 points in n-space that are significantly different from the point of view of their possible triangulations. (d) The local sphere test induces a global sphere test property for a triangulation. (e) A triangulation satisfying the global sphere property is dual to the n-dimensional Dirichlet tessellation, i. e. , it is a Delaunay triangulation. (Author abstract) 12 refs.

8549 C. L. Lawson. Software for C^1 surface interpolation. In J. R. Rice, editor, *Math. Software III*, pages 161–194. Academic Press, New York, NY, 1977. [l-scsi-77]

8550 C. L. Lawson. Some properties of n-dimensional triangulations. Publication 85-42, Jet Propulsion Lab., California Inst. Tech., Pasadena, CA, 1985. [l-spndt-85]

8551 C. L. Lawson. Transforming triangulations. *Discrete Math.*, 3:365–372, 1972. [l-tt-72] *Annote:* Proves that any triangulation of a given set of points can be transformed into any other by a sequence of "exchanges". (If two adjacent triangles form a convex quadrilateral, replace the included diagonal with the other one.).

8552 S. R. Lay. *Convex Sets and Their applications*. John Wiley & Sons, New York, 1972. [l-csa-72]

8553 Steven R. Lay. *Convex Sets and Their Applications*. John Wiley & Sons, New York, NY, 1982. [l-csta-82] *Keywords:* book.

8554 S. R. Lay. On separation by spherical surfaces. *Amer. Math. Monthly*, 78:1112–1113, 1971. [l-sss-71]

A. Layman. See also [6247].

8555 A. Lazanas and J.-C. Latombe. Landmark-based robot navigation. Technical Report, Dept. of Computer Science, Stanford University, 1992. [ll-lbrn-92]

8556 A. Lazanas and J.-C. Latombe. Motion planning with uncertainty: A landmark approach. Technical Report, Dept. of Computer Science, Stanford University, 1992. [ll-mpula-92]

8557 D. Lazard. Gröbner-bases, Gaussian elimination and resolution of systems of algebraic equations. In *Proc. EUROCAL 83*, pages 146–156, 1983. [l-gbger-83]

8558 Sylvain Lazard. *Planification de trajectoires de robots mobiles non-holonomes et de robots à pattes*. Thèse de doctorat en sciences, université Paris 6, France, 1996. [l-ptrmn-96] *URL:* http://www-sop.inria.fr/prisme/publis/these-lazard.ps.gz. *Keywords:* doctoral thesis.

8559 Sylvain Lazard. Shortest paths of bounded curvature in a convex polygon. Manuscript, presented at the 2nd cgc workshop on computational geometry, october, 1997, McGill University, 1997. [l-spbcc-97]

S. Lazard. See also [160, 1979, 1980, 1991, 2181–2184, 2211, 2212, 5081].

8560 Francis Lazarus, Michel Pocchiola, Gert Vegter, and Anne Verroust. Computing a canonical polygonal schema of an orientable triangulated surface. In *Abstracts 17th European Workshop Comput. Geom.*, pages 146–149. Freie Universität Berlin, 2001. [lpvv-ccpso-01]

F. Lazarus. See also [12831].

8561 E. Le Bras-Mehlman, M. Schmitt, O. D. Faugeras, and J. D. Boissonnat. How the Delaunay triangulation can be used for representing stereo data. In *Second International Conference on Computer Vision*, pages 54–63, New York, NY, 1988. IEEE. [lsfb-hdtcb-88] *Keywords:* Delaunay triangulation, stereo data. *Annote:* Uses Watson style insertion algorithm. Constraints are dealt with by adding extra points. To get a triangulated surface we discard tetrahedra that block visibility of line segments. This is combined with 3D DT calculation. *Abstract:* A coherent method is discussed of interpolating 3-D data with a polyhedral surface by the Delaunay triangulation. First some theoretical properties are given concerning the approximation of sampled objects obtained when the sampling rate increases, based on study of object skeletons using some tools of mathematical morphology. Then the algorithms and their complexity analysis are presented which yield both a surface representation of objects and a volume representation of free space. This goal is achieved by means of a simple visibility criterion. The method is intrinsically discontinuity- preserving and is useful for the integration of multiple viewpoints. 32 Refs.

E. Le Bras-Mehlman. See also [2201, 2202, 5150].

8562 Ngoc-Minh Lê. A quantum–searching application note. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 113–116, 1997. [l-qsan-97]

8563 Ngoc-Minh Lê. Abstract Voronoi diagrams in 3-space. Technical Report HKUST-TCSC-99-11, Hong Kong University of Science and Technology, Theoretical Computer Science Center, 1999. [l-avd3s-99] *URL:* http://www.cs.ust.hk/tcsc/RR/1999-11.ps.gz.

8564 Ngoc-Minh Lê. Computing the L_∞-Voronoi diagram in 3-space optimally. In *Abstracts 14th European Workshop Comput. Geom.*, page 113. Universitat Polytènica de Catalunya, Barcelona, 1998. [l-clvd3-98]

8565 Ngoc-Minh Lê. On determining optimal strategies in pursuit games in the plane. Technical Report 172, Department of Computer Science, FernUniversität Hagen, Germany, 1995. [l-dospg-95t] *Precedes:* l-dospg-95.

8566 Ngoc-Minh Lê. On determining optimal strategies in pursuit games in the plane. In *Proc. 22th Internat. Colloq. Automata Lang. Program.*, volume 944 of *Lecture Notes Comput. Sci.*, pages 499–510. Springer-Verlag, 1995. [l-dospg-95] *Succeeds:* l-dospg-95t.

8567 Ngoc-Minh Lê. On general properties of strictly convex smooth distance functions in R^d. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 375–380, 1993. [l-gpscs-93] *Cites:* ei-drmwc-79, h-dt-76, iklm-cdf3s-93, k-vd-73, m-dmpcg-90, s-nfa-69, ZZZ.

8568 Ngoc-Minh Lê. On non-smooth convex distance functions. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 113–118. Carleton University Press, Ottawa, Canada, 1996. [l-nscdf-96]

8569 Ngoc-Minh Lê. On non-smooth convex distance functions. *Inform. Process. Lett.*, 63(6):323–329, 1997. [l-nscdf-97] *Keywords:* Voronoi diagram, convex distance function, abstract Voronoi diagram.

8570 Ngoc-Minh Lê. On Voronoi diagrams in the L_p metric in higher dimensions. In *Proc. 11th Sympos. Theoret. Aspects Comput. Sci.*, volume 755 of *Lecture Notes Comput. Sci.*, pages 711–722. Springer-Verlag, 1994. [l-vdlmh-94] *Precedes:* l-vdlm-96.

8571 Ngoc-Minh Lê. On Voronoi diagrams in the L_p-metric in R^D. *Discrete Comput. Geom.*, 16:177–196, 1996. [l-vdlm-96] *Succeeds:* l-vdlmh-94.

8572 Ngoc-Minh Lê. Randomized incremental construction of simple abstract Voronoi diagrams in 3-space. Technical Report 174, Department of Computer Science, FernUniversität Hagen, Germany, 1995. [l-ricsa-95t] *Precedes:* l-ricsa-95.

8573 Ngoc-Minh Lê. Randomized incremental construction of simple abstract Voronoi diagrams in 3-space. In *Proc. 10th Internat. Conf. Fund. Comput. Theory*, volume 965 of *Lecture Notes Comput. Sci.*, pages 333–342. Springer-Verlag, 1995. [l-ricsa-95] *Succeeds:* l-ricsa-95t. *Precedes:* l-ricsa-97.

8574 Ngoc-Minh Lê. Randomized incremental construction of simple abstract Voronoi diagrams in 3-space. In *Abstracts 11th European Workshop Comput. Geom.*, pages 17–20. Universität Linz, 1995. [l-ricsa-95c]

8575 Ngoc-Minh Lê. Randomized incremental construction of simple abstract Voronoi diagrams in 3-space. *Comput. Geom. Theory Appl.*, 8:279–298, 1997. [l-ricsa-97] *Keywords:* computational geometry, Voronoi diagrams, power diagrams, convex distance functions. *Succeeds:* l-ricsa-95.

Ngoc-Minh Lê. See also [7306–7310].

8576 V. B. Le and D. T. Lee. Out-of-roundness problem revisited. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-13(3):217–223, 1991. [ll-orpr-91]

8577 A. Leach. A survey of methods for searching the conformational space of small and medium sized molecules. In K. Lipkowitz and D. Boyd, editors, *Reviews in Computational Chemistry*, volume 2, pages 1–47. VCH Publishers, 1991. [l-smscs-91]

8578 G. Leach. Improving worst-case optimal Delaunay triangulation algorithms. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 340–346, 1992. [l-iwcod-92] *Cites:* d-fdcac-87, e-acg-87, f-savd-87, gs-dfbt-78, ps-cgi-85, b-prcv-75, dk-savd-87, gs-pmgsc-85, j-ecpqe-86, kln-edtur-91, ls-tacdt-80, s-a-88, s-cg-78, sh-cpp-75, st-sah-86, ZZZ.

B. Leban. See also [8053].

8579 A. Leblanc. Some applications of the topological plane sweep algorithm. Technical Report SOCS 90.5, McGill Univ., Montreal, PQ, 1990. [l-satps-90]

Juliette Leblond. See also [2160, 2167–2170].

8580 ?? L'Ecuyer and ?? Tezuka. Structural properties for two classes of combined random number generators. *Math. Comput.*, 57, 1991. [lt-sptcc-91]

8581 Pierre L'Ecuyer. Efficient and portable combined random number generators. *Commun. ACM*, 31:742–749, 774, 1988. [l-epcrn-88]

8582 A. W. F. Lee, W. Swelden, P. Schröder, L. Cowsar, and D. Dobkin. Maps: Multiresolution adaptive parameterization of surfaces. In *Proc. SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, pages 95–104, July 1998. [lsscd-mmaps-98]

8583 B. Lee and F. M. Richards. The interpretation of protein structure: Estimation of static accessibility. *J. Molecular Biology*, 55:379–400, 1971. [lr-ipses-71]

8584 C. Lee. Regular triangulations of polytopes. In *Applied Geometry and Discrete Mathematics*, volume 4 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 443–456. AMS Press, 1991. [l-rtp-91] *Keywords:* convex hull, expected-case analysis.

C. Lee. See also [1535, 3175].

8585 C. C. Lee and D. T. Lee. On a circle-cover minimization problem. *Inform. Process. Lett.*, 18:109–115, 1984. [ll-ccmp-84]

C. T. Lee. See also [2849].

8586 C. W. Lee. Subdivisions and triangulations of polytopes. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 14, pages 271–290. CRC Press LLC, Boca Raton, FL, 1997. [l-stp-97]

8587 C. W. Lee. The associahedron and triangulations of the n-gon. *European J. Combin.*, 10:551–560, 1989. [l-atng-89]

C. W. Lee. See also [2029, 7005].

8588 D. Lee and A. Lin. Computational complexity of art gallery problems. *IEEE Trans. Inform. Theory*, 32(2):276–282, 1986. [ll-ccagp-86]

D. Lee. See also [366, 5336, 7363, 13751].

8589 D. T. Lee. An approach to finding the k-nearest neighbors in the Eucliedean plane. Technical report, Dept. Elect. Engrg. Comput. Sci., Northwestern Univ., Evanston, IL, 1981. [l-afknn-81]

8590 D. T. Lee. Computational geometry. In Jr. Allen B. Tucker, editor, *The Computer Science and Engineering Handbook*, chapter 6. CRC Press, Boca Raton, FL, 1996. [l-cg-96] *URL:* http://www.ece.nwu.edu/~dtlee/CRCHandbook_chap6.ps.Z. *Comments:* survey article, 36 pages, 128 references.

8591 D. T. Lee. Furthest neighbor Voronoi diagrams and applications. Report 80-11-FC-04, Dept. Elect. Engrg. Comput. Sci., Northwestern Univ., Evanston, IL, 1980. [l-fnvda-80]

8592 D. T. Lee. Geometric algorithm visualization revisited. In *Workshop on Geometric Computing*, 1997. [l-gavr-97] *URL:* http://www-sop.inria.fr/prisme/scg97/prog_workshop.html.

8593 D. T. Lee. Maximum clique problem of rectangle graphs. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 91–107. JAI Press, Greenwich, Conn., 1983. [l-mcprg-83]

8594 D. T. Lee. Medial axis transformation of a planar shape. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-4(4):363–369, 1982. [l-matps-82]

8595 D. T. Lee. On finding the convex hull of a simple polygon. Technical Report 80-03-FC-01, Northwestern Univ., Evanston, IL, March 1980. [l-fchsp-80]

8596 D. T. Lee. On finding the convex hull of a simple polygon. *Internat. J. Comput. Inform. Sci.*, 12:87–98, 1983. [l-fchsp-83]

8597 D. T. Lee. On finding the k-nearest neighbors in the plane. Master's thesis, Coordinated Sci. Lab., Univ. Illinois, Urbana, IL, 1976. Report R-728. [l-fknnp-76] *Keywords:* master thesis.

8598 D. T. Lee. On k-nearest neighbor Voronoi diagrams in the plane. *IEEE Trans. Comput.*, C-31:478–487, 1982. [l-knnvd-82]

8599 D. T. Lee. Proximity and reachability in the plane. Report R-831, Dept. Elect. Engrg., Univ. Illinois, Urbana, IL, 1978. [l-prp-78] *Succeeds:* l-prp-78p.

8600 D. T. Lee. *Proximity and reachability in the plane.* PhD thesis, Coordinated Science Lab., Univ. Illinois, Urbana, Ill., 1978. [l-prp-78p] *Keywords:* doctoral thesis. *Precedes:* l-prp-78.

8601 D. T. Lee. Rectilinear paths among rectilinear obstacles. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 5–20. Springer-Verlag, 1992. [l-rpro-92] *Precedes:* lyw-rpro-96. *Annote:* This is an abridged version of the journal paper by Lee, Yang, and Wong.

8602 D. T. Lee. Relative neighborhood graphs in the L_1 metric. *Pattern Recogn.*, 18(5):327–335, 1985. [l-rnglm-85] *Annote:* $O(n \log n)$ algorithm for RNG in L_1, from DT. Scan in each of four directions, removing non RNG edges.

8603 D. T. Lee. Shading of regions on vector display devices. *Comput. Graph.*, 15(3):37–44, 1981. Proc. SIGGRAPH '81. [l-srvdd-81]

8604 D. T. Lee. Two-dimensional Voronoi diagrams in the L_p-metric. *J. ACM*, 27(4):604–618, 1980. [l-tdvdl-80]

8605 D. T. Lee. Visibility of a simple polygon. *Comput. Vision Graph. Image Process.*, 22:207–221, 1983. [l-vsp-83]

8606 D. T. Lee. Weighted farthest neighbor Voronoi diagrams. Manuscript, Mississippi State University, February 1993. [l-wfnvd-93] *Comments:* Second Workshop on Proximity Graphs.

8607 D. T. Lee, C.-H. Chang, and C. K. Wong. An on-chip compare steer bubble sorter. *IEEE Trans. Comput.*, ??:396–405, 1981. [lcw-occss-81]

8608 D. T. Lee and I. M. Chen. Display of visible edges of a set of convex polygons. In G. T. Toussaint, editor, *Computational Geometry*, pages 249–265. North-Holland, Amsterdam, Netherlands, 1985. [lc-dvesc-85]

8609 D. T. Lee, T. H. Chen, and C. D. Yang. Shortest rectilinear paths among weighted obstacles. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 301–310, 1990. [lcy-srpwo-90] *Cites:* aaghi-vdp-86, ckv-rsptp-87, rlw-rsppr-89, ft-fhtu-84, gh-ospqs-87, gs-canen-83, ll-fmrdp-81, l-prp-78, lp-esppr-84, lw-apcfp-79, mp-psp-85, m-srpo-87t, m-naspo-88, ps-cgi-85, w-cvgnl-85, w-ndiv-89, wwsw-rspms-87, ZZZ.

8610 D. T. Lee and Y. T. Ching. The power of geometric duality revisited. *Inform. Process. Lett.*, 21:117–122, 1985. [lc-pgdr-85]

8611 D. T. Lee and R. L. Drysdale, III. Generalization of Voronoi diagrams in the plane. *SIAM J. Comput.*, 10:73–87, 1981. [ld-gvdp-81] *Keywords:* Voronoi diagrams, line segments, two-dimensional.

8612 D. T. Lee and A. Lin. Computing the visibility polygon from an egde. Technical Report, Northwestern University, 1984. [ll-cvpe-84]

8613 D. T. Lee and A. K. Lin. Computing the visibility polygon from an edge. *Comput. Vision Graph. Image Process.*, 34:1–19, 1986. [ll-cvpe-86]

8614 D. T. Lee and A. K. Lin. Generalized Delaunay triangulation for planar graphs. *Discrete Comput. Geom.*, 1:201–217, 1986. [ll-gdtpg-86]

8615 D. T. Lee and N. Megiddo. Routing around circles. Manuscript, ??, 1983. [lm-rac-83]

8616 D. T. Lee and A. Naamad. A dynamic data structure for Voronoi diagrams and its applications. Report 80-10-FC-03, Dept. Elect. Engrg. Comput. Sci., Northwestern Univ., Evanston, IL, 1980. [ln-ddsvd-80]

8617 D. T. Lee and F. P. Preparata. An improved algorithm for the rectangle enclosure problem. *J. Algorithms*, 3:218–224, 1982. [lp-iarep-82]

8618 D. T. Lee and F. P. Preparata. An optimal algorithm for finding the kernel of a polygon. *J. ACM*, 26(3):415–421, July 1979. [lp-oafkp-79]

8619 D. T. Lee and F. P. Preparata. Computational geometry: a survey. *IEEE Trans. Comput.*, C-33:1072–1101, 1984. [lp-cgs-84]

8620 D. T. Lee and F. P. Preparata. Euclidean shortest paths in the presence of rectilinear barriers. *Networks*, 14:393–410, 1984. [lp-esppr-84] *Keywords:* triangulations.

8621 D. T. Lee and F. P. Preparata. Location of a point in a planar subdivision and its applications. In *Proc. 8th Annu. ACM Sympos. Theory Comput.*, pages 231–235, 1976. [lp-lppsi-76] *Precedes:* lp-lppsi-77.

8622 D. T. Lee and F. P. Preparata. Location of a point in a planar subdivision and its applications. *SIAM J. Comput.*, 6(3):594–606, 1977. [lp-lppsi-77] *Succeeds:* lp-lppsi-76.

8623 D. T. Lee and F. P. Preparata. Parallel batched planar point location on the CCC. *Inform. Process. Lett.*, 33:175–179, 1989. [lp-pbppl-89]

8624 D. T. Lee and F. P. Preparata. The all nearest-neighbor problem for convex polygons. *Inform. Process. Lett.*, 7:189–192, 1978. [lp-annpc-78]

8625 D. T. Lee and M. Sarrafzadeh. Maximum independent set of a permutation graph in k tracks. *Internat. J. Comput. Geom. Appl.*, 3:291–304, 1993. [ls-mispg-93] *Keywords:* Permutation graphs, maximum independent set, maximum chain, track assignment, plane sweep technique.

8626 D. T. Lee and B. J. Schachter. Two algorithms for constructing Delaunay triangulations. *Internat. J. Comput. Inform. Sci.*, 9(3):219–242, 1980. [ls-tacdt-80]

8627 D. T. Lee, C.-F. Shen, and D. S. Sheu. Geosheet: A distributed visualization tool for geometric algorithms. *Internat. J. Comput. Geom. Appl.*, 8:119–156, 1998. [lss-gdvtg-98]

8628 D. T. Lee and C. B. Silio. An optimal illumination region algorithm for convex polygons. *IEEE Trans. Comput.*, C-31:1225–1227, 1982. [ls-oirac-82]

8629 D. T. Lee and C. B. Silio, Jr. An optimal simplex coverability algorithm for convex polygons. Report ??, Dept. Elect. Engrg. Comput. Sci., Northwestern Univ., Evanston, IL, 1980. [ls-oscac-80]

8630 D. T. Lee and C. K. Wong. Finding intersections of rectangles by range search. *J. Algorithms*, 2:337–347, 1981. [lw-firrs-81]

8631 D. T. Lee and C. K. Wong. Quintary trees: a file structure for multidimensional database systems. *ACM Trans. Database Syst.*, 5:339–353, 1980. [lw-qtfsm-80]

8632 D. T. Lee and C. K. Wong. Voronoi diagrams in L_1 (L_∞) metrics with 2-dimensional storage applications. *SIAM J. Comput.*, 9(1):200–211, 1980. [lw-vdllm-80]

8633 D. T. Lee and C. K. Wong. Worst-case analysis for region and partial region searches in multidimensional binary search trees and balanced quad trees. *Acta Inform.*, 9:23–29, 1977. [lw-wcarp-77]

8634 D. T. Lee and Y. F. Wu. Efficient algorithms for Euclidean 1-line center and problems. In *Proc. ISOLDE III*, page ??, 1987. [lw-eae1l-87]

8635 D. T. Lee and Y. F. Wu. Geometric complexity of some location problems. *Algorithmica*, 1:193–211, 1986. [lw-gcslp-86]

8636 D. T. Lee and C. C. Yang. Location of multiple points in a planar subdivision. *Inform. Process. Lett.*, 9:190–193, 1979. [ly-lmpps-79]

8637 D. T. Lee, C. D. Yang, and T. H. Chen. Shortest rectilinear paths among weighted obstacles. *Internat. J. Comput. Geom. Appl.*, 1(2):109–124, 1991. [lyc-srpwo-91] *Keywords:* shortest path, rectilinear path, weighted obstacle, graph theoretic approach.

8638 D. T. Lee, C. D. Yang, and C. K. Wong. Finding rectilinear paths among obstacles in a two-layer interconnection model. *Internat. J. Comput. Geom. Appl.*, 7:581–598, 1997. [lyw-frpao-97]

8639 D. T. Lee, C. D. Yang, and C. K. Wong. Rectilinear paths among rectilinear obstacles. *Discrete Appl. Math.*, 70:185–215, 1996. [lyw-rpro-96] *Keywords:* survey, shortest paths, rectilinear geometry, bicriteria paths, VLSI, wire routing. *Succeeds:* l-rpro-92.

D. T. Lee. See also [559, 560, 686, 2949, 2950, 2996, 2997, 3001, 3220, 3221, 3527, 4435, 6216, 6965, 6966, 7364, 7524, 8576, 8585, 8978, 10007, 10126, 10609, 10610, 11202–11204, 11657, 11727, 12316, 12317, 12686, 13048, 13049, 13752–13761].

E. Lee. See also [13763].

Eva K. Lee. See also [7638].

H.-C. Lee. See also [13673].

H. Q. Lee. See also [3089].

8640 H. S. Lee and R. C. Chang. Approximating vertices of a convex polygon with grid points in the polygon. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 269–278. Springer-Verlag, 1992. [lc-avcpg-92]

8641 H. S. Lee and R. C. Chang. On hitting grid points in a convex polygon with straight lines. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 176–189. Springer-Verlag, 1991. [lc-hgpcp-91]

8642 H. S. Lee and R. C. Chang. Regular enumeration of grid points in a convex polygon. *Internat. J. Comput. Geom. Appl.*, 3:305–322, 1993. [lc-regpc-93] *Keywords:* approximation algorithms, continued fraction expansions, hitting set problem, number theory.

H. S. Lee. See also [2851].

8643 Jay Lee. A drop heuristic conversion method for extracting irregular network for digital elevation models. In *GIS/LIS '89 Proc.*, volume 1, pages 30–39. American Congress on Surveying and Mapping, November 1989. [l-dhcme-89] *Keywords:* triangulated irregular network, terrain, surface simplification. *Abstract:* The advantages and disadvantages of various DEMs have been discussed extensively and authors have concluded that for many types of applications the triangulated irregular network is better suited for approximating terrain surfaces because of its efficiency in data storage and its simple structure for accommodating irregular data points. While the USGS grid DEM files are the most widely available digital elevation data, an efficient conversion algorithm between grid-based DEM and TIN models becomes more important as TIN models are increasingly more popular. The author examines and compares several existing methods of converting grid DEMs to TIN models with a new method which uses a drop heuristic approach. The drop heuristic method may be used either to extract TINs from grid DEM or to reduce the size of an irregularly spaced point set.

8644 J. Lee. Analyses of visibility sites on topographic surfaces. *Internat. J. Geogr. Inform. Syst.*, 5:413–430, 1991. [l-avsts-91]

8645 Jay Lee. Comparison of existing methods for building triangular irregular network models of terrain from grid digital elevation models. *Internat. J. Geogr. Inform. Syst.*, 5(3):267–285, July-September 1991. [l-cembt-91] *Keywords:* terrain, triangulated irregular network, TIN. *Annote:* Compares his drop heuristic algorithm to Chen-Guevara and DeFloriani84. *Abstract:* Triangulated irregular networks (TINs) are increasingly popular for their efficiency in data storage and their ability to accommodate irregularly spaced elevation points for many applications of geographical information systems. The paper reviews and evaluates various methods for extracting TINs from dense digital elevation models (DEMs) on a sample DEM. Both structural and statistical comparisons show that the methods perform with different rates of success in different settings. Users of DEM to TIN conversion methods should be aware of the strengths and weaknesses of the methods in addition to their own purposes before conducting the conversion.

8646 Jae-Ha Lee and Kyung-Yong Chwa. Tight analysis of a self-approaching strategy for the online kernel-search problem. Technical report, Department of Computer Science, KAIST, Taejon, Korea, 1998. [lc-tasso-98] *Precedes:* lc-tasso-99.

8647 Jae-Ha Lee and Kyung-Yong Chwa. Tight analysis of a self-approaching strategy for the online kernel-search problem. *Inform. Process. Lett.*, 69:39–45, 1999. [lc-tasso-99] *Succeeds:* lc-tasso-98.

8648 Jae-Ha Lee, Chan-Su Shin, Jae-Hoon Kim, Sung Yong Shin, and Kyung-Yong Chwa. New competitive strategies for searching in unknown star-shaped polygons. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 427–429, 1997. [lsksc-ncssu-97] *Cites:* bcr-sp-93, di-csgs-94, ik-skpcs-95, l-oltsb-96, ls-pinos-97, k-wusbd-91, k-olssp-94, py-spwm-89, ZZZ. *Annote:* They assume an input of a star-shaped polygon, P. For the problem of getting from s to the kernel, they give an algorithm with competitive ratio $1+2\sqrt{2} \approx 3.829$, while for getting from s to a target point t, a ratio of 17 is obtained (which is improved to 12.72 by [8970]).

Jae-Ha Lee. See also [10626].

J. N. Lee. See also [5294].

J. W. Lee. See also [3233].

K. Lee. See also [12641].

Kam-Hing Lee. See also [3119].

K. R. Lee. See also [3516].

8649 M. K. Lee. A new convex-hull based approach to evaluating flatness tolerance. *Comput. Aided Design*, 29(12):861–868, 1997. [twccwj-cpspu-97]

R. Lee. See also [8799, 8800, 13361].

8650 R. C. T. Lee, Y. H. Chin, and S. C. Chang. Application of principal component analysis to multikey searching. *IEEE Trans. Softw. Eng.*, SE-2:185–193, 1976. [lcc-apcam-76]

8651 R. C. T. Lee, J. R. Slagle, and H. Blum. A triangulation method for the sequential mapping of points from n-space to 2-space. *IEEE Trans. Comput.*, C-26:288–292, 1977. [lsb-tmsmp-77]

8652 R. C. T. Lee and R. C. Tsai. Application of short spanning path to multi-key searching. Report ??, Inst. Appl. Math., National Tsing Hua Univ., Hsinchu, Taiwan, 1976. [lt-asspm-76]

R. C. T. Lee. See also [2839, 2850, 2852–2854, 3060, 5630–5632, 7153, 7277–7279, 8221–8223, 8884, 8885, 12149, 12799, 13363, 13364, 13378].

8653 S. H. Lee and K. Y. Chwa. A new triangulation-linear class of simple polygons. *Internat. J. Comput. Math.*, 22:135–147, 1987. [lc-ntlcs-87]

8654 S. H. Lee and K. Y. Chwa. Some chain visibility problems in a simple polygon. *Algorithmica*, 5:485–507, 1990. [lc-scvps-90]

S.-H. Lee. See also [7076].

Wenke Lee. See also [1423].

8655 Y. T. Lee, A. De Pennington, and N. K. Shaw. Automatic finite-element mesh generation from geometric models: a point-based approach. *ACM Trans. Graph.*, 3(4):287–311, 1984. [lds-afemg-84]

8656 Y. T. Lee and A. A. G. Requicha. Algorithms for computing the volume and other integral properties of solids. I. Known methods and open issues. *Commun. ACM*, 25:635–641, 1982. [lr-acvoi1-82]

8657 Y. T. Lee and A. A. G. Requicha. Algorithms for computing the volume and other integral properties of solids. II. A family of algorithms based on representation conversion and cellular approximation. *Commun. ACM*, 25:642–650, 1982. [lr-acvoi2-82]

N. Leekha. See also [644, 4105].

W. de Leeuw. See also [7484].

8658 J. van Leeuwen. Graphics and computational geometry. Report RUU-CS-81-18, Les Mathematiques de Informatique, Colloq. AFCET, Paris, France, 1982. [l-gcg-82]

8659 J. van Leeuwen. Problem P20. *Bull. EATCS*, 19:150, 1983. [l-pp-83]

8660 J. van Leeuwen and H. A. Maurer. Dynamic systems of static data-structures. Report F42, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1980. [lm-dssds-80]

8661 J. van Leeuwen and M. H. Overmars. The art of dynamizing. In *Proc. 10th Internat. Sympos. Math. Found. Comput. Sci.*, volume 118 of *Lecture Notes Comput. Sci.*, pages 121–131. Springer-Verlag, 1981. [lo-ad-81]

8662 J. van Leeuwen and Anneke A. Schoone. Untangling a travelling salesman tour in the plane. In J. R. Mühlbacher, editor, *Proc. 7th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 87–98, München, 1982. Hanser. [ls-utstp-82] *Comments:* replaces the old techreport vs-utstp-80.

8663 J. van Leeuwen and D. Wood. Dynamization of decomposable searching problems. *Inform. Process. Lett.*, 10:51–56, 1980. [lw-ddsp-80]

8664 J. van Leeuwen and D. Wood. The measure problem for rectangular ranges in d-space. *J. Algorithms*, 2:282–300, 1981. [lw-mprrd-81]

J. van Leeuwen. See also [1318, 1915, 4719, 4720, 8301, 8441, 10487–10495, 11782, 13567, 13568].

8665 Vincent Lefévre and Jean-Michel Muller. The table maker's dilemma. *IEEE Trans. Comput.*, 47(11), 1998. [lm-tmd-98]

H. Lefmann. See also [1871, 5280].

8666 S. Lefschetz. *Algebraic topology*. American Mathematical Society, 1942. [l-at-42]

8667 S. Lefschetz. *Applications of Algebraic Topology*. Springer-Verlag, New York, NY, 1975. [l-aat-75]

8668 S. Lefschetz. *Introduction to Topology*. Princeton University Press, Princeton, NJ, 1949. [l-it-49]

J. Lehel. See also [1381, 6529, 6530].

8669 P. Lehert and P. A. Devijver. Clustering by connected components in $O(n)$ expected time. *RAIRO Inform. Theor.*, 15:207–218, 1981. [ld-cccoe-81]

J. Lehman. See also [11139, 11141].

8670 G. Lei. Recognition of planar objects in 3-d space from single perspective views using cross ratio. *IEEE Trans. Robot. Autom.*, 6(4):432–437, 1990. [l-rpo3d-90]

8671 Greg Leibon and David Letscher. Delaunay triangulations and Voronoi diagrams for Riemannian manifolds. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 341–349, 2000. [ll-dtvdr-00]

8672 K. Leichtweiß. Über die affine Exzentrizität konvexer Körper. *Arch. Math.*, 10:187–199, 1959. [l-udaek-59]

L. A. Leifer. See also [1518].

l. J. Leifer. See also [2575].

E. N. Leight. See also [3657].

?? Leighton. See also [5229].

F. Leighton. See also [1932].

8673 F. T. Leighton. A layout strategy for VLSI which is provably good. In *Proc. 14th Annu. ACM Sympos. Theory Comput.*, pages 85–98, 1982. [l-lsvwi-82] *Precedes:* bl-fsvgl-84.

8674 F. T. Leighton. *Complexity issues in VLSI*. MIT Press, Cambridge, MA, 1983. [l-civ-83]

8675 F. T. Leighton. *Introduction to Parallel Algorithms and Architectures: Arrays, Trees, Hypercubes*. Morgan-Kaufmann, San Mateo, CA, 1992. [l-ipaaa-92]

8676 F. T. Leighton. New lower bound techniques for VLSI. In *Proc. 22nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 1–12, 1981. [l-nlbtv-81] *Precedes:* l-nlbtv-84.

8677 F. T. Leighton. New lower bound techniques for VLSI. *Math. Syst. Theory*, 17:47–70, 1984. [l-nlbtv-84] *Succeeds:* l-nlbtv-81.

8678 F. T. Leighton. Tight bounds on the complexity of parallel sorting. *IEEE Trans. Comput.*, C-34(4):344–354, 1985. [l-tbcps-85]

8679 F. T. Leighton and C. E. Leiserson. Wafer-scale integration of systolic arrays. *IEEE Trans. Comput.*, ??:448–461, 1985. [ll-wsisa-85]

8680 F. T. Leighton and A. Rosenberg. 3D circuit layouts. *SIAM J. Comput.*, 15:793–813, 1986. [lr-3dcl-86]

F. T. Leighton. See also [1934, 4338, 5372–5374].

Tom Leighton. See also [290, 1758].

G. Leih. See also [4911].

8681 P. Leinhardt. Subdivision of n-dimensional spaces and n-dimensional generalized maps. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 228–236, 1989. [l-sndsn-89]

8682 T. Leipaelae and O. Nevalainen. On a dynamic nearest neighbour problem. *RAIRO Inform. Theor.*, 13:3–15, 1979. [ln-dnnp-79]

Sebastian Leipert. See also [7639].

8683 C. E. Leiserson. Area-efficient graph layouts (for VLSI). In *Proc. 21st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 270–281, 1980. [l-aeglv-80]

8684 C. E. Leiserson. *Area-efficient graph layouts (for VLSI)*. ACM Doctoral Dissertation Award Series. MIT Press, Cambridge, MA, 1983. [l-aeglv-83]

8685 C. E. Leiserson and F. M. Maley. Algorithms for routing and testing routability of planar VLSI layouts. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 69–78, 1985. [lm-artrp-85]

8686 C. E. Leiserson and C. A. Phillips. A space-efficient algorithm for finding the connected components of rectangles in the plane. Report ??, Lab. Comput. Sci., Massachusetts Inst. Tech., Cambridge, MA, 1983. [lp-seafc-83]

8687 C. E. Leiserson and R. Y. Pinter. Optimal placement for river routing. *SIAM J. Comput.*, 12:447–462, 1983. [lp-oprr-83]

C. E. Leiserson. See also [2078, 3548, 3549, 6257, 8679].

W. Leister. See also [11743].

8688 A. L. Leistman and T. C. Shermer. Two-dimensional grid spanners. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 211–214, August 1991. [ls-tdgs-91] *Cites:* ckv-fhe-87, c-t2s-91, kl-pic-80, ls-ghs-91, ps-gs-89, pu-osh-87, rl-dcps-90, ZZZ.

8689 L. D. Lejter. A collaborative environment for algorithm animation on the WWW. http://loki.cs.brown.edu:8080/CollaborativeMocha/paper_html/index.htm%l. [l-ceaaw-] *Annote:* M.Sc. thesis manuscript.

8690 Moises Lejter, Scott Meyers, and Steven P. Reiss. Support for maintaining object-oriented programs. *IEEE Trans. Softw. Eng.*, 18(12):1045–1052, December 1992. [lmr-smoop-92]

C. G. Lekkerkerker. See also [6335].

8691 G. Lekkerkerker. *Geometry of Numbers*. Wolters-Noordhoff, Groningen, Netherlands, 1969. [l-gn-69] *Precedes:* gl-gn-87.

8692 C. Lemaire. *Triangulation de Delaunay et arbres multidimensionnels*. Thèse de doctorat en sciences, École des Mines de St-Etienne, France, 1997. [l-tdam-97] *Keywords:* doctoral thesis.

8693 C. Lemaire and J.-M. Moreau. A probabilistic result on multi-dimensional Delaunay triangulations, and its application to the 2D case. *Comput. Geom. Theory Appl.*, 17:69–96, 2000. [lm-prmdd-00]

8694 Christophe Lemaire and Jean-Michel Moreau. Analysis of a class of k–dimensional merge procedures, with an application to $2d$ Delaunay triangulation in expected linear time after two–directional sorting. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 129–134, 1997. [lm-ackdm-97]

R. J. LeMaster. See also [8784].

8695 P. Lemke and M. Werman. On the complexity of inverting the autocorrelation function of a finite integer sequence, and the problem of locating n points on a line, given the unlabeled distances between them. Manuscript, 1988. [lw-ciaff-88]

P. Lemke. See also [12249].

8696 A. Lempel, S. Even, and I. Cederbaum. An algorithm for planarity testing of graphs. In *Theory of Graphs: Internat. Symposium (Rome 1966)*, pages 215–232, New York, 1967. Gordon and Breach. [lec-aptg-67] *Keywords:* graph drawing.

A. Lempel. See also [10793].

8697 T. Lengauer. Algorithmic research problems in molecular bioinformatics. In *Proc. 2nd IEEE Israeli Sympos. Theory of Comput. and Systems*, pages 177–192, 1993. [l-arpmb-93]

8698 T. Lengauer. *Combinatorial Algorithms for Integrated Circuit Layout*. B. G. Teubner, 1990. [l-caicl-90]

8699 T. Lengauer. On the solution of inequality systems relevant to IC-layout. *J. Algorithms*, 5:408–421, 1984. [l-sisri-84]

T. Lengauer. See also [6761, 6788].

J. Lengyel. See also [4366].

8700 William Lenhart and Giuseppe Liotta. Drawable and forbidden minimum weight triangulations. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 1–12. Springer-Verlag, 1997. [ll-dfmwt-97] *Keywords:* graph drawing.

8701 W. Lenhart and G. Liotta. Drawing outerplanar minimum weight triangulations. *Inform. Process. Lett.*, 57(5):253–260, 1996. [ll-domwt-96] *URL:* http://www.cs.brown.edu/cgc/papers/ll-domwt-96.ps.gz. *Keywords:* graph drawing, planar, minimum weight triangulation.

8702 W. Lenhart and G. Liotta. How to draw outerplanar minimum weight triangulations. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 373–384. Springer-Verlag, 1996. [ll-hdomw-96] *URL:* http://www.cs.brown.edu/cgc/papers/ll-hdomw-96.ps.gz. *Keywords:* graph drawing.

8703 W. Lenhart and G. Liotta. Proximity drawings of outerplanar graphs. Technical Report CS-96-21, Center for Geometric Computing, Dept. Computer Science, Brown Univ., 1996. [ll-pdog-96] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-21.ps.Z. *Keywords:* graph drawing, proximity, CGC, Brown.

8704 W. Lenhart and G. Liotta. Proximity drawings of outerplanar graphs. In S. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 286–302. Springer-Verlag, 1997. [ll-pdog-97] *URL:* http://www.cs.brown.edu/cgc/papers/ll-pdog-97.ps.gz. *Keywords:* graph drawing, proximity, CGC, Brown.

8705 W. Lenhart, R. Pollack, J.-R. Sack, R. Seidel, Micha Sharir, Subhash Suri, G. T. Toussaint, S. Whitesides, and C. K. Yap. Computing the link center of a simple polygon. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 1–10, 1987. [lpsssstwy-clcsp-87] *Keywords:* polygons, simple, link distance, visibility, construction, diameter, covering. *Precedes:* lpsssstwy-clcsp-88. *Cites:* at-cgcsp-86, at-oadvp-81, c-tpca-82, cg-vippg-85, ea-lacvp-81, gjpt-tsp-78, g-agtpg-80, ghlst-ltavs-86t, lp-esppr-84, ps-cgcsp-86, s-pptld-86, s-cagfn-86, tv-otats-86, ZZZ.

8706 W. Lenhart, R. Pollack, J.-R. Sack, R. Seidel, Micha Sharir, Subhash Suri, G. T. Toussaint, S. Whitesides, and C. K. Yap. Computing the link center of a simple polygon. *Discrete Comput. Geom.*, 3:281–293, 1988. [lpsssstwy-clcsp-88] *Keywords:* polygons, simple, link distance, visibility, construction, diameter, covering. *Succeeds:* lpsssstwy-clcsp-87.

William Lenhart. See also [2306, 2307, 2323–2325, 4131, 4845, 5082, 13103].

8707 W. J. Lenhart and S. H. Whitesides. Reconfiguration with line tracking motions. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 198–203, 1992. [lw-rltm-92] *Cites:* hjw-mra2d-85, k-mslra-92, kk-namra-86, lw-tpio-91, ss-pmp2g-83, w-aigpl-92, ZZZ.

8708 W. J. Lenhart and S. H. Whitesides. Reconfiguring closed polygonal chains in Euclidean d-space. *Discrete Comput. Geom.*, 13:123–140, 1995. [lw-rcpce-95]

8709 William J. Lenhart and Sue H. Whitesides. Reconfiguring simple polygons. Technical Report SOCS-93.3, School of Computer Science, McGill University, March 1993. [lw-rsp-93]

8710 W. J. Lenhart and S. H. Whitesides. Turning a polygon inside-out. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 66–69, August 1991. [lw-tpio-91] *Cites:* hjw-mra2d-85, kk-namra-86, k-mslra-92, ZZZ.

W. J. Lenhart. See also [7521].

8711 H. P. Lenhof. *Distanz- und Suchprobleme in der algorithmischen Geometrie und Anwendungen in der Bioinformatik*. Ph.D. thesis, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1993. [l-dusda-93] *Keywords:* doctoral thesis.

8712 H.-P. Lenhof and M. Smid. An animation of a fixed-radius all-nearest-neighbors algorithm. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, page 387, 1994. [ls-afran-94] *Keywords:* video review. *Cites:* hsb-tarms-90, ls-ekcpo-92i, ZZZ.

8713 H. P. Lenhof and M. Smid. An optimal construction method for generalized convex layers. Report MPI-I-91-112, Max-Planck-Institut Inform., Saarbrücken, Germany, 1991. [ls-ocmgc-91t] *Precedes:* ls-ocmgc-91i.

8714 H. P. Lenhof and M. Smid. An optimal construction method for generalized convex layers. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 349–363. Springer-Verlag, 1991. [ls-ocmgc-91i] *Succeeds:* ls-ocmgc-91t. *Precedes:* ls-ocmgc-93.

8715 H. P. Lenhof and M. Smid. An optimal construction method for generalized convex layers. *Internat. J. Comput. Geom. Appl.*, 3:245–267, 1993. [ls-ocmgc-93] *Succeeds:* ls-ocmgc-91i.

8716 H. P. Lenhof and M. Smid. Enumerating the k closest pairs optimally. Report MPI-I-92-118, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [ls-ekcpo-92t]

8717 H.-P. Lenhof and M. Smid. Enumerating the k closest pairs optimally. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 380–386, 1992. [ls-ekcpo-92i]

8718 H. P. Lenhof and M. Smid. Maintaining the visibility map of spheres while moving the viewpoint on a circle at infinity. Report MPI-I-92-102, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [ls-mvmsw-92t] *Precedes:* ls-mvmsw-92i.

8719 H.-P. Lenhof and M. Smid. Maintaining the visibility map of spheres while moving the viewpoint on a circle at infinity. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 388–398. Springer-Verlag, 1992. [ls-mvmsw-92i] *Succeeds:* ls-mvmsw-92t. *Precedes:* ls-mvmsw-95.

8720 H.-P. Lenhof and M. Smid. Maintaining the visibility map of spheres while moving the viewpoint on a circle at infinity. *Algorithmica*, 13:301–312, 1995. [ls-mvmsw-95] *Succeeds:* ls-mvmsw-92i.

8721 H. P. Lenhof and M. Smid. Sequential and parallel algorithms for the k closest pairs problem. Report MPI-I-92-134, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [ls-spakc-92]

8722 H. P. Lenhof and M. Smid. Sequential and parallel algorithms for the k closest pairs problem. *Internat. J. Comput. Geom. Appl.*, 5:273–288, 1995. [ls-spakc-95]

8723 H. P. Lenhof and M. Smid. Using persistent data structures for adding range restrictions to searching problems. Report A-22/90, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1990. [ls-updsa-90]

8724 H. P. Lenhof and M. Smid. Using persistent data structures for adding range restrictions to searching problems. *RAIRO Inform. Theor.*, 28:25–49, 1994. [ls-updsa-94]

H.-P. Lenhof. See also [3793–3795].

8725 N. J. Lennes. Theorems on the simple finite polygon and polyhedron. *Amer. J. Math.*, 33:37–62, 1911. [l-tsfpp-11] *Keywords:* decomposition, polygon triangulation, elementary geometry. *Annote:* Proves that convex decomposition, without introducing new vertices, exists for any polygon but not necessarily for any polyhedron.

8726 A. K. Lenstra, H. W. Lenstra, Jr., and L. Lovasz. Factoring polynomials with rational coefficients. *Math. Ann.*, 261:514–534, 1982. [lll-fprc-82]

8727 H. W. Lenstra. Integer programming with a fixed number of variables. *Math. Oper. Res.*, 8:538–548, 1983. [l-ipfnv-83]

H. W. Lenstra, Jr. See also [8726].

J. K. Lenstra. See also [8538].

A. Lent. See also [610].

H. Lenz. See also [3741].

J. J. Leonard. See also [10663, 13065, 13069].

S. Leonardi. See also [1118,1555,1556].

Antonio Leonforte. See also [4188].

Benton L. Leong. See also [2855–2857].

8728 A. S. LePaugh. A polynomial time algorithm for optimal routing around a rectangle. In *Proc. 21st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 292–293, 1980. [l-ptaor-80]

8729 J. Leray. Sur la forme des espaces topologiques et sur les points fixes des reprèsentations. *J. Math. Pure Appl.*, 24:95–167, 1945. [l-slfde-45]

G. Lerman. See also [1810].

A. M. Leroy. See also [11437].

M. E. Lesk. See also [4880,4881]

8730 John S. Letcher, Jr. and Michael Shook. Nurbs considered harmful for gridding (alternative offered). In *Proc. 4th International Meshing Roundtable*, pages 253–264, Albuquerque, NM, 1995. Sandia National Laboratories. [js-nchga-95]

David Letscher. See also [1810, 4721, 8671].

M. C. Leu. See also [13371].

8731 S. T. Leutenegger, M. A. Lopez, and J. Edington. STR: A simple and efficient algorithm for R-tree packing. In *Proc. 13th IEEE Internat. Conf. Data Eng.*, pages 497–506, 1997. [lle-ssea-97]

8732 C. Levcopoulos. An $\Omega(\sqrt{n})$ lower bound for the non-optimality of the greedy triangulation. *Inform. Process. Lett.*, 25:247–251, 1987. [l-olbng-87]

8733 C. Levcopoulos. Fast heuristics for minimum length rectangular partitions of polygons. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 100–108, 1986. [l-fhmlr-86] *Cites:* cd-vdbcd-85, f-fapct-85, gz-bprp-85, ia-dsisa-84, ks-mdpo-85, k-ubsir-80, ll-blcpp-84, l-hmelr-83, lprs-melpr-82, l-tspp-77, ps-cgi-85, r-ppis-82, ZZZ.

8734 C. Levcopoulos. *Heuristics for Minimum Decompositions of Polygons.* PhD thesis, Linköping Studies in Science and Technology, Linköping, Sweden, 1987. No. 155. [l-hmdp-87] *Keywords:* doctoral thesis.

8735 C. Levcopoulos. Minimum length and 'thickest-first' rectangular partitions of polygons. In *Proc. 23rd Allerton Conf. Commun. Control Comput.*, 1985. [l-mltfr-85]

8736 C. Levcopoulos and J. Gudmundsson. A linear time heuristic for minimum rectangle coverings. In *11th International Symposium on Fundamentals of Computation Theory*, volume 1279 of *Lecture Notes Comput. Sci.*, pages 305–316. Springer-Verlag, 1997. [lg-lthmr-97]

8737 C. Levcopoulos and J. Gudmundsson. Close approximations of minimum rectangular coverings. In *Proc. 16th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1180 of *Lecture Notes Comput. Sci.*, pages 135–146. Springer-Verlag, 1996. [lg-camrc-96]

8738 C. Levcopoulos, J. Katajainen, and A. Lingas. An optimal expected-time parallel algorithm for Voronoi diagrams. In *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 190–198. Springer-Verlag, 1988. [lkl-oetpa-88]

8739 C. Levcopoulos and D. Krznaric. A linear-time approximation scheme for minimum weight triangulation of convex polygons. *Algorithmica*, 21:285–311, 1998. [lk-ltasm-98]

8740 Christos Levcopoulos and Drago Krznaric. Quasi-greedy triangulations approximating the minimum weight triangulation. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 392–401, 1996. [lk-qgtam-96] *Keywords:* greedy triangulation, approximation of MWT.

8741 C. Levcopoulos and A. Lingas. Bounds on the length of convex partitions of polygons. In *Proc. 4th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 181 of *Lecture Notes Comput. Sci.*, pages 279–295. Springer-Verlag, 1984. [ll-blcpp-84] *Keywords:* design of algorithms, VLSI design, partition, approximation, length, polygons, convex, rectangles.

8742 C. Levcopoulos and A. Lingas. C-sensitive triangulations approximate the minmax length triangulation. In *Proc. 12th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, 1992. [ll-cstam-92]

8743 C. Levcopoulos and A. Lingas. Covering polygons with minimum number of rectangles. In *Proc. 1st Sympos. Theoret. Aspects Comput. Sci.*, volume 166 of *Lecture Notes Comput. Sci.*, pages 63–72. Springer-Verlag, 1984. [ll-cpmnr-84] *Keywords:* design of algorithms, VLSI design, covering, approximation, polygons, rectangles.

8744 C. Levcopoulos and A. Lingas. Fast algorithms for greedy triangulation. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 238–250. Springer-Verlag, 1990. [ll-fagt-90] *Precedes:* ll-fagt-92.

8745 Christos Levcopoulos and Andrzej Lingas. Fast algorithms for greedy triangulations. *BIT*, 32:280–296, 1992. [ll-fagt-92] *Succeeds:* ll-fagt-90.

8746 C. Levcopoulos and A. Lingas. Greedy trianglation approximates the optimum and can be implemented in linear time in the average case. In *Proc. 3rd Internat. Conf. on Information and Computing*, volume 497 of *Lecture Notes Comput. Sci.*, pages 139–148, 1991. [ll-gtaoc-91] *Succeeds:* ll-gtaoc-90.

8747 C. Levcopoulos and A. Lingas. Greedy triangulation approximates the minimum weight triangulation and can be computed in linear time in the average case. Technical Report LU-CS-TR:92-105, Dept. Comput. Sci., Lund Univ., Lund, Sweden, 1992. [ll-gtamw-92]

8748 C. Levcopoulos and A. Lingas. Greedy triangulation approximates the optimum and can be implemented in linear time in the average case. Technical Report 90-72, Dept. of Comp. Sci., Lund University, 1990. [ll-gtaoc-90]

8749 C. Levcopoulos and A. Lingas. On approximation behavior of the greedy triangulation for convex polygons. *Algorithmica*, 2:175–193, 1987. [ll-abgtc-87] *Keywords:* implementing algorithms, approximation, length, triangulations, polygons, convex.

8750 C. Levcopoulos and A. Lingas. Supplement: An $\Omega(p \log k)$ lower bound on the length of convex partitions of polygons. Manuscript, ??, ?? [ll-solbl-??]

8751 C. Levcopoulos and A. Lingas. There are planar graphs almost as good as the complete graphs and almost as cheap as minimum spanning trees. *Algorithmica*, 8:251–256, 1992. [ll-tapga-92]

8752 C. Levcopoulos and A. Lingas. There are planar graphs almost as good as the complete graphs and as short as minimum spanning trees. In *Proc. International Symposium on Optimal Algorithms*, volume 401 of *Lecture Notes Comput. Sci.*, pages 9–13. Springer-Verlag, 1989. [ll-tapga-89]

8753 C. Levcopoulos, A. Lingas, and J.-R. Sack. Algorithms for minimum length partitions of polygons. Report SCS-TR-119, School Comput. Sci., Carleton Univ., Ottawa, ON, 1987. [lls-amlpp-87t] *Keywords:* design of algorithms, decomposition, triangulations, partition, dynamic programming, length, two-dimensional, convex, polygons. *Precedes:* lls-amlpp-87a.

8754 Christos Levcopoulos, Andrzej Lingas, and Jorg-R. Sack. Heuristics for optimum binary search trees and minimum weight triangulation problems. *Theoret. Comput. Sci.*, 66(2):181–203, August 1989. [lls-hobst-89] *Keywords:* optimum binary search trees, minimum weight triangulation, amortization argument. *Annote:* Amortized linear algorithm for GT of semi-circular polygons. *Abstract:* We establish new bounds on the problem of constructing optimum binary search trees with zero-key access probabilities (with applications e.g. to point location problems). We present a linear-time heuristic for constructing such trees so that their cost is within a factor of 1 plus epsilon from the optimum cost, where epsilon is an arbitrary positive constant. Furthermore, by using an interesting amortization argument, we give a simple and practical, linear-time implementation of a known greedy heuristics for such trees. The above results are obtained in a more general setting, namely, in the context of minimum length triangulations of so- called semi-circular polygons. They are carried over to binary search trees by proving a duality between optimum (m minus 1)-way search trees and minimum weight partitions of infinitely-flat semi-circular polygons into m- gons. With this duality we can also obtain better heuristics for minimum length partitions of polygons by using known algorithms for optimum search trees. (Author abstract) 14 Refs.

8755 C. Levcopoulos, A. Lingas, and J.-R. Sack. Nearly optimal heuristics for binary search trees with geometric generalizations. In *Proc. 14th Internat. Colloq. Automata Lang. Program.*, volume 267 of *Lecture Notes Comput. Sci.*, pages 376–385. Springer-Verlag, 1987. [lls-nohbs-87] *Keywords:* decomposition, partition, polygons, two-dimensional.

8756 C. Levcopoulos, A. Lingas, and C. Wang. On parallel complexity of planar triangulations. In *Proc. 15th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1026 of *Lecture Notes Comput. Sci.*, pages 413–427. Springer-Verlag, 1995. [llw-pcpt-95]

8757 C. Levcopoulos, G. Narasimhan, and M. Smid. Efficient algorithms for constructing fault-tolerant geometric spanners. Report 16, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1997. [lns-eacft-97]

8758 C. Levcopoulos, G. Narasimhan, and M. Smid. Efficient algorithms for constructing fault-tolerant geometric spanners. In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, pages 186–195, 1998. [lns-eacft-98]

8759 C. Levcopoulos, G. Narasimhan, and M. Smid. Improved algorithms for constructing fault-tolerant geometric spanners. Report 15, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1999. [lns-iacft-99]

8760 C. Levcopoulos, G. Narasimhan, and M. Smid. Improved algorithms for constructing fault-tolerant spanners. *Algorithmica*, 32:144–156, 2002. [lns-iacft-02]

C. Levcopoulos. See also [5312, 6360–6365, 8383–8387, 8860].

8761 D. Leven. *Efficient algorithms for motion planning of robot systems amidst obstacles.* Ph.D. thesis, Tel-Aviv Univ., Tel-Aviv, Israel, 1986. [l-eampr-86] *Keywords:* doctoral thesis.

8762 D. Leven. Multidimensional reconstruction by set-valued approximations. Report 018-84, Eskenasy Inst. Comput. Sci., Tel-Aviv Univ., Tel-Aviv, Israel, 1984. [l-mrsva-84]

8763 D. Leven and Micha Sharir. An efficient and simple motion planning algorithm for a ladder moving in two-dimensional space amidst polygonal barriers. Technical Report 84-014, Eskenasy Inst. Comput. Sci., Tel-Aviv Univ., Tel-Aviv, Israel, November 1984. [ls-esmpa-84]

8764 D. Leven and Micha Sharir. An efficient and simple motion planning algorithm for a ladder moving in two-dimensional space amidst polygonal barriers. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 221–227, 1985. [ls-esmpa-85] *Keywords:* motion planning, two-dimensional. *Precedes:* ls-esmpa-87. *Cites:* ls-esmpa-84, ss-pmp1c-83, ss-pmp2g-83, ss-pmp3c-83, osy-gvdl1-84, osy-gvdl2-84, ZZZ.

8765 D. Leven and Micha Sharir. An efficient and simple motion planning algorithm for a ladder moving in two-dimensional space amidst polygonal barriers. *J. Algorithms*, 8:192–215, 1987. [ls-esmpa-87] *Keywords:* motion planning, two-dimensional. *Succeeds:* ls-esmpa-85.

8766 D. Leven and Micha Sharir. Intersection and proximity problems and Voronoi diagrams. In J. T. Schwartz and C.-K. Yap, editors, *Advances in Robotics 1: Algorithmic and Geometric Aspects of Robotics*, pages 187–228. Lawrence Erlbaum Associates, Hillsdale, NJ, 1987. [ls-ippvd-87] *Keywords:* survey paper, Voronoi diagrams.

8767 D. Leven and Micha Sharir. On the number of critical free contacts of a convex polygonal object moving in two-dimensional polygonal space. *Discrete Comput. Geom.*, 2:255–270, 1987. [ls-ncfcc-87]

8768 D. Leven and M. Sharir. Planning a purely translational motion for a convex object in two-dimensional space using generalized Voronoi diagrams. Technical Report 34/85, Tel Aviv University, June 1985. [ls-pptmc-85]

8769 D. Leven and Micha Sharir. Planning a purely translational motion for a convex object in two-dimensional space using generalized Voronoi diagrams. *Discrete Comput. Geom.*, 2:9–31, 1987. [ls-pptmc-87] *Keywords:* motion planning, convex objects, Voronoi diagrams, convex distance functions.

D. Leven. See also [6375, 6397, 6398, 12074].

8770 G. A. Kabatjansky ans V. Levenšteĭn. Bounds for packings of the sphere and in space. *Prob. Information Trans.*, 14:1–17, 1978. [kl-bpss-78]

8771 F. Levi. Die Teilung der projektiven Ebene durch Gerade oder Pseudogerade. *Ber. Math.-Phys. Kl. sächs. Akad. Wiss. Leipzig*, 78:256–267, 1926. [l-dtdpe-26]

8772 F. W. Levi. On Helly's theorem and the axioms of convexity. *J. Indian Math. Soc.*, 15:65–76, 1951. [l-htac-51]

S. Levialdi. See also [726, 12255].

C. Levin. See also [11262].

8773 David Levin. Mesh-independent surface interpolation. In *4th International Conference on Curves and Surfaces*, page 46, 1999. Saint-Malo, France. [l-misi-99]

David Levin. See also [4566, 4567].

8774 J. Levin. Algorithm for drawing pictures of solid objects composed of quadratic surfaces. *Commun. ACM*, 19(10):555–563, October 1976. [l-padps-76]

8775 J. Levin. Mathematical models for determining the intersections of quadric surfaces. *Comput. Graph. Image Process.*, 11:73–87, 1979. [l-mmdiq-79]

L. A. Levin. See also [13747].

P. L. Levin. See also [6647].

D. B. Levine. See also [1638].

8776 C. Levinthal. Molecular model-building by computer. *Scientific Amer.*, 213(6):42–52, June 1966. [l-mmbc-66]

8777 N. Levitt. The Euler characteristic is the unique locally determined numerical homotopy invariant of finite completeness. *Discrete Comput. Geom.*, 7:59–67, 1992. [l-eciul-92]

M. Levoy. See also [3653].

8778 A. Levy. Energy-minimizing networks meet only in threes. *J. Und. Math.*, 22:53–59, 1990. [l-emnmo-90]

A. Levy. See also [501, 502].

Larry Levy. See also [2125, 6025].

S. Levy. See also [648].

Silvio V. F. Levy. See also [4274].

J. Levy-Vehel. See also [1198].

8779 B. A. Lewis and J. S. Robinson. Triangulation of planar regions with applications. *Comput. J.*, 21:324–332, 1978. [lr-tpra-78] *Keywords:* point-set triangulation, implementing algorithms.

D. H. Lewis. See also [11451].

8780 H. R. Lewis and L. Denenberg. *Data Structures and Their Algorithms.* Harper Collins, 1991. [ld-dsta-91]

Harry R. Lewis. See also [5503].

P. M. Lewis. See also [11397, 11398].

8781 Robert R. Lewis. VideHoc: A visualizer for homogeneous coordinates. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C14–C15, 1995. [l-vvhc-95] *Keywords:* *Cites:* h-hgc-84, nslab-xpegc-91, s-edpti-88, s-opgfg-91, ZZZ.

8782 T. Lewis. Two counterexamples concerning transversals for convex subsets of the plane. *Geometriae Didacta*, 9:461–465, 1980. [l-tcctc-80]

T. Lewis. See also [7869–7872, 8136].

R. M. Lewitt. See also [610].

8783 S. Lhuilier. *De relatione mutua capacitatis et terminorum figurarum etc.* Versaviae, 1782. [l-rmctf-82]

Brian Li. See also [3987].

Chen Li. See also [7789].

8784 H. Li, M. A. Lavin, and R. J. LeMaster. Fast Hough transform: a hierarchical approach. *Comput. Vision Graph. Image Process.*, 36:139–161, 1985. [lll-fhtha-85]

8785 H. Li and K. C. Sevcik. Parallel sorting by overpartitioning. In *Proc. 6th ACM Sympos. Parallel Algorithms Architect.*, pages 46–56, 1994. [ls-pso-94]

H. Li. See also [9196, 9543].

8786 K. Li and K.-H. Cheng. On three-dimensional packing. *SIAM J. Comput.*, 19:847–867, 1990. [lc-tdp-90]

M. Li. See also [1273, 1274].

S. Li. See also [7839].

8787 Shuo-Yen Robert Li. Reconstruction of polygons from projections. *Inform. Process. Lett.*, 28(5):235–240, August 1988. [l-rpp-88] *Keywords:* probing, x-ray probes.

T. S. Li. See also [807].

8788 T.-Y. Li and J. A. Yorke. Period three implies chaos. *Amer. Math. Monthly*, 82:985–992, 1975. [ly-ptic-75]

T.-Y. Li. See also [1443]

V. O. K. Li. See also [8500].

W. Li. See also [5092].

X. L. Li. See also [5977].

8789 Z. Li. *Compaction algorithms for non-convex polygons and their applications.* Ph.D. thesis, Harvard University, Cambridge, MA, 1994. [l-canpt-94] *URL:* ftp://deas-ftp.harvard.edu/techreports/tr-1994.html. *Keywords:* doctoral thesis, concave, polygons, layout, packing, optimization, linear programming, physically-based modeling, separation, motion planning, rotation, Minkowski sum, configuration space. *Comments:* is also Harvard DAS TechReport number: 15-94.

8790 Z. Li and J. F. Canny, editors. *Nonholonomic Motion Planning.* Kluwer Academic Pubishers, Norwell, MA, 1992. [lc-nmp-92]

8791 Z. Li and V. Milenkovic. A compaction algorithm for non-convex polygons and its application. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 153–162, 1993. [lm-cancp-93] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* optimization, CAD, CAM, packing, layout, linear programming, motion planning, separation, configuration space, Minkowski sum. *Cites:* aks-oa1dt-90, b-amdsn-89, bb-msbdc-88, c-crmp-87, dhks-isccd-90, grs-kfcg-83, hss-cmpmi-84, kos-cmsrp-91i, l-sisri-84, m-hphc-90, mdl-amm-91, mdl-pcnpc-92, mw-cdrca-88, mfs-2dcmc-87, p-ccmsp-87, pb-cmfm-88, sss-tdczr-86, sp-cppca-92, w-otdcs-85, ZZZ.

8792 Z. Li and V. Milenkovic. Compaction and separation algorithms for nonconvex polygons and their applications. *European J. Oper. Res.*, 84:539–561, 1995. [lm-csanp-95] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* layout, packing, placement, linear programming, motion planning, Minkowski sum, configuration space.

8793 Z. Li and V. Milenkovic. Constructing strongly convex hulls using exact or rounded arithmetic. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 235–243, 1990. [lm-cschu-90] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation. *Precedes:* lm-cschu-92. *Cites:* f-smpst-89, g-eadch-72, gss-egbra-89, m-cacau-89, m-dpggt-89, m-vigau-88p, si-cvd10-89, ZZZ.

8794 Z. Li and V. Milenkovic. Constructing strongly convex hulls using exact or rounded arithmetic. *Algorithmica*, 8:345–364, 1992. [lm-cschu-92] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation. *Succeeds:* lm-cschu-90.

8795 Z. Li and V. Milenkovic. The complexity of the compaction problem. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 7–11, 1993. [lm-ccp-93] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* packing, layout, motion planning, PSPACE. *Cites:* cosw-cds-84, hss-cmpmi-84, lm-cancp-93, ZZZ.

8796 Z. Li and S. Openshaw. Algorithms for automated line generalization based on a natural principle of objective generalization. *Internat. J. Geogr. Inform. Syst.*, 6:373–389, 1992. [lo-aalgb-92]

Zexiang Li. See also [2320, 3728, 9588, 9589, 9600, 9987].

8797 J. Liang. On a class of 2-d compliant motion planning problems. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 70–73, August 1991. [l-c2dcm-91] *Cites:* c-cfmp-89, lmt-asfms-84, ZZZ.

J. Liang. See also [4686–4688].

8798 Y.-D. Liang and B. A. Barsky. An analysis and algorithm for polygon clipping. *Commun. ACM*, 26:868–877, 1983. [lb-aapc-83]

Y. Z. Liao. See also [10126].

8799 B.-C. Liaw, N. Huang, and R. Lee. The minimum cooperative guards problem on k-spiral polygons. Technical report, Department of Computer Science, National Tsing Hua University, 1993. [lhl-mcgpk-93t] *Precedes:* lhl-mcgpk-93, lhl-mcgpk-93.

8800 B.-C. Liaw, N. Huang, and R. Lee. The minimum cooperative guards problem on k-spiral polygons. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 97–102, 1993. [lhl-mcgpk-93] *Succeeds:* lhl-mcgpk-93t. *Cites:* cn-owr-88, cn-wrsp-91, ghs-citds-91, ik-tgp-91, lhl-mcgpk-93t, ll-ccagp-86, mw-wrmg-91, o-agta-87, s-rrag-92, cnn-ogcmw-91, nw-owrsp-90i, t-pvldp-93, ZZZ.

8801 D. Lichtenstein. Planar formulae and their uses. *SIAM J. Comput.*, 11(2):329–343, 1982. [l-pftu-82]

D. Lichtenstein. See also [295, 296].

I. Lico. See also [9215].

D. Lieber. See also [7792–7794].

K. J. Lieberherr. See also [7169].

8802 L. I. Lieberman and M. A. Wesley. Autopass: an automatic programming system for computer controlled mechanical assembly. *IBM J. Res. Develop.*, 21(4):321–333, 1977. [lw-aapsc-77]

T. Liebling. See also [5660].

T. M. Liebling. See also [5661].

8803 Th. M. Liebling, F. Margot, D. Muller, A. Prodon, and L. Stauffer. Disjoint paths in the plane. Technical Report RO 930628, Ecole Polytechnique Federale de Lausanne, Lausanne, Suisse, June 1993. [lmmps-dpp-93] *Keywords:* Disjoint paths, computational geometry, routing, heuristics.

J. S. Liebman. See also [12316, 12317].

8804 P. Lienhardt. Barycentric triangulation of generalized maps. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 129–133, 1990. [l-btgm-90] *Cites:* l-sndsn-89, l-ndgtm-89, b-rgsdd-89, e-crps-60, j-cegt-70, c-ucplg-75, bs-ftmsb-85, t-gt-84, gs-pmgsc-85, a-atfc-76, m-eat-84, l-ngcse-90, ZZZ.

8805 P. Lienhardt. N-dimensional generalized combinatorial maps and cellular quasi-manifolds. *Internat. J. Comput. Geom. Appl.*, 4(3):275–324, 1994. [l-ndgcm-94]

8806 P. Lienhardt. n-dimensional generalized topological maps. Research Report R89-10, Département d'Informatique, Université Louis Pasteur, Strasbourg, France, December 1989. [l-ndgtm-89]

8807 P. Lienhardt. N-G-cartes simplexes et triangulation barycentrique. Research Report R90-08, Département d'Informatique, Université Louis Pasteur, Strasbourg, France, 1990. [l-ngcse-90]

8808 P. Lienhardt. Topological models for boundary representation: A comparison with n-dimensional generalized maps. *Comput. Aided Design*, 23(1):59–82, 1991. [l-tmbrc-91]

P. Lienhardt. See also [4885, 4886].

8809 A. L. Liestman and T. C. Shermer. Grid and hypercube spanners. Technical Report TR 91-1, Simon Fraser University, 1991. [ls-ghs-91]

A. L. Liestman. See also [11214].

S. Lifschitz. See also [1050, 1051].

Andrew Lim. See also [3120].

8810 J. Lim, S. Iyengar, and S.-Q. Zheng. A heuristic approach for shortest path problem with rectilinear obstacles. Technical Report, Dept. of Computer Science, Louisiana University, 1993. [liz-haspp-93]

L. Lim. See also [8070].

8811 R. A. Liming. *Practical analytical geometry with applications to aircraft.* Macmillan, New York, 1944. [l-pagaa-44]

A. Lin. See also [8588, 8612].

A. K. Lin. See also [8613, 8614].

8812 C. Lin. An application of Ramsey theory to the crossing number of posets, 1994. Preprint. [l-artcn-94]

8813 C. Lin. The crossing number of posets. *Order*, 11:1–25, 1994. [l-cnp-94]

D. Lin. See also [8534].

H. Lin. See also [50].

8814 J. Lin and J. A. Storer. Geometric clustering to minimize the mean-square error. *Unpublished Manuscript*, ??, 1997. [ls-gcmme-97]

8815 J.-H. Lin and J. S. Vitter. Approximation algorithms for geometric median problems. *Inform. Process. Lett.*, 44:245–249, 1992. [lv-aagmp-92]

8816 J.-H. Lin and J. S. Vitter. ϵ-approximations with minimum packing constraint violation. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 771–782, 1992. [lv-eampc-92]

J.-H. Lin. See also [13267, 13268].

8817 K. I. Lin, H. V. Jagdish, and C. Faloutsos. The TV-tree: An index structure for higher dimensional data. *VLDB Journal*, 4:517–542, 1994. [ljf-ttish-94]

K.-I. Lin. See also [326, 5120].

Kwun-Nan Lin. See also [1286].

8818 Y. Lin-Kriz and V. Pan. On parallel complexity of integer linear programming, GCD and the iterated mod function. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 124–137, 1992. [lp-pcilp-92]

8819 M. Lin and D. Manocha. Efficient contact determination in dynamic environments. *Internat. J. Comput. Geom. Appl.*, 7:123–151, 1997. [lm-ecdde-97]

M. Lin. See also [7003, 7192, 8362, 8409–8411].

8820 M. C. Lin. *Efficient Collision Detection for Animation and Robotics.* PhD thesis, University of California, Berkeley, CA, December 1993. [l-ecdar-93] *Keywords:* doctoral thesis.

8821 M. C. Lin. *Efficient Collision Detection for Animation and Robotics.* Ph.D. thesis, Dept. Elec. Engin. Comput. Sci., Univ. California, Berkeley, CA, 1993. [l-efdar-93] *Keywords:* doctoral thesis.

8822 M. C. Lin and J. F. Canny. Efficient algorithms for incremental distance computation. In *Proc. IEEE Internat. Conf. Robot. Autom.*, volume 2, pages 1008–1014, 1991. [lc-eaidc-91]

8823 M. C. Lin and D. Manocha. Fast interference detection between geometric models. *Visual Comput.*, 11(10):542–561, 1995. [lm-fidgm-95]

8824 M. C. Lin and D. Manocha. Interference detection between curved objects for computer animation. In *Models and Techniques in Computer Animation*, pages 43–57. Springer-Verlag, 1993. [lm-idbco-93]

8825 M. C. Lin, D. Manocha, and J. Canny. Efficient contact determination for dynamic environments. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 602–608, 1994. [lmc-ecdde-94]

M. C. Lin. See also [3415–3417, 6210, 10828–10830].

8826 R. Lin, S. Olariu, J. L. Schwing, and J. Zhang. Simulating enhanced meshes, with applications. Technical Report TR-91-041, Department of Computer Science, Old Dominion University, Norfolk, Virginia, ?? [losz-sema-]

S. Lin. See also [8011].

8827 S.-Y. Lin and C. Chen. Planar visibility graphs. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 30–35, 1994. [lc-pvg-94] *Keywords:* Computational geometry, visibility graphs, planar graphs, visibility problems. *Cites:* alp-vgsp-92, o-agta-87, t-tpg-56, o-cgc18-93a, ZZZ.

8828 T. Lin and P. Eades. Integration of declarative and algorithmic approaches for layout creation. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 376–387. Springer-Verlag, 1995. [le-idaal-95] *Keywords:* graph drawing, declarative, system, trees.

T. Lin. See also [3426, 3427, 4579–4582].

8829 X. Lin. *Analysis of Algorithms for Drawing Graphs.* PhD thesis, Department of Computer Science, University of Queensland, 1992. [l-aadg-92] *Keywords:* doctoral thesis, graph drawing.

8830 Xuemin Lin and Peter Eades. Area requirements for drawing hierarchically planar graphs. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 219–229. Springer-Verlag, 1997. [le-ardhp-97] *Keywords:* graph drawing.

Xuemin Lin. See also [3711, 4580–4590].

8831 Y. Lin and Steven S. Skiena. Complexity aspects of visibility graphs. Technical Report 92/08, SUNY Stony Brook, 1992. [ls-cavg-92] *Keywords:* visibility graphs, polygons, area requirements, outerplanar graphs, isomorphism, independent sets. *Precedes:* ls-cavg-95.

8832 Y. Lin and Steven S. Skiena. Complexity aspects of visibility graphs. *Internat. J. Comput. Geom. Appl.*, 5:289–312, 1995. [ls-cavg-95] *Keywords:* graph drawing, visibility graphs, polygons, area requirements, outerplanar graphs, isomorphism, independent sets. *Succeeds:* ls-cavg-92.

Y.-L. Lin. See also [3088].

8833 Y. Linde, A. Buzo, and R. M. Gray. An algorithm for vector quantiser design. *IEEE Transactions on Communications*, COM-28:84–95, 1980. [lbg-avqd-80]

8834 M. Lindenbaum and A. Bruckstein. On recursive $o(n)$ partition of a digital curve into digital straight segments. to appear in IEEE Trans. on Pattern Analysis and Machine Intelligence(PAMI). [lb-rpdcd-]

8835 M. Lindenbaum and A. M. Bruckstein. Blind approximation of planar convex sets. *IEEE Trans. Robot. Autom.*, 10(4):517–529, August 1994. [lb-bapcs-94] *Keywords:* probing, line probes, approximation.

8836 M. Lindenbaum and A. M. Bruckstein. Determining object shape from local velocity measurements. *Pattern Recogn.*, 21(6):591–606, 1988. [lb-doslv-88]

8837 M. Lindenbaum and A. M. Bruckstein. Parallel strategies for geometric probing. *J. Algorithms*, 13:320–349, 1992. [lb-psgp-92] *Keywords:* probing, composite probes, parallel.

8838 M. Lindenbaum and A. M. Bruckstein. Reconstruction of polygonal sets by constrained and unconstrained double probing. *Ann. Math. Artif. Intell.*, 4:345–362, 1991. [lb-rpscu-91] *Keywords:* probing, line probes.

8839 M. Lindenbaum and H. Samet. A probabilistic analysis of hierarchical geometric data structures. In *Proceedings of the Tenth International Conference on Pattern Recognition*, volume II, pages 91–96, June 1990. [ls-pahgd-90]

8840 M. Lindenbaum and H. Samet. A probabilistic analysis of trie-based sorting of large collections of line segments. Center for Automation Research CAR-TR-766, University of Maryland, April 1995. [ls-patbs-95]

M. Lindenbaum. See also [4811].

J. Lindenstrauss. See also [2349,7581].

8841 P. A. Lindholm. Automatic triangle mesh generation on surfaces of polyhedra. *IEEE Trans. Magn.*, MAG19(6):2539–2542, 1983. [l-atmgs-83] *Annote:* Defines "quality" of two triangles as $(r/R)_{-1}$. Used to triangulate strip along boundary. For interior $(r/R)_\infty$ is used (sort of).

8842 T. Lindholm and F. Yellin. *The Java Virtual Machine Specification.* Addison-Wesley, Reading, MA, 1997. [ly-jvms-97]

T. Ling. See also [3030].

8843 A. Lingas. A linear-time construction of the relative neighborhood graph from the Delaunay triangulation. *Comput. Geom. Theory Appl.*, 4:199–208, 1994. [l-ltcrn-94]

8844 A. Lingas. A linear-time heuristic for minimum weight triangulation of convex polygons. In *Proc. 23rd Allerton Conf. Commun. Control Comput.*, 1985. [l-lthmw-85] *Keywords:* design of algorithms, approximation, length, triangulations, polygons, convex.

8845 A. Lingas. A new heuristic for minimum weight triangulation. *SIAM J. Algebraic Discrete Methods*, 8(4):646–658, 1987. [l-nhmwt-87] *Keywords:* design of algorithms, approximation, length, triangulations, minimum spanning trees, points, geometric graphs.

8846 A. Lingas. A space efficient algorithm for the greedy triangulation. In *Proc. 13th IFIP Conf. System Modelling and Optimization*, page ??, 1987. [l-seagt-87] *Keywords:* implementing algorithms, approximation, length, triangulations, Delaunay triangulations, Voronoi diagrams, points, geometric graphs. *Precedes:* l-seagt-87a.

8847 A. Lingas. A space efficient algorithm for the greedy triangulation. *Lecture Notes in Control and Information Sci.*, 113:359–364, 1987. [l-seagt-87a] *Succeeds:* l-seagt-87.

8848 A. Lingas. Advances in minimum-weight triangulation. Linköping Studies in Sci. Technical Dissertations 97, Linköping Univ., Linköping, Sweden, 1983. [l-amwt-83] *Keywords:* design of algorithms, approximation, NP-completeness, length, triangulations, minimum spanning trees, points, polygons.

8849 A. Lingas. Applications of Voronoi diagrams with barriers to efficient implementations of greedy triangulations. Report ??, Dept. Comput. Inform. Sci., Linköping Univ., Linköping, Sweden, 1985. [l-avdbe-85]

8850 A. Lingas. Fast algorithms for bounded Voronoi diagrams of restricted polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 204–208, 1990. [l-fabvd-90] *Cites:* a-rtcg-89, agss-ltacv-87, c-tpca-82, e-acg-87, ll-gdtpg-86, ll-fagt-90, l-pp-85, l-vdbsd-89, ps-cgi-85, tv-otats-88, ws-oacdt-87, ZZZ.

8851 Andrzej Lingas. Greedy triangulation can be efficiently implemented in the average case. In *Graph-Theoretic Concepts in Computer Science. Proceedings.*, 1989. [l-gtcbe-89] *Abstract:* Let S be a set of n points uniformly distributed in a unit square. We show that the greedy triangulation of S can be computed in $O(n \log^{1.5} n)$ expected time (without bucketing). The best previously known upper-bound on the expected-time performance of an algorithm for the greedy triangulation was $O(n^2)$.

8852 A. Lingas. Heuristics for minimum edge length rectangular partitions of rectilinear figures. In *Proc. 6th GI Conf. Theoret. Comput. Sci.*, volume 145 of *Lecture Notes Comput. Sci.*, pages 199–210. Springer-Verlag, 1983. [l-hmelr-83] *Keywords:* design of algorithms, VLSI design, length, partition, approximation, polygons, geometric graphs, rectangles.

8853 A. Lingas. On approximation behavior and implementation of the greedy triangulation for convex planar point sets. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 72–79, 1986. [l-abigt-86] *Keywords:* implementing algorithms, approximation, length, triangulations, points, polygons, convex. *Cites:* g-nrpt-79, k-ndot-80, k-mtpd-80, lp-annpc-78, l-lthmw-85, l-tspp-77, mz-ngndt-79, mz-pmhfa-83, ps-cgi-85, yl-nannp-79, ZZZ.

8854 A. Lingas. On partitioning polygons. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 288–295, 1985. [l-pp-85] *Keywords:* design of algorithms, partition, divide-and-conquer, triangulations, polygons. *Cites:* c-tpca-82, d-pppg-82, h-gt-72, hm-ftsp-83, lt-stpg-77, lt-apst-77, m-spgus-84, u-cav-84, ZZZ.

8855 A. Lingas. The greedy and Delaunay triangulations are not bad in the average case. *Inform. Process. Lett.*, 22:25–31, 1986. [l-gdtan-86] *Keywords:* approximation, Delaunay triangulations, triangulations, average-case analysis, points. *Succeeds:* l-gdtan-83.

8856 A. Lingas. The greedy and Delaunay triangulations are not bad in the average case and minimum weight geometric triangulation of multi-connected polygons is NP-complete. In *Proc. 24th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 270–284, 1983. [l-gdtan-83] *Precedes:* l-gdtan-86. *Annote:* Geometric Triangulation just has to cover all points with edges.

8857 A. Lingas. The power of non-rectilinear holes. In *Proc. 9th Internat. Colloq. Automata Lang. Program.*, volume 140 of *Lecture Notes Comput. Sci.*, pages 369–383. Springer-Verlag, 1982. [l-pnrh-82] *Keywords:* complexity theory, partition, NP-completeness, polygons, geometric graphs, rectangles. *Annote:* One of the six NP-hardness results is incorrect, see sg-mdrpa-92, sg-mdrra-?? for a polynomial solution. The error is in cases G and H on p. 374, where the claimed partition is not optimal.

8858 A. Lingas. Voronoi diagrams with barriers and the shortest diagonal problem. *Inform. Process. Lett.*, 32:191–198, 1989. [l-vdbsd-89] *Keywords:* design of algorithms, Delaunay triangulations, Voronoi diagrams, geometric graphs.

8859 Andrzej Lingas and Rolf Klein. A linear-time randomized algorithm for the bounded Voronoi diagram of a simple polygon. Manuscript, Lund Univ., Lund, Sweden, 1991. [lk-ltrab-91] *Precedes:* kl-ltrab-93t.

8860 A. Lingas, C. Levcopoulos, and J.-R. Sack. Algorithms for minimum length partitions of polygons. *BIT*, 27:474–479, 1987. [lls-amlpp-87a] *Keywords:* design of algorithms, decomposition, triangulations, partition, dynamic programming, length, two-dimensional, convex, polygons. *Succeeds:* lls-amlpp-87t.

8861 A. Lingas, A. Maheshwari, and J.-R. Sack. Parallel algorithms for rectilinear link distance problems. Technical Report SCS-TR-213, Carleton University, School of Computer Science, 1992. [lms-parld-92]

8862 Andrzej Lingas, Anil Maheshwari, and Jorg-Rudiger Sack. Parallel algorithms for rectilinear link distance problems. In *Proc. 7th IEEE Internat. Parallel Process. Sympos.*, pages 65–72. IEEE Computer Society, 1993. [lms-parld-93] *Precedes:* lms-parld-95.

8863 Andrzej Lingas, Anil Maheshwari, and Jörg-Rüdiger Sack. Parallel algorithms for rectilinear link distance problems. *Algorithmica*, 14:261–289, 1995. [lms-parld-95] *Keywords:* link distance, parallel algorithms, rectilinear paths. *Succeeds:* lms-parld-93. *Abstract:* We provide optimal parallel solutions to several link distance problems set in trapezoided rectilinear polygons. All our main parallel algorithms are deterministic and designed to run on the exclusive read exclusive write parallel random-access machine (EREW PRAM). Let P be a trapezoided rectilinear simple polygon with n vertices. In $O(\log n)$ time using $O(n/\log n)$ processors we can optimally compute

1. minimum rectilinear link paths, or shortest paths in the L_1 metric from any point in P to all vertices of P,
2. minimum rectilinear link paths from any segment inside P to all vertices of P,
3. the rectilinear window (histogram) partition of P,
4. both covering radii and vertex intervals for any diagonal of P,
5. a data structure to support rectilinear link distance queries between any two points in P (queries can be answered optimally in $O(\log n)$ time by a uniprocessor).

Our solution to 5 is based on a new linear-time sequential algorithm for this problem which is also provided here. (Independently, Schuierer [11807] obtained a linear-time sequential algorithm.) This improves on the previously best known sequential algorithm for this problem which used $O(n \log n)$ time and space. We develop techniques for solving link distance problems in parallel which are expected to find applications in the design of other parallel computational geometry algorithms. We employ these parallel techniques for example to optimally compute (on a CREW PRAM) the link diameter, the link center and the central diagonal of a rectilinear polygon.

8864 Andrzej Lingas and Asish Mukhopadhyay. A linear-time construction of the relative neighborhood graph within a histogram. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 228–238. Springer-Verlag, 1995. [lm-ltcrn-95]

8865 A. Lingas, R. Pinter, R. Rivest, and A. Shamir. Minimum edge length partitioning of rectilinear polygons. In *Proc. 20th Allerton Conf. Commun. Control Comput.*, pages 53–63, 1982. [lprs-melpr-82] *Keywords:* design of algorithms, VLSI design, partition, length, dynamic programming, NP-completeness, polygons, geometric graphs, rectangles.

8866 A. Lingas, R. Y. Pinter, R. L. Rivest, and A. Shamir. Minimum edge length decomposition of rectilinear polygons. Unpublished Manuscript. [lprs-meldr-]

A. Lingas. See also [1777, 3667, 3861, 3862, 3999, 4252, 4253, 4257–4259, 7520, 8158–8169, 8738, 8741–8756].

8867 J. Linhart. A quick point-in-polyhedron test. *Comput. Graph. (UK)*, 14(3–4):445–447, 1990. [l-qppt-90]

8868 N. Linial, M. Luby, M. Saks, and D. Zuckerman. Efficient construction of a small hitting set for combinatorial rectangles in high dimension. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, page ??, 1993. [llsz-ecshs-93]

8869 N. Linial, Y. Mansour, and R. L. Rivest. Results on learnability and the Vapnik-Chervonekis dimension. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 120–129, 1988. [lmr-rlvcd-88] *Precedes:* lmr-rlvcd-91.

8870 N. Linial, Y. Mansour, and R. L. Rivest. Results on learnability and the Vapnik-Chervonekis dimension. *Inform. Comput.*, 90:33–49, 1991. [lmr-rlvcd-91] *Succeeds:* lmr-rlvcd-88.

8871 Nathan Linial and Michael Saks. Decomposing graphs into regions of small diameter. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, page ??, 1991. [ls-dgrsd-91]

8872 N. Linial and O. Sasson. Non-expansive hashing. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 509–517, 1996. [ls-neh-96]

N. Linial. See also [295, 296, 327, 328].

Douglas Garfield Link. See also [3868].

8873 G. Liotta. Low degree algorithms for computing and checking Gabriel graphs. Technical Report CS-96-28, Center for Geometric Computing, Dept. Computer Science, Brown Univ., 1996. [l-ldacc-96] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-28.ps.Z. *Keywords:* graph drawing, proximity, CGC, Brown.

8874 Giuseppe Liotta and Giuseppe Di Battista. Computing proximity drawings of trees in the 3-dimensional space. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 239–250. Springer-Verlag, 1995. [ld-cpdt3-95] *Keywords:* graph drawing, 3D, proximity.

8875 G. Liotta, A. Lubiw, H. Meijer, and S. H. Whitesides. The rectangle of influence drawability problem. Technical Report CS-96-22, Center for Geometric Computing, Dept. Computer Science, Brown Univ., 1996. [llmw-crig-96] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-22.ps.Z. *Keywords:* graph drawing, proximity, CGC, Brown. *Precedes:* llmw-crig-98.

8876 G. Liotta, A. Lubiw, H. Meijer, and S. H. Whitesides. The rectangle of influence drawability problem. *Comput. Geom. Theory Appl.*, 10(1):1–22, 1998. [llmw-crig-98] *Succeeds:* llmw-crig-96.

8877 Giuseppe Liotta, Franco P. Preparata, and Roberto Tamassia. Robust proximity queries: an illustration of degree-driven algorithm design. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 156–165, 1997. [lpt-rpqid-97] *Keywords:* nearest-neighbor search, point location, arithmetic precision, CGC, Brown. *Cites:* b-iha-07, b-ecvdl-96, bkmnsu-egcl-95, bms-dgc-94, c-hsh-85, c-sede-92, d-cgcg-92, dk-fdpi-83, dl-pmtds-89, egs-oplms-86, em-feptd-85, f-smpst-89, fv-eeacg-93, gks-ricdv-92, gs-pmgsc-85, h-pargc-89, kln-edtur-91, k-osps-83, lp-lppsi-77, lpt-rpqid-96, p-nappl-81, ps-cgi-85, pt-eplcs-92, st-pplup-86, si-cvdom-92, tv-ocsfc-96, y-stgd-90, y-tegc-97, ZZZ.

8878 Giuseppe Liotta, Franco P. Preparata, and Roberto Tamassia. Robust proximity queries: An illustration of degree-driven algorithm design. *SIAM J. Comput.*, 28(3):864–889, 1998. [lpt-rpqid-98] *Keywords:* nearest-neighbor search, point location, arithmetic precision, CGC, Brown.

8879 Giuseppe Liotta, Franco P. Preparata, and Roberto Tamassia. Robust proximity queries in implicit Voronoi diagrams. Technical Report CS-96-16, Center for Geometric Computing, Comput. Sci. Dept., Brown Univ., Providence, RI, 1996. [lpt-rpqiv-96] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-16.ps.Z.

8880 G. Liotta, R. Tamassia, I. G. Tollis, and P. Vocca. Area requirement of Gabriel drawings. Technical Report CS-96-29, Center for Geometric Computing, Dept. Computer Science, Brown Univ., 1996. [lttv-argd-96] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/96/cs96-29.ps.Z. *Keywords:* graph drawing, proximity, CGC, Brown.

8881 G. Liotta, R. Tamassia, I. G. Tollis, and P. Vocca. Area requirement of Gabriel drawings. In *Algorithms and Complexity (Proc. CIAC' 97)*, volume 1203 of *Lecture Notes Comput. Sci.*, pages 135–146. Springer-Verlag, 1997. [lttv-argd-97] *URL:* http://www.cs.brown.edu/cgc/papers/lttv-argd-97.ps.gz. *Keywords:* graph drawing, proximity, CGC, Brown.

8882 G. Liotta, F. Vargiu, and G. Di Battista. Orthogonal drawings with the minimum number of bends. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 281–286, 1994. [lvd-odmnb-94] *Cites:* dt-ipt-89, dlv-sorod-93, e-ga-79, gt-ccurp-94, k-mpgdg-92, l-conm-76, t-eggmn-87, tt-pgelt-89, ttv-lbpap-91, ttv-lbpod-91, v-ucvc-81, dett-adgab-94, ZZZ.

8883 G. Liotta and S. Whitesides, editors. *Special Issue on Selected Papers from the 1998 Symposium on Graph Drawing.* J. Graph Algorithms Appl. To appear. [lw-spgd-] *Keywords:* graph drawing, collection.

G. Liotta. See also [1309–1313, 1547, 1861–1863, 2306, 2307, 2323–2325, 2434, 2435, 2439, 2440, 2633, 3718, 3719, 4036, 4037, 4123–4129, 4131–4137, 4189, 4868, 7220, 7748–7750, 8700–8704, 12745, 13256].

8884 W. T. Liou, J. J. M. Tan, and R. C. T. Lee. Minimum partitioning simple rectilinear polygons in $O(n \log\log n)$ time. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 344–353, 1989. [ltl-mpsrp-89] *Cites:* ahu-daca-74, aap-ptem-86, ckss-crr-81, fss-mrpdb-84, fk-acpr-84, gt-ltasc-85, g-mmbg-67, cg-prca-83, h-acpr-82, hk-nammb-73, ia-eaggs-86, lllmp-tddo2-79, lp-eafmm-81, m-dsa-84, ns-fapd-88, o-mdrr-83, ostt-mprr-83, ps-coac-82, tv-otats-88, ZZZ.

8885 W. T. Liou, C. Y. Tang, and R. C. T. Lee. Covering convex rectilinear polygons in linear time. *Internat. J. Comput. Geom. Appl.*, 1(2):137–185, 1991. [ltl-ccrpl-91] *Keywords:* optimal covering problem, convex rectilinear polygon, optimum algorithm.

8886 W. Lipski, Jr. An $O(n \log n)$ Manhattan path algorithm. *Inform. Process. Lett.*, 19:99–102, 1984. [l-ompa-84]

8887 W. Lipski, Jr. Finding a Manhattan path and related problems. *Networks*, 13:399–409, 1983. [l-fmprp-83]

8888 W. Lipski, Jr. On the structure of three-layer wirable layouts. In Franco P. Preparata, editor, *VLSI Theory*, volume 2 of *Adv. Comput. Res.*, pages 231–243. JAI Press, Greenwich, Conn., 1984. [l-stlwl-84]

8889 W. Lipski, Jr., E. Lodi, F. Luccio, C. Mugnai, and L. Pagli. On two-dimensional data organization , Part II. *Fundam. Inform.*, 2:245–260, 1979. [lllmp-tddo2-79]

8890 W. Lipski, Jr. and C. H. Papadimitriou. A fast algorithm for testing for safety and detecting deadlocks in locked transaction systems. *J. Algorithms*, 2:211–226, 1981. [lp-fatsd-81]

8891 W. Lipski, Jr. and F. P. Preparata. Efficient algorithms for finding maximum matchings in convex bipartite graphs and related problems. *Acta Inform.*, 15:329–346, 1981. [lp-eafmm-81]

8892 W. Lipski, Jr. and F. P. Preparata. Finding the contour of a union of iso-oriented rectangles. *J. Algorithms*, 1:235–246, 1980. Errata in 2(1981), 105; corrigendum in 3(1982), 301–302. [lp-fcuio-80]

8893 W. Lipski, Jr. and F. P. Preparata. Segments, rectangles, contours. *J. Algorithms*, 2:63–76, 1981. [lp-src-81]

W. Lipski, Jr. See also [10884, 10885].

8894 J. Lipson. *Elements of Algebra and Algebraic Computing.* Addison-Wesley, 1981. [l-eaac-81]

8895 M. Lipton and W. Still. The multiple minimum problem in molecular modeling: Tree searching internal coordinate conformational space. *J. Computational Chemistry*, 9(4):343–355, 1988. [ls-mmpmm-88]

8896 R. J. Lipton and R. E. Miller. A batching method for coloring planar graphs. *Inform. Process. Lett.*, 7(4):185–188, 1978. [lm-bmcpg-78]

8897 R. J. Lipton, S. C. North, and J. S. Sandberg. A method for drawing graphs. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 153–160, 1985. [lns-mdg-85] *Keywords:* graph drawing. *Cites:* b-agt-74, c-agg-83, c-cgts-69, cm-ecgt-78, c-tggr-95, c-sdcrg-50, cm-grdg-80, cfp-zsg-81, er-ag-63, f-gcen-32, f-egavp-83, f-grg-49, f-gdtga-49, f-hdg-70, fhl-ptapg-80, gj-cigtn-79, gw-cetg-77, gm-gtg-64, ht-ogpm-66, h-gt-72, h-vsag-65, j-crpg-82, k-c-47, k-lgdlt-46, k-dpgtg-47, k-cdf-63, l-cpe-79, m-caclg-77, m-sgta-72, p-kafgg-37, rt-tdt-81, s-ggggg-57, s-cg-59, s-mogga-59, s-gm-60, s-cmspg-70, sr-cdtn-83, t-scg-59, t-crg-60, t-hdg-63, t-cg-66, t-wim-73, t-gt-84, u-ascan-84, w-grras-, w-anagg-71, w-moagp-66, ws-tdt-79, w-s-51, w-fpg-64, ZZZ.

8898 R. J. Lipton, S. C. North, and R. Sledgewick. Vlsi layout as programming. *ACM Trans. on Programming Languages and Systems*, ??, 1983. [lns-vlp-83]

8899 R. J. Lipton, D. J. Rose, and R. E. Tarjan. Generalized nested dissection. *SIAM J. Numer. Anal.*, 16(2):346–358, 1979. [lrt-gnd-79]

8900 R. J. Lipton and R. Sedgewick. Lower bounds for VLSI. In *Proc. 13th Annu. ACM Sympos. Theory Comput.*, pages 300–307, 1981. [ls-lbv-81]

8901 R. J. Lipton and R. E. Tarjan. A separator theorem for planar graphs. In *Proc. GI Conf. Theoret. Comput. Sci.*, 1977. [lt-stpg-77]

8902 R. J. Lipton and R. E. Tarjan. A separator theorem for planar graphs. *SIAM J. Appl. Math.*, 36:177–189, 1979. [lt-stpg-79]

8903 R. J. Lipton and R. E. Tarjan. Applications of a planar separator theorem. In *Proc. 18th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 162–170, 1977. [lt-apst-77] *Precedes:* lt-apst-80.

8904 R. J. Lipton and R. E. Tarjan. Applications of a planar separator theorem. *SIAM J. Comput.*, 9:615–627, 1980. [lt-apst-80] *Succeeds:* lt-apst-77.

R. J. Lipton. See also [474, 4266, 4301–4304].

8905 Dani Lischinski. Converting rectangular patches into Bézier triangles. In Paul Heckbert, editor, *Graphics Gems IV*, pages 278–285. Academic Press, Boston, MA, 1994. [l-crpbt-94] *Keywords:* Bezier surface, biquadratic patch. *Annote:* A parametric surface conversion routine. Contains C++ code.

8906 Dani Lischinski. Incremental Delaunay triangulation. In Paul Heckbert, editor, *Graphics Gems IV*, pages 47–59. Academic Press, Boston, MA, 1994. [l-idt-94] *Keywords:* mesh generation, polygonization, Voronoi diagram. *Annote:* Gives some code to solve a very important problem: finding Delaunay triangulations and Voronoi diagrams in 2D. These two geometric constructions are useful for triangular mesh generation and for nearest neighbor finding, respectively. Triangular mesh generation comes up when doing interpolation of surfaces from scattered data points, and in finite element simulations of all kinds, such as radiosity. Voronoi diagrams are used in many computational geometry algorithms. Contains C++ code.

8907 Dani Lischinski, Filippo Tampieri, and Donald Greenberg. Discontinuity meshing for accurate radiosity. *IEEE Comp. Graph. App.*, ??:25–39, November 1992. [ltg-dmar-92]

Dani Lischinski. See also [2785, 11999].

8908 D. Lishinski, B. Smith, and D. P. Greenberg. Bounds and error estimates for radiosity. *Comput. Graph.*, ??:67–74, 1994. Proc. SIGGRAPH '94. [lsg-beer-94]

8909 B. Lisper. TheoryNet posting and followup communication. ??, July 1988. [l-tpfc-88]

8910 F. F. Little and J. L. Schwing. Automatic generation of triangulations. [ls-agt-]

F. F. Little. See also [1436, 1437].

J. Little. See also [2079, 3572].

8911 J. J. Little. An iterative method for reconstructing convex polyhedra from extended Gaussian image. In *Proc. AAAI*, pages 247–250, 1983. [l-imrcp-83]

8912 J. J. Little. Determining object attitude from extended Gaussian image. In *Proc. Internat. Joint Conf. Artif. Intell.*, 1985. Submitted. [l-doaeg-85]

8913 J. J. Little. Extended gaussian images, mixed volumes, and shape reconstruction. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 15–23, 1985. [l-egimv-85] *Cites:* bb-deibs-81, b-fodm-84, b-fihs-78, gmw-po-81, g-iscsh-81, g-cp-67, grs-kfcg-83, h-egi-84, i-r3dou-81, ihncf-puopo-83, l-imrcp-83, l-doaeg-85, l-cfp-66, m-aludk-97, ps-coac-82, ph-chfsp-77, s-mplbc-84, s-uesi-79, s-pur-22, t-cpt-62, w-pmdso-80, ZZZ.

8914 J. J. Little and T. K. Peucker. A recursive procedure for finding the intersection of two digital curves. *Comput. Graph. Image Process.*, 10:159–171, 1979. [lp-rpfit-79]

J. J. Little. See also [2080, 5440, 9199, 10748].

8915 N. Littlestone. Learning quickly when irrelevant attributes abound: A new linear-threshold algorithm. In *Proc. 28th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 68–77, 1987. [l-lqwia-87]

J. E. Littlewood. See also [6679, 6680].

8916 Anwei Liu and Barry Joe. Relationship between tetrahedron shape measures. Technical report, University of Alberta, Edmonton, Alberta, Canada, 1993. [lj-rbtsm-93]

A. Liu. See also [7869–7871, 7873, 8106].

8917 C. Liu, D. M. Esterling, J. Fontdecaba, and E. Mosel. Dimensional verification of NC machining profiles using extended quadtrees. *Comput. Aided Design*, 28(11):845–852, November 1996. [lefm-dvnmp-96]

C. L. Liu. See also [4375].

C. R. Liu. See also [11456].

D.-Y. Liu. See also [5633].

J. W. Liu. See also [5850].

8918 Robin Liu and Simeon Ntafos. On decomposing polygons into uniformly monotone parts. *Inform. Process. Lett.*, 27(2):85–89, February 1988. [ln-dpump-88]

8919 R. Liu and S. Ntafos. On partitioning rectilinear polygons into star-shaped polygons. *Algorithmica*, 6:771–800, 1991. [ln-prpss-91]

8920 S. Liu and K. Singhal. A statistical mosfet model. In *Proc. of the International Conference on Computer-Aided Design*, pages 78–80, 1985. [ls-smm-85]

8921 S. Liu, K. Singhal, and V. Visivanathan. Center/advice: A cad system for circuit design optimization. Manuscript in preparation, 1986. [lsv-cacsc-86]

8922 Shang-Sheng Liu and Rajit Gadh. Basic logical bulk shapes (blobs) for finite element hexahedral mesh generation. In *Proc. 5th International Meshing Roundtable*, pages 291–304, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [lg-blbsb-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

8923 W.-P. Liu and I. Rival. Enumerating one-directional blocking relations and embedding them in small areas on the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 138–141, 1990. [lr-eodbr-90] *Cites:* d-rbwdo-84, fpp-sssfe-88, mt-tqcp-85, nru-roptp-90, ru-roptc-88, dtt-arsdd-89, tt-uavrp-86, w-cblsg-85, ZZZ.

W. P. Liu. See also [4138].

8924 Y. Liu, P. Marchioro, and R. Petreschi. A single bend embedding algorithm for cubic graphs. Manuscript, 1994. [lmp-sbeac-94] *Keywords:* graph drawing.

8925 Y. Liu, P. Marchioro, R. Petreschi, and B. Simeone. Theoretical results on at most 1-bend embeddability of graphs. Technical report, Dipartimento di Statistica, Univ. di Roma "La Sapienza", 1990. [lmps-trm1b-90] *Keywords:* graph drawing.

8926 Y. Liu, A. Morgana, and B. Simeone. A linear algorithm for 3-bend embeddings of planar graphs in the grid. Manuscript, 1993. [lms-la3be-93] *Keywords:* graph drawing.

8927 Y. Liu, A. Morgana, and B. Simeone. General theoretical results on rectilinear embeddability of graphs. *Acta Math. Appl. Sinica*, 7:187–192, 1991. [lms-gtrre-91] *Keywords:* graph drawing.

8928 Y.-H. Liu and S. Arimoto. Finding the shortest path of a disc among polygonal obstacles using a radius-independent graph. *IEEE Trans. Robot. Autom.*, 11(5):682–691, October 1995. [la-fspdp-95]

8929 Z. C. Liu and D. Z. Du. On Steiner minimal trees with L_p distance. *Algorithmica*, 7:179–191, 1992. [ld-smtld-92]

Z.-C. Liu. See also [4442].

8930 C. Livingston. *Knot Theory*. Mathematical Association of America, Washington, 1993. [l-kt-93]

8931 Y. Livnat, H.-W. Shen, and C. R. Johnson. A near optimal isosurface extraction algorithm using the span space. *IEEE Trans. Visualizat. Comput. Graph.*, 2:73–84, 1996. [lsj-noiea-96]

8932 R. Livne and Micha Sharir. On intersection of planar Jordan curves. Technical Report 153, Courant Institute of Mathematical Sciences, 1985. [ls-ipjc-85] *Comments:* Robotics Report number 37.

R. Livne. See also [7948, 12075].

8933 E. L. Lloyd. On triangulations of a set of points in the plane. In *Proc. 18th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 228–240, 1977. [l-tspp-77]

8934 J. W. Lloyd. Optimal partial-match retrieval. *BIT*, 20:406–413, 1980. [l-opmr-80]

8935 J. W. Lloyd. Partial-match retrieval for dynamic files. *BIT*, 22:150–168, 1982. [l-pmrdf-82]

J. W. Lloyd. See also [10972].

C. Lo. See also [2251].

8936 C.-Y. Lo, J. Matoušek, and W. Steiger. Ham-sandwich cuts in $\Re^d$. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 539–545, 1992. [lms-hscr-92]

8937 C.-Y. Lo, J. Matoušek, and W. L. Steiger. Algorithms for ham-sandwich cuts. *Discrete Comput. Geom.*, 11:433–452, 1994. [lms-ahsc-94] *Succeeds:* lms-hscr-92.

8938 C.-Y. Lo and W. Steiger. An optimal-time algorithm for ham-sandwich cuts in the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 5–9, 1990. [ls-otahs-90] *Cites:* csss-otass-89, csy-khrp-87, e-acg-87, ew-chsct-86, m-cen-89, m-ptlp-85, w-pr-82, ZZZ.

J. A. Lo. See also [12112].

8939 S. H. Lo. Delaunay triangulation of non-convex planar domains. *Internat. J. Numer. Methods Eng.*, 28(11):2695–2707, November 1989. [l-dtncp-89] *Keywords:* Delaunay triangulation, planar domains, mesh generation techniques. *Annote:* Triangle quality measure of

$$2\sqrt{3}\frac{|a \times b|}{a^2 + b^2 + c^2}$$

. Circumcircle algorithm for CDT. Keep track of non-Delaunay edges. Initially the boundary, edges of non-Delaunay triangles are added to this list, which is all that must be checked for intersections. *Abstract:* This paper investigates the possibility of integrating the two currently most popular mesh generation techniques, namely the method of advancing front and the Delaunay triangulation algorithm. The merits of the resulting scheme are its simplicity, efficiency and versatility. With the introduction of 'non-Delaunay' line segments, the concept of using Delaunay triangulation as a means of mesh generation is clarified. An efficient algorithm is proposed for the construction of Delaunay triangulations over non-convex planar domains. Interior nodes are first generated within the planar domain. These interior nodes and the boundary nodes are then linked up together to produce a valid triangulation. Through the study of numerous examples of various characteristics, it is found that high-quality triangular element meshes are obtained by the proposed algorithm, and the mesh generation time bears a linear relationship with the number of elements/nodes of the triangulation. (Edited author abstract) 37 Refs.

8940 S. H. Lo. Volume discretization into tetrahedra. I. verification and orientation of boundary surfaces. *Comput. Struct.*, 39(5):493–500, 1991. [l-vdt1v-91] *Annote:* Mesh quality is harmonic mean of $A/(a^2 + b^2 + c^2)$.

8941 S. H. Lo. Volume discretization into tetrahedra. II. 3D triangulation by advancing front approach. *Comput. Struct.*, 39(5):501–511, 1991. [l-vdt23-91] *Keywords:* discretization, tetrahedra, mesh generation, triangulation, advancing fronts. *Annote:* Doesn't like 3DDT. Advancing front picks next vertex as one that maximizes 'quality' with a lookahead. *Abstract:* Existing methods of automatic mesh generation for 3D solid objects are reviewed. Although the 3D Delaunay triangulation recently aroused much attention, its suitability as a finite element mesh generator is questioned. Although in 2D Delaunay triangulation, the 'max-min' angle criterion can be verified over the entire domain, no equivalent or similar criterion can be defined for its extension to 3D situations to ensure that tetrahedron elements so generated are well proportioned for numerical calculations. In this paper, a simple but versatile 3D triangulation scheme based on the advancing front technique for the discretization of arbitrary volumes is presented. To ensure that the tetrahedron elements generated are as equilateral as possible, the ratio of volume of the element to the sum of squares of edges put into a dimensionless form is adopted to judge the quality of a tetrahedron element. The quality of the finite element mesh can thus be ensured if the shape of each tetrahedron element is carefully controlled in the mesh construction process. Through the study of numerous examples of various characteristics, it is found that high-quality tetrahedron element meshes are obtained by the proposed algorithm. (Author abstract) 24 Refs.

C. F. van Loan. See also [6065].

C. van Loan. See also [6064].

8942 Randy Lober, Timothy J. Tautges, and Rich A. Cairncross. The parallelization of an advancing-front, all-quadrilateral meshing algorithm for adaptive analysis. In *Proc. 4th International Meshing Roundtable*, pages 59–71, Albuquerque, NM, 1995. Sandia National Laboratories. [ltc-pafaq-95]

R. R. Lober. See also [2061].

M. Lobo. See also [4896].

8943 E. Lockwood. Cambridge University Press, Cambridge, UK, 1961. [l-bc-61]

8944 M. Loczkovich. Tilings of polygons with similar triangles. *Combinatorica*, 10:281–306, 1990. [l-tpst-90]

8945 E. Lodi, F. Luccio, C. Mugnai, and L. Pagli. On two-dimensional data organization, Part I. *Fundam. Inform.*, 2:211–226, 1979. [llmp-tddo1-79]

8946 E. Lodi and L. Pagli. A VLSI solution to the vertical segment visibility problem. *IEEE Trans. Comput.*, C-35(10):923–928, 1986. [lp-vsvsv-86]

E. Lodi. See also [971, 8889].

8947 A. L. Loeb. *Space Structures, their Harmony and Counterpoint.* Addison-Wesley, Reading, MA, 1976. [l-ssthc-76]

8948 Jesús A. de Loera, Serkan Hoşten, Francisco Santos, and Bernd Sturmfels. The polytope of all triangulations of a point configuration. In *Abstracts 12th European Workshop Comput. Geom.*, pages 21–24. Universität Münster, 1996. [lhss-96]

8949 J. de Loera. Computing regular traiangulations of point configurations. Preprint, 1994. [l-crtpc-94]

8950 J. de Loera, B. Sturmfels, and R. Thomas. Gröbner bases and triangulation of the second hypersimplex. *Combinatorica*, 15(3):409–424, 1995. [lst-gbtsh-95]

F. Loeser. See also [1610].

M. H. Loew. See also [12187].

J. Loewer. See also [7649].

8951 I. P. Logan, W. A. McNeely, J. J. Troy, and D. P. Wills. Voxel based real-time collision detection. Manuscript, Univ. Hull, 1997. [lmtw-vbrtc-97] *Keywords:* intersection detection, collision detection, voxels, haptics.

Dave Logothetti. See also [2778].

H. T. Loh. See also [3124].

S. C. Loh. See also [3207].

8952 A. W. Lohman and N. Sreibl. Map transformation by optical anamorphic processing. *Appl. Optics*, 22(6):780–783, 1983. [ls-mtoap-83]

8953 Rainald Lohner. Surface gridding from discrete data. In *Proc. 4th International Meshing Roundtable*, pages 29–45, Albuquerque, NM, 1995. Sandia National Laboratories. [l-sgdd-95]

8954 Rainald Lohner and Paresh Parikh. Generation of three-dimensional unstructured grids by the advancing-front method. In *AIAA 26th Aerospace Sciences Meeting*, January 1988. AIAA Paper AIAA-88-0515. [lp-gtdug-88]

8955 S. Lojasiewicz. Triangulation of semi-analytic sets. *Annali della Scuola Normale Superiore de Pisa, Annali Scienze, Fisiche i Mathimatische Serie III*, 18:449–474, 1964. [l-tsas-64]

Henri Lombardi. See also [6094].

8956 D. B. Lomet and B. Salzberg. The hB-tree: A multiattribute indexing method with good guaranteed performance. *ACM Trans. Database Syst.*, 15:625–658, 1990. [ls-htmim-90]

D. B. Lomet. See also [5053].

M. Longinetti. See also [1975].

8957 M. J. Longtin. Cover and concealment in ModSAF. In *Proc. 4th Conf. on Computer Generated Forces and Behavioral Representation*, pages 239–247, 1994. [l-ccm-94]

8958 M. J. Longtin and D. Megherbi. Concealed routes in ModSAF. In *Proc. 5th Conf. on Computer Generated Forces and Behavioral Representation*, pages 305–313, 1995. [lm-crm-95]

P. Looges. See also [1920].

8959 R. Loos. Computing in algebraic extensions. In B. Buchberger, G. E. Collins, R. Loos, and R. Albrecht, editors, *Computer Algebra: Symbolic and Algebraic Computation*, pages 173–187. Springer-Verlag, 1983. [l-cae-83]

8960 R. Loos. Generalized polynomial remainder sequences. In B. Buchberger, G. E. Collins, R. Loos, and R. Albrecht, editors, *Computer Algebra: Symbolic and Algebraic Computation*, pages 115–137. Springer-Verlag, Wien, 1983. [l-gprs-83]

R. Loos. See also [2563, 2565, 2566, 3485].

L. Lopez-Buriek. See also [2061].

8961 Jesús García López and Pedro Ramos-Alonso. Circular visibility. In *Abstracts 9th European Workshop Comput. Geom.*, pages 61–65. FernUniversität Hagen, 1993. [l-cv-93]

Jesús García López. See also [2063].

8962 Mario Lopez and Dinesh Mehta. Efficient decomposition of polygons into L-shapes with applications to VLSI layouts. *ACM Trans. Design. Autom. Electr. Syst.*, 1(3):371–395, 1996. [lm-edpls-96]

M. Lopez. See also [7480].

8963 M. A. Lopez and S. Reisner. Efficient approximation of convex polygons. *Internat. J. Comput. Geom. Appl.*, 10:445–452, 2000. [lr-eacp-00]

M. A. Lopez. See also [8731].

8964 A. López-Ortiz. *On-line target searching in bounded and unbounded domains.* PhD thesis, Univ. Waterloo, Waterloo, Canada, 1996. [l-oltsb-96] *Keywords:* doctoral thesis.

8965 A. López-Ortiz and S. Schuierer. Generalized streets revisited. In *Proc. 4th Annu. European Sympos. Algorithms*, volume 1136 of *Lecture Notes Comput. Sci.*, pages 546–558. Springer-Verlag, 1996. [ls-gsr-96]

8966 A. López-Ortiz and S. Schuierer. Going home through an unknown neighbourhood. Technical Report, Dept. Comput. Sci., Univ. Waterloo, Waterloo, Canada, 1994. [ls-ghtun-94]

8967 Alejandro López-Ortiz and Sven Schuierer. Going home through an unknown street. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 135–146. Springer-Verlag, 1995. [ls-ghtus-95] *ISBN:* 3-540-60220-8.

8968 Alejandro López-Ortiz and Sven Schuierer. Lower bounds for searching on generalized streets. University of New Brunswick, Canada, 1998. [ls-lbsgs-98]

8969 A. López-Ortiz and S. Schuierer. Lower bounds for streets and generalized streets. *Internat. J. Comput. Geom. Appl.*, 11:401–421, 2001. [ls-lbsgs-01]

8970 A. López-Ortiz and S. Schuierer. Position-independent near optimal searching and on-line recognition in star polygons. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 445–447, 1997. [ls-pinos-97] *Precedes:* ls-pinos-97b. *Cites:* bcr-sp-93, dhs-cspbg-95, di-csgs-94, g-sg-80, ik-skpcs-95, k-wusbd-92, k-olssp-94, l-oltsb-96, ls-ghtus-95, ls-gsr-96, ls-wsf-96, ZZZ.

8971 Alejandro López-Ortiz and Sven Schuierer. Position-independent near optimal searching and on-line recognition in star polygons. In *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 284–296. Springer-Verlag, 1997. [ls-pinos-97b]

8972 Alejandro López-Ortiz and Sven Schuierer. Simple, efficient and robust strategies to traverse streets. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 217–222, 1995. [ls-serst-95]

8973 Alejandro López-Ortiz and Sven Schuierer. The exact cost of exploring streets with CAB. Technical report, Institut für Informatik, Universität Freiburg, 1998. [ls-ecesc-98]

8974 Alejandro López-Ortiz and Sven Schuierer. The ultimate strategy to search on m rays? In *Proc. 4th Ann. Internat. Conf. Computing and Combinatorics*, volume 1449 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1998. [ls-ussmr-98]

8975 Alejandro López-Ortiz and Sven Schuierer. Walking streets faster. In *Proc. 5th Scand. Workshop Algorithm Theory*, volume 1097 of *Lecture Notes Comput. Sci.*, pages 345–356. Springer-Verlag, 1996. [ls-wsf-96] *ISBN:* 3-540-61422-2.

Alejandro López-Ortiz. See also [2457, 7319].

8976 W. Lorensen and H. Cline. Marching cubes: a high resolution 3d surface construction algorithm. *Comput. Graph.*, 21(4):163–170, 1987. [lc-mchr3-87]

W. E. Lorensen. See also [3380,11802].

M. J. Lorenzetti. See also [10864].

M. de Lorenzi. See also [10146,10147].

8977 M. Lothaire. *Combinatorics on Words*. Addison-Wesley, Reading, MA, 1983. [l-cw-83]

J. B. Lotspiech. See also [2036].

8978 R. D. Lou, M. Sarrafzadeh, and D. T. Lee. An optimal algorithm for the maximum two-chain problem. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 149–158, 1990. [lsl-oamtc-90]

8979 Michael C. Loui et al. Strategic directions in research in theory of computing. *ACM Comput. Surv.*, 28(4):575–590, 1996. http://geisel.csl.uiuc.edu/~loui/complete.html. [l-sdrtc-96] *URL:* http://geisel.csl.uiuc.edu/~loui/complete.html.

8980 M. Lounsbery, T. D. DeRose, and J. Warren. Multiresolution analysis for surfaces of arbitrary topological type. *ACM Trans. Graph.*, 16(1):34–73, January 1997. [ldw-masat-97]

M. Lounsbery. See also [3990].

8981 A. Louri. Three-dimensional optical architecture and data-parallel algorithms for massively parallel computing. *IEEE Micro*, ??:24–81, April 1991. [l-tdoad-91]

8982 P. P. Loutrel. A solution to the hidden-line problem for computer drawn polyhedra. *IEEE Trans. Comput.*, C-19:205–213, 1970. [l-shlpc-70]

P. P. Loutrel. See also [5580].

8983 L. Lovasz. *An Algorithmic Theory of Numbers, Graphs, and Convexity.* CBMS-NSF Regional Conference Series in Applied Mathematics. Society of Industrial and Applied Mathematicians, Philadelphia, PA, 1986. [l-atngc-86]

8984 L. Lovász. *Combinatorial Problems and Exercises.* North-Holland, 1979. [l-cpe-79]

8985 L. Lovàsz. Communication complexity: A survey. In *Paths, Flows, and VLSI Layout*, volume 9 of *Algorithms and Combinatorics*, pages 235–265. Springer-Verlag, 1990. [l-ccs-90]

8986 L. Lovász. On the number of halving lines. *Annal. Univ. Scie. Budapest. de Rolando Eötvös Nominatae, Sectio Math.*, 14:107–108, 1971. [l-nhl-71]

8987 L. Lovász. On the ratio of optimal integral and fractional covers. *Discrete Math.*, 13:383–390, 1975. [l-roifc-75] *Keywords:* approximation.

8988 László Lovász, János Pach, and Mario Szegedy. On conway's thrackle conjecture. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 147–151, 1995. [lps-ctc-95] *Keywords: Cites:* bf-lamcp-88, b-siec-69, be-cp-48, dett-adgab-94, fs-lda1-35, f-edpsp-40, gj-cninc-83, g-lsh-75, g-tsdg-93, g-cng-72, hp-an1-34, kst-pkz-54, lst-gbtsh-95, pa-cg-95, prs-crtcs-94, prs-pnmcs-91, rsp-sbmc-91, t-nw-77, t-ttcn-70, wb-tgt-78, w-td-69, w-op-72, ZZZ.

8989 L. Lovasz and M. D. Plummer. *Matching Theory*, volume 29 of *Ann. Discrete Math.* North-Holland, 1986. [lp-mt-86]

8990 L. Lovasz and H. E. Scarf. The generalized basis reduction algorithm. Cowles Foundation Paper 818, Yale University, 1992. [ls-gbra-92]

8991 L. Lovász and M. Siminovits. The mixing rate of Markov chains, an isoperimetric inequality, and computing the volume. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 346–354, 1990. [ls-mrmci-90] *Keywords:* approximation, volume, convex.

8992 L. Lovász and M. Simonovits. On the randomized complexity of volume and diameter. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 482–492, 1992. [ls-rcvd-92]

8993 L. Lovasz and Y. Yemini. On generic rigidity in the plane. *SIAM J. Algebraic Discrete Methods*, 3:91–98, 1982. [ly-grp-82]

L. Lovasz. See also [474, 1377–1379, 2057, 4995, 4996, 6327, 6328, 7828, 8726].

8994 N. Linial L. Lovasz and A. Wigderson. Rubber bands, convex embeddings and graph connectivity. *Combinatorica*, 8:91–102, 1988. [llw-rbceg-88]

8995 L. Lováz. Perfect graphs. In L. W. Beineke and R. J. Wilson, editors, *Selected Topics in Graph Theory*, volume 2, pages 55–85. Academic Press, London, UK, 1983. [l-pg-83]

L. Lováz. See also [6329].

8996 D. G. Lowe. Three-dimensional object recognition from single two-dimensional images. Report 202, Comput. Sci. Div., New York Univ., New York, NY, 1986. [l-tdors-86]

S. R. Lowry. See also [11246].

A. Lozano. See also [1325].

8997 T. Lozano-Pérez. A simple motion planning algorithm for general robot manipulators. Technical Report, Artif. Intell. Lab., Massachusetts Inst. Tech., Cambridge, MA, 1986. [l-smpag-86]

8998 T. Lozano-Pérez. A simple motion planning algorithm for general robot manipulators. *IEEE Trans. Robot. Autom.*, RA-3(3):224–238, 1987. [l-smpag-87]

8999 T. Lozano-Pérez. Automatic planning of manipulator transfer movements. *IEEE Trans. Syst. Man Cybern.*, SMC-11(10):681–698, 1981. [l-apmtm-81]

9000 T. Lozano-Pérez. Robot programming. In *IEEE Poceedings*, 1983. [l-rp-83]

9001 T. Lozano-Pérez. Spatial planning: A configuration space approach. *IEEE Trans. Comput.*, C-32:108–120, 1983. [l-spcsa-83]

9002 T. Lozano-Pérez, M. T. Mason, and R. Taylor. Automatic synthesis of fine-motion strategies for robots. *Internat. J. Robot. Res.*, 3(1), 1984. [lmt-asfms-84]

9003 T. Lozano-Pérez and M. A. Wesley. An algorithm for planning collision-free paths among polyhedral obstacles. *Commun. ACM*, 22(10):560–570, 1979. [lw-apcfp-79]

T. Lozano-Pérez. See also [2489, 2493, 2494, 4974, 5820, 6288, 13626].

D. Lozevanu. See also [13867].

J. Lozito. See also [9166].

J.-Y. Lu. See also [3103].

9004 M. Lu. Constructing the Voronoi diagram on a mesh-connected computer. In *Proc. Internat. Conf. Parallel Process.*, pages 806–811, 1985. [l-cvdmc-85]

9005 A. Lubiw. Decomposing polygonal regions into convex quadrilaterals. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 97–106, 1985. [l-dprcq-85] *Cites:* ahu-daca-74, cd-dpicp-79, eow-sgrag-84, f-spcwt-78, gj-cigtn-79, gjpt-tsp-78, k-dpsc-83, kkk-tgrfw-83, l-pftu-82, l-pnrh-82, lprs-meldr-, o-aprag-83, ps-dtram-80, lllmp-tddo2-79, s-oadrp-82, sh-gip-76, t-prgc-80, t-dsna-83, ZZZ.

9006 A. Lubiw. *Ordering and some Combinatorial optimization Problems with some Geometric Applications.* PhD thesis, University of Waterloo, 1985. [l-ocopg-85] *Keywords:* doctoral thesis.

9007 A. Lubiw. The boolean basis problem and how to cover polygons by rectangles. Manuscript, University of Waterloo, 1988. [l-bbpcp-88]

9008 A. Lubiw and N. Mouawad. Interval graphs as visibility graphs of simple polygons, part i: Parachutes. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 18–23, 1994. [lm-igvgs-94] *Cites:* c-vpgr-92, o-agta-87, o-cgc18-93a, ec-rvgsp-90, g-rcvgs-88, ZZZ.

9009 A. Lubiw and J. O'Rourke. When can a polygon fold to a polytope? Technical Report 048, Dept. Comput. Sci., Smith College, June 1996. Presented at AMS Conf., 5 Oct. 1996. [lo-wcpfp-96] *Keywords:* polytopes.

9010 A. Lubiw and N. Sleumer. Maximal outerplanar graphs are relative neighborhood graphs. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 198–203, 1993. [ls-mogar-93] *Cites:* am-rngtd-92a, bll-cpt-93t, c-psepg-92, d-rdt-90, jt-rngtr-92, ms-pggrg-80, o-agta-87, s-rngam-83, t-rngfp-80, u-spper-83, v-gng-92, ZZZ.

A. Lubiw. See also [1979–1982, 1985, 2309, 2310, 2313, 2314, 2326, 3477, 3565, 3566, 3951, 3954–3959, 4868, 5083, 5084, 7264, 7265, 7418, 8314, 8875, 8876].

9011 A. Lubotzky, R. Phillips, and P. Sarnak. Explicit expanders and the Ramanujan conjectures. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 240–246, 1986. [lps-eerc-86] *Precedes:* lps-rg-88.

9012 A. Lubotzky, R. Phillips, and P. Sarnak. Ramanujan graphs. *Combinatorica*, 8:261–277, 1988. [lps-rg-88] *Succeeds:* lps-eerc-86.

9013 M. Luby. A simple parallel algorithm for the maximal independent set problem. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 1–10, 1985. [l-spami-85]

9014 M. Luby. A simple parallel algorithm for the maximal independent set problem. *SIAM J. Comput.*, 15(4):1036–1053, 1986. [l-spami-86]

9015 M. Luby. Removing randomness in parallel computation without a processor penalty. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 162–173, 1988. [l-rrpcw-88]

M. Luby. See also [2109, 2110, 3705, 7828, 7840, 7844, 8868].

9016 M. G. Luby. Grid geometries which preserve properties of Euclidean geometry: a study of graphics line drawing algorithms. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 397–432. Springer-Verlag, 1988. [l-ggwpp-88]

9017 J. Lucas. The rotation graph of binary trees is Hamiltonian. *J. Algorithms*, 9:503–535, 1988. [l-rgbth-88]

9018 J. Lucas, D. Roelants van Baronaigien, and F. Ruskey. On rotations and the generation of binary trees Hamiltonian. *J. Algorithms*, 15:343–366, 1993. [lrr-rgbth-93]

9019 F. Luccio, S. Mazzone, and C. Wong. A note on visibility graphs. *Discrete Math.*, 64:209–219, 1987. [lmw-nvg-87] *Keywords:* graph drawing.

9020 F. Luccio and L. Pagli. On the upper bound on the rotation distance of binary trees. *Inform. Process. Lett.*, 31(2):57–60, April 1989. [lp-ubrdb-89] *Keywords:* rotation distance, binary search trees, upper bounds, tree transformation algorithm. *Annote:* Exhibits an algorithm to transform from one tree to another by rotations. *Abstract:* The rotation distance d(T//1,T//2) between two binary search trees T//1 and T//2 on n nodes is the minimum number of rotations needed to transform T//1 into T//2. D.D. Sleator, R.E. Tarjan and W.R. Thurston have proved an upper bound 2n minus 6 to d(T//1,T//2), using triangulation of polyhedra. Makinen has subsequently shown that a weaker upper bound of 2n minus 5 can be simply proved with elementary tree concepts. In this note we present a new tree transformation algorithm, leading to an elementary proof of the bound 2n minus 6. (Author abstract) 4 Refs.

9021 F. Luccio, A. Pietracaprina, and G. Pucci. A new scheme for the deterministic simulation of prams in vlsi. *Algorithmica*, 5:529–544, 1990. [lpp-nsdsp-90]

F. Luccio. See also [8414, 8889, 8945, 11727].

I. M. Lucewicz. See also [1434].

T. Luczak. See also [5280].

J. Luddermann. See also [8318].

S. Ludke. See also [3380].

A. Ludwig. See also [5602].

9022 W. Ludwig. A subexponential randomized algorithm for the simple stochastic game problem. *Inform. Comput.*, 117(1):151–155, 1995. [l-srass-95]

9023 David Luebke and Carl Erikson. View-dependent simplification of arbitrary polygonal environments. In *Proc. SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, pages 199–208. ACM SIGGRAPH, ACM Press, August 1997. [le-vdsap-97]

9024 D. Luebke and C. Georges. Portals and mirrors: Simple, fast evaluation of potentially visible sets. In *Proc. ACM Interactive 3D Graphics Conf.*, 1995. [lg-pmsfe-95]

G. Lueker. See also [2262].

9025 G. S. Lueker. A data structure for orthogonal range queries. In *Proc. 19th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 28–34, 1978. [l-dsorq-78] *Precedes:* lw-dsdrq-82.

9026 G. S. Lueker. A transformation for adding range restriction capability to dynamic data structures for decomposable searching problems. Report R129, Dept. Inform. Comput. Sci., Univ. California, Irvine, CA, 1979. [l-tarrc-79]

9027 G. S. Lueker, N. Megiddo, and V. Ramachandran. Linear programming with two variables per inequality in poly log time. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 196–205, 1986. [lmr-lptvp-86] *Keywords:* parallel computation, linear programming, d-dimensional. *Precedes:* lmr-lptvp-90.

9028 G. S. Lueker, N. Megiddo, and V. Ramachandran. Linear programming with two variables per inequality in poly log time. *SIAM J. Comput.*, 19:1000–1010, 1990. [lmr-lptvp-90] *Keywords:* parallel computation, linear programming, d-dimensional. *Succeeds:* lmr-lptvp-86.

9029 G. S. Lueker and D. E. Willard. A data structure for dynamic range queries. *Inform. Process. Lett.*, 15(5):209–213, 1982. [lw-dsdrq-82] *Succeeds:* l-dsorq-78.

G. S. Lueker. See also [13610].

W. K. Luk. See also [12777].

G. Lukács. See also [6806].

9030 H. Lukatela. Hipparchus data structures: Points, lines and regions in spherical Voronoi grid. In *Proc. 9th Internat. Sympos. Comput.-Assist. Cartog.*, pages 164–170, 1989. [l-hdspl-89]

9031 W. L. Luken and F. Cheng. Rendering trimmed NURB surfaces. Research Report 18669 (81711), IBM Research Division, 1993. [lc-rtns-93]

9032 T. Lukovszki. New results on fault tolerant geometric spanners. In *Proc. 6th Workshop Algorithms Data Struct.*, volume 1663 of *Lecture Notes Comput. Sci.*, pages 193–204. Springer-Verlag, 1999. [l-nrftg-99]

9033 T. Lukovszki. *New results on geometric spanners and their applications*. Ph.D. thesis, Department of Computer Science, University of Paderborn, Paderborn, Germany, 1999. [l-nrgst-99] *Keywords:* doctoral thesis.

Tamás Lukovszki. See also [5273–5275].

E. Luks. See also [5683].

9034 V. Y. Lum. Multi-attribute retrieval with combined indexes. *Commun. ACM*, 13:660–665, 1970. [l-marci-70]

9035 V. J. Lumelski. Dynamic path planning for planar articulated robot arm moving amidst moving obstacles. *Automatica*, ??, 1987. To appear. [l-dpppa-87]

9036 V. Lumelsky and T. Skewis. A paradigm for incorporating vision in the robot navigation function. In *Proc. 1988 IEEE Internat. Conf. Robot. Autom.*, April 1988. [ls-pivrn-88]

V. Lumelsky. See also [6888–6890].

9037 V. J. Lumelsky. A comparative study on the path length performance of maze-searching and robot motion planning algorithms. *IEEE Trans. Robot. Autom.*, 7(1):57–66, 1991. [l-csplp-91]

9038 V. J. Lumelsky. Algorithmic and complexity issues of robot motion in an uncertain environment. *J. Complexity*, 3:146–182, 1987. [l-acirm-87]

9039 V. J. Lumelsky. Algorithmic issues of sensor-based robot motion planning. In *Proc. 26th IEEE Conf. Decision Control*, pages 1796–1801, 1987. [l-aisbr-87]

9040 V. J. Lumelsky. Continous motion planning in unknown environment for a 3d cartesian robot arm. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1569–1574, 1986. [l-cmpue-86]

9041 V. J. Lumelsky. Effect of kinematics on dynamic path planning for planar robot arms moving amidst unknown obstacles. *Internat. J. Robot. Autom.*, RA-3(3):207–223, 1987. [l-ekdpp-87]

9042 V. J. Lumelsky. On fast computation of distance between line segments. *Inform. Process. Lett.*, 21:55–61, 1985. [l-fcdbl-85]

9043 V. J. Lumelsky, S. Mukhopadhyay, and K. Sun. Dynamic path planning in sensor-based terrain acquisition. *IEEE Trans. Robot. Autom.*, 6(4):462–472, August 1990. [lms-dppsb-90]

9044 V. J. Lumelsky and T. Skewis. Incorporating range sensing in the robot navigation function. *IEEE Trans. Syst. Man Cybern.*, 20(5):1058–1069, 1990. [ls-irsrn-90]

9045 V. J. Lumelsky and A. A. Stepanov. Dynamic path planning for a mobile automaton with limited information on the environment. *IEEE Trans. Autom. Control*, AC-31:1058–1063, 1986. [ls-dppma-86]

9046 V. J. Lumelsky and A. A. Stepanov. Path-planning strategies for a point mobile automaton moving amidst unknown obstacles of arbitrary shape. *Algorithmica*, 2:403–430, 1987. [ls-ppspm-87]

9047 V. J. Lumelsky and K. Sun. A unified methodology for motion planning with uncertainty for 2d and 3d two-link robot arm manipulators. *Internat. J. Robot. Res.*, 9(5):89–104, 1990. [ls-ummpu-90]

9048 V. J. Lumelsky and K. Sun. Path planning among unknown obstacles: The case of a 3d cartesian arm. *IEEE Trans. Robot. Autom.*, 8(6):??, 1992. [ls-ppuoc-92]

V. J. Lumelsky. See also [12644].

9049 C. Lund and M. Yannakakis. On the hardness of approximating minimization problems. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 286–293, 1993. [ly-hamp-93]

9050 Carsten Lund and Mihalis Yannakakis. On the hardness of approximating minimization problems. *J. ACM*, 41(5):960–981, 1994. [ly-ohamp-94]

C. Lund. See also [886, 887, 1579].

9051 A. T. Lundell and S. Weingram. *The topology of CW complexes.* Van Nostrand, New York, NY, 1969. [lw-tcc-69]

9052 Mikael Lundquist. An implementation of a method for simulating injection moulding of non-planar objects. Technical Report LiTH-MAT-R-95-09, Linköping University, October 1995. [l-imsim-95] *Keywords:* injection molding, continuous Dijkstra, geodesic metric, shortest paths, wavefront propagation.

9053 J. Luo and K. Miriyala. A practical approach to static node positioning. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 436–443. Springer-Verlag, 1995. [lm-pasnp-95] *Keywords:* graph drawing, placement, system.

9054 Robert Lupton, F. Miller Maley, and Neal Young. Data collection for the Sloan Digital Sky Survey – A network-flow heuristic. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 296–303, 1996. [lmy-dcsds-96] *Keywords:* covering, capacitated covering of point sets, facility location, disk covers, sphere covers, implementation.

Jens Lüssem. See also [4385].

H.-J. Lüthi. See also [2577].

C. Lütolf. See also [5661].

J. M. Lutz. See also [7194].

Alexey Lvov. See also [3002].

9055 A. M. Lyakh, V. S. Mukhanov, and R. B. Kemp. The virtual cell project for the investigation of microalgal morphology and dispersity of natural phytoplankton. In *Abstracts 17th European Workshop Comput. Geom.*, pages 57–58. Freie Universität Berlin, 2001. [lmk-vcpim-01]

9056 T. Lybrand. Computer simulation of biomolecular systems using molecular dynamics and free energy perturbation methods. In K. Lipkowitz and D. B. Boyd, editors, *Reviews in Computational Chemistry*, volume 1, pages 295–320. VCH Publishers, 1990. [l-csbsu-90]

9057 T. Lyche and K. Morken. Knot removal for parametric b-spline curves and surfaces. *Comput. Aided Geom. Design*, 4(3):217–230, 1987. [lm-krpbc-87]

T. Lyche. See also [3406, 3407].

T. C. Lyerly. See also [4882].

9058 K. M. Lynch and M. T. Mason. Stable pushing: Mechanics, controllability, and planning. *Internat. J. Robot. Res.*, 15:533–556, 1996. [lm-spmcp-96]

K. M. Lynch. See also [397].

R. E. Lynch. See also [1262, 1289].

9059 K. Lyons. Cluster busting in anchored graph drawing. In *Proceedings of the 1992 CAS Conference*, pages 7–16, 1992. [l-cbagd-92] *Keywords:* graph drawing.

9060 K. Lyons, H. Meijer, and D. Rappaport. Minimum polygon covers for isothetic line segments. Manuscript, ??, 1990. In preparation. [lmr-mpcil-90] *Succeeds:* lmr-mpsil-.

K. Lyons. See also [5085].

9061 Kelly A. Lyons. An efficient algorithm for identifying objects using robot probes. Master's thesis, Queen's University, Kingston, December 1988. [l-aiorp-88] *Keywords:* master thesis.

9062 K. A. Lyons. *Cluster Busting in Anchored Graph Drawing.* PhD thesis, ?? in preparation. [l-cbagd] *Keywords:* doctoral thesis.

9063 Kelly A. Lyons, Henk Meijer, and David Rappaport. Algorithms for cluster busting in anchored graph drawing. *J. Graph Algorithms Appl.*, 2(1):1–24, 1998. [lmr-acbag-98] *Keywords:* graph drawing, straight-line, interactive.

9064 Kelly A. Lyons, Henk Meijer, and David Rappaport. Minimum polygon stabbers of isothetic line segments. Technical report, Dept. of Computing and Information Science, Queen's University, Ontario, Canada. [lmr-mpsil-] *Precedes:* lmr-mpcil-90.

9065 K. A. Lyons, H. Meijer, and D. Rappaport. Properties of the Voronoi diagram cluster buster. In A. Gawman, W. M. Getleman, E. Kidd, P. Larson, and J. Slonim, editors, *Proc. 1993 CAS Conference*, volume 2, pages 1148–1163, Toronto, Ontario, Canada, October 1993. IBM Canada Ltd. Laboratory Center for Advanced Studies and National Research Council Canada. [lmr-pvdcb-93]

9066 K. A. Lyons and D. Rappaport. An efficient algorithm for identifying objects using robot probes. Technical Report TR CISC 89-259, Queen's University, Kingston, Ontario, 1989. [lr-eaiou-89t] *Precedes:* lr-eaiou-89, lr-eaiou-94.

9067 K. A. Lyons and D. Rappaport. An efficient algorithm for identifying objects using robot probes. *Visual Comput.*, 10:452–458, 1994. [lr-eaiou-94] *Succeeds:* lr-eaiou-89t.

9068 K. A. Lyons and D. H. Rappaport. An efficient algorithm for identifying objects using robot probes. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 7, 1989. [lr-eaiou-89] *Succeeds:* lr-eaiou-89t.

K. A. Lyons. See also [426].

9069 L. A. Lyusternik. *Convex Figures and Polyhedra.* D. C. Heath, Boston, MA, 1966. [l-cfp-66]

9070 L. A. Lyusternik. *Shortest Paths: Variational Problems.* Macmillan Company, New York, 1964. [l-spvp-64]

9071 Lihong Ma. *Bisectors and Voronoi Diagrams for Convex Distance Functions.* PhD thesis, Department of Computer Science, FernUniversität Hagen, Technical Report 267, 2000. [m-bvdcd-00] *URL:* http://wwwpi6.fernuni-hagen.de/Publikationen/tr267.pdf. *Keywords:* doctoral thesis.

Lihong Ma. See also [38–40, 7299, 7306–7317, 7320, 7321, 8170, 8171].

T. H. Ma. See also [6964].

G. P. J. F. M. Maas. See also [3382].

W. Maas. See also [6978].

9072 Wolfgang Maass. Efficient agnostic PAC-learning with simple hypotheses. In *Proc. 7th Ann. ACM Conf. Comput. Learning Theory*, pages 67–75, 1994. [m-eapls-94]

9073 Wolfgang Maass. On the complexity of nonconvex covering. *SIAM J. Comput.*, 15:453–467, 1986. [m-cnc-86]

W. Maass. See also [4205, 6979, 6980].

9074 F. Macaulay. Some formulae in elimination. *Proc. London Math. Soc.*, 35:3–27, 1902. [m-sfe-02]

9075 A. M. Macbeath. A theorem on non-homogeneous lattices. *Ann. Math.*, 56:269–293, 1952. [m-tnhl-52]

M. C. Maccarone. See also [4166].

9076 J. MacDanold and K. Booth. Heuristics for ray tracing using space subdivision. *Visual Comput.*, 6:153–166, 1990. [mb-hrtus-90] *Keywords:* ray tracing.

9077 G. MacDonald and T. Shermer. Isomophism of spiral polygons. *Discrete Comput. Geom.*, 16(2):277–304, 1996. [ms-isp-96] *Keywords:* visibility graphs.

N. C. MacDonald. See also [2142, 2143].

S. Macdonald. See also [4323].

9078 G. Macedonio and M. T. Pareschi. An algorithm for the triangulation of arbitrarily distributed points: Applications to volume estimate and terrain fitting. *Comput. Geosci.*, 17(7):859–874, 1991. [mp-atadp-91] *Annote:* Just Lee-Schachter Insertion algorithm. Includes C code.

MacGregor. See also [4334].

9079 J. MacGregor Smith. Point set decomposition and suboptimal Steiner minimal trees. Report ??, Dept. Indust. Engrg. Oper. Res., Univ. Massachusetts Amherst, Amherst, MA, 1985. [m-psdss-85]

A. Maciel. See also [7137].

9080 C. Mack. The expected number of aggregates in 2 random distribution of n points. In *Proc. Cambridge Phil. Soc.*, volume 46, pages 285–292, 1950. [m-ena2r-50]

9081 A. L. Mackay. Stereological characteristics of atomic arrangements in crystals. *Journal of Microscopy*, 95:217–227, 1972. [m-scaac-72] *Annote:* Voronoi polyhedron as a model of crystal structures. $O(N^3)$ algorithm to find one polyhedron (all triples neighbouring).

9082 P. D. MacKenzie and Q. F. Stout. Ultra-fast expected time parallel algorithms. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 414–423, 1991. [ms-ufetp-91]

J. D. Mackinlay. See also [11305].

9083 J. D. Mackinley. Automating the design of graphical presentations of relational information. *ACM Trans. Graph.*, 5(2), 1986. [m-adgpr-86] *Keywords:* graph drawing.

9084 A. K. Mackworth. Interpreting pictures of polyhedral scenes. *Artif. Intell.*, 4:121–137, 1973. [m-ipps-73]

S. MacLane. See also [2037].

J. E. S. Macleod. See also [13116].

R. MacPherson. See also [6204].

9085 J. MacQueen. Some methods for classification and analysis of multivariate observations. In *Proceedings of the Fifth Berkeley Symposium on Math., Stat. and Prob.*, pages 281–296, 1967. [m-smcam-67]

9086 B. Madden, P. Madden, S. Powers, and M. Himsolt. Portable graph layout and editing. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 385–395. Springer-Verlag, 1996. [mmph-pgle-96]

Brendan P. Madden. See also [1993, 1994].

P. Madden. See also [9086].

9087 S. Maddila and C. K. Yap. Moving a polygon around the corner in a corridor. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 187–192, 1986. [my-mpacc-86] *Cites:* b-sfppg-83, m-damlr-86, s-wc-82, y-hmctd-87, y-amp-87, ZZZ.

S. Maddila. See also [10389, 10390].

9088 S. R. Maddila. Decomposition algorithm for moving a ladder among rectangular obstacles. In *Proc. of IEEE Inter. Conf. on Robotics and Automation*, April 1986. [m-damlr-86]

9089 S. R. Maddila. Motion planning algorithm for a ladder among rectangular obstacles. Manuscript, Dept. Elect. Comput. Engrg., Univ. Illinois, Urbana, IL, ?? [m-mpalr-??]

9090 S. P. Madur and P. A. Koparkar. Interval methods for processing geometric objects. *IEEE Comput. Graph. Appl.*, 7–17, February 1984. [mk-impgo-84]

9091 R. E. Maeder. Uniform polyhedra. *The Mathematica Journal*, 3(4):48–57, 1993. [m-up-93]

9092 D. Maegher. Octree encoding. Technical Report TR-IPL-80-111, Dept. Electrical Syst., Rensselaer Polytechnic Inst., Troy, NY, 1980. [m-oe-80]

9093 H. Maehara. Dispersed points and geometric embeddings of complete bipartite graphs. *Discrete Comput. Geom.*, 6:57–67, 1991. [m-dpgec-91]

9094 H. Maehara. Helly-type theorems for spheres. *Discrete Comput. Geom.*, 4:279–285, 1989. [m-htts-89]

9095 H. Maehara. Note on induced subgraphs of the unit distance graph E^n. *Discrete Comput. Geom.*, 4:15–18, 1989. [m-nisud-89]

9096 H. Maehara. On Graver's conjecture concerning the rigidity problem of graphs. *Discrete Comput. Geom.*, 6:339–342, 1991. [m-gccrp-91]

9097 H. Maehara and M. Homma. Distance graphs in Euclidean space. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 29, 1989. [mh-dges-89]

H. Maehara. See also [5462–5464].

9098 J. Maekawa. ?? *Oru*, 2(2), 1994. [m-??-94]

9099 T. Maekawa. *Robust Computational Methods for Shape Interrogation*. Ph.D. thesis, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1993. [m-rcmsi-93] *Keywords:* doctoral thesis.

9100 T. Maekawa and N. M. Patrikalakis. Computation of singularities and intersections of offsets of planar curves. *Comput. Aided Geom. Design*, 10(5):407–429, 1993. [mp-csiop-93]

9101 T. Maekawa and N. M. Patrikalakis. Interrogation of differential geometry properties for design and manufacture. *Visual Comput.*, 10(4):216–237, 1994. [mp-idgdm-94]

9102 T. Maekawa, F.-E. Wolter, and N. M. Patrikalakis. Umbilics and lines of curvature for shape interrogation. *Comput. Aided Geom. Design*, ??, 1995. To appear. [mwp-ulcsi-95]

T. Maekawa. See also [10662, 10665, 10669, 13066].

P. Maestrini. See also [11727].

F. Maffrey. See also [6730].

B. Magedson. See also [8472].

R. Magedson. See also [5247].

B. M. Maggs. See also [2078].

9103 P. Magillo and L. De Floriani. Computing visibility maps on hierarchical terrain models. In *Proc. 2nd ACM Workshop on Advances in GIS*, 1994. [mf-cvmht-94]

9104 P. Magillo and L. De Floriani. Maintaining multiple levels of detail in the overlay of hierarchical subdivisions. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 190–195, 1996. [mf-mmldo-96]

Paola Magillo. See also [3844, 3845, 5343].

T. L. Magnanti. See also [354, 355].

9105 E. R. Magnus, C. C. Joyce, and W. D. Scott. A spiral procedure for selecting a triangular grid from random data. *Journal for Applied Mathematics and Physics (ZAMP)*, 34:231–235, March 1983. [mjs-spstg-83] *Annote:* Constructs a spiral through successive convex hulls by a variation of Jarvis scan. Spiral is then triangulated (when a choice is possible Delaunay triangles are chosen). Then switchings are applied to produce DT. Claim measured $O(n^{1.6})$ but initial step is clearly $O(n^2)$.

W. Magnus. See also [6325].

9106 D. J. Maguire, M. F. Goodchild, and D. W. Rhind, editors. *Geographical Information Systems: Principles and Applications*. Longman, London, 1991. [mgr-gispa-91]

K. E. Magurn. See also [2030].

S. R. Mahaney. See also [1303, 1304].

9107 Anil Maheshwari. *Parallel algorithms for minimum link path and related problems*. Ph.D. dissertation, Univ. Bombay, Bombay, India, February 1992. [m-pamlp-92] *Keywords:* doctoral thesis.

9108 A. Maheshwari and J.-R. Sack. Simple optimal algorithms for rectilinear link path and polygon separation problems. *Parallel Processing Letter*, ??, June 1997. [ms-soarl-97]

9109 Anil Maheshwari, Jörg-Rüdiger Sack, and Hristo N. Djidjev. Link distance problems. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 519–558. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [msd-ldp-00] *Annote:* Chapter 12 of su-hcg-00.

9110 A. Maheshwari, M. Smid, and N. Zeh. I/o-efficient shortest path queries in geometric spanners. In *Proc. 7th Workshop Algorithms Data Struct.*, volume 2125 of *Lecture Notes Comput. Sci.*, pages 287–299. Springer-Verlag, 2001. [msz-ioesp-01]

Anil Maheshwari. See also [472, 473, 752, 1520, 1521, 1918, 2300, 2327, 2833, 2834, 3796, 3797, 3999, 5905–5915, 7166, 7237–7241, 8312, 8485–8487, 8861–8863].

9111 S. N. Maheshwari and P. C. P. Bhatt. Parallel algorithms for the convex hull problems in two dimensions. In *Conf. Analy. Prob. Classes Program. Parallel Comput.*, volume 111 of *Lecture Notes Comput. Sci.*, pages 358–372. Springer-Verlag, 1981. [mb-pachp-81]

S. N. Maheshwari. See also [7774–7776, 10078, 10079].

9112 K. W. Mahin, K. Hanson, and J. W. Morris Jr. Comparative analysis of the cellular and Johnson-Mehl microstructures through computer simulation. *Acta Metallurgica*, ??, 1980. [mhm-cacjm-80]

9113 K. Mahler. An inequality for the discriminant of polynomial. *Michigan Math. J.*, 11:257–262, 1964. [m-idp-64]

9114 K. Mahler. Lectures on transcendental numbres. In *??*, volume 546 of *Lecture Notes Math.* Springer-Verlag, 1976. [m-ltn-76]

Z. Mahmood. See also [501, 502].

S. Mai. See also [5056].

9115 D. Maier and C. Salveter. Hysterical B-trees. *Inform. Process. Lett.*, 12:199–202, 1981. [ms-hbt-81]

9116 D. Maier and S. C. Salveter. Hysterical B-trees. Technical Report 79/007, Univ. Stony Brook, 1979. [ms-hbt-79]

9117 M. Maille. Methodes d'evaluation de la precision d'une mesure ou d'un calcul numerique. Rapport L.I.T.P., Universite P. et M. Curie, Paris, France, 1979. [m-mddlp-79]

E. Mainsah. See also [4376].

J. Maiorana. See also [5532].

9118 H. G. Mairson. Reporting line segment intersections. manuscript, 1981. [m-rlsi-81]

9119 H. G. Mairson and J. Stolfi. Reporting and counting intersections between two sets of line segments. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 307–325. Springer-Verlag, Berlin, West Germany, 1988. [ms-rcibt-88]

F. Maisonneuve. See also [8488].

H. Maitre. See also [3575].

D. S. Majcher. See also [8429].

9120 M. A. Majewski, F. N. Krull, T. E. Fuhrman, and P. J. Ainslie. Autodraft: Automatic synthesis of circuit schematics. In *Proc. IEEE Internat. Conf. on Computer-Aided Design*, pages 435–438, 1986. [mkfa-aascs-86] *Keywords:* graph drawing.

9121 J. Majhi. *Geometric Methods in Computer-Aided Design and Manufacturing*. Ph.D. thesis, University of Minnesota, Minneapolis, 1998. [m-gmcad-98] *Keywords:* doctoral thesis.

9122 J. Majhi, P. Gupta, and R. Janardan. Computing a flattest, undercut-free parting line for a convex polyhedron, with application to mold design. In *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, volume 1148 of *Lecture Notes Comput. Sci.*, pages 39–47. Springer-Verlag, 1996. [mgj-cfufp-96]

9123 J. Majhi, P. Gupta, and R. Janardan. Computing a flattest, undercut-free parting line for a convex polyhedron, with application to mold design. *Comput. Geom. Theory Appl.*, 13:229–252, 1999. [mgj-cfufp-99]

9124 J. Majhi, R. Janardan, J. Schwerdt, M. Smid, and P. Gupta. Minimizing support structures and trapped area in two-dimensional layered manufacturing. Report 1, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1998. [mjssg-mssta-98] *Succeeds:* mjsg-osgop-97i.

9125 J. Majhi, R. Janardan, J. Schwerdt, M. Smid, and P. Gupta. Minimizing support structures and trapped area in two-dimensional layered manufacturing. *Comput. Geom. Theory Appl.*, 12:241–267, 1999. [mjssg-mssta-99] *Succeeds:* mjssg-osgop-98.

9126 J. Majhi, R. Janardan, M. Smid, and P. Gupta. On some geometric optimization problems in layered manufacturing. Report 1, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1997. [mjsg-osgop-97t]

9127 J. Majhi, R. Janardan, M. Smid, and P. Gupta. On some geometric optimization problems in layered manufacturing. In *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 136–149. Springer-Verlag, 1997. [mjsg-osgop-97i]

9128 J. Majhi, R. Janardan, M. Smid, and P. Gupta. On some geometric optimization problems in layered manufacturing. Report 2, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1998. [mjsg-osgop-98] *Succeeds:* mjsg-osgop-97i.

9129 J. Majhi, R. Janardan, M. Smid, and P. Gupta. On some geometric optimization problems in layered manufacturing. *Comput. Geom. Theory Appl.*, 12:219–239, 1999. [mjsg-osgop-99] *Succeeds:* mjsg-osgop-98.

9130 J. Majhi, R. Janardan, M. Smid, and J. Schwerdt. Multi-criteria geometric optimization problems in layered manufacturing. Report 4, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1998. [mjss-mcgop-98t]

9131 J. Majhi, R. Janardan, M. Smid, and J. Schwerdt. Multi-criteria geometric optimization problems in layered manufacturing. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 19–28, 1998. [mjss-mcgop-98i]

J. Majhi. See also [6457, 6458, 7339, 7340, 11904–11909].

E. Makai. See also [1909, 1911].

9132 V. V. Makeev. The degree of a mapping in some problems in combinatiorial geometry. *J. of Soviet Math.*, 51(5), October 1990. Plenum Publ. Corp. [m-dmpcg-90]

9133 I. Mäkelä and A. Dolenc. Some efficient procedures for correcting triangulated models. In *Proc. Sympos. on Solid Freeform Fabrication.* Dept. Mech. Eng., Univ. Texas Austin, 1993. [md-sepct-93]

I. Mäkelä. See also [4335].

9134 J. Makhoul, S. Roucos, and H. Gish. Vector quantization in speech coding. *Proc. IEEE*, 73(11):1551–1588, November 1985. [mrg-vqsc-85]

9135 E. Makinen. A note on the median heuristic for drawing bipartite graphs. Technical Report A-1988-4, Department of Computer Science, University of Tampere, May 1988. [m-nmhdb-88] *Keywords:* graph drawing.

9136 E. Makinen. Experiments of drawing 2-level hierarchical graphs. Technical Report A-1988-1, Department of Computer Science, University of Tampere, January 1988. [m-ed2lh-88] *Keywords:* graph drawing.

9137 E. Mäkinen. Experiments on drawing 2-level hierarchical graphs. *Internat. J. Comput. Math.*, 36:175–181, 1990. [m-ed2lh-90]

9138 E. Makinen. How to draw a hypergraph, 1989. [m-hdh-89] *Keywords:* graph drawing.

9139 E. Makinen. On circular layouts. *Internat. J. Comput. Math.*, 24:29–37, 1988. [m-cl-88] *Keywords:* graph drawing.

9140 E. Makinen. On drawing regular bipartite graphs. Technical Report A-1990-8, Department of Computer Science, University of Tampere, 1990. [m-drbg-90] *Keywords:* graph drawing.

9141 E. Makinen. Remarks on the assignment heuristic for drawing bipartite graphs. Technical Report A-1990-7, Department of Computer Science, University of Tampere, 1990. [m-rahdb-90] *Keywords:* graph drawing.

9142 Christos Makris and Athanasios Tsakalidis. Fast piercing of iso–oriented rectangles. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 217–222, 1997. [mt-fpior-97]

C. Makris. See also [2375, 2376].

9143 F. M. Maley. *Single-Layer Wire Routing.* PhD thesis, Massachusetts Inst. Tech., Cambridge, MA, August 1987. [m-slwr-87] *Keywords:* doctoral thesis.

9144 F. M. Maley. *Single-Layer Wire Routing and Compaction.* MIT Press, Cambridge, MA, 1990. [m-slwrc-90]

F. Miller Maley. See also [5746, 8685, 9054].

J. Malik. See also [5942].

G. S. Malindzak. See also [11912].

9145 S. Malitz and A. Papakostas. On the angular resolution of planar graphs. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 527–538, 1992. [mp-arpg-92] *Keywords:* graph drawing.

9146 S. Malitz and A. Papakostas. On the angular resolution of planar graphs. *SIAM J. Discrete Math.*, 7:172–183, 1994. [mp-arpg-94] *Keywords:* graph drawing. *Succeeds:* mp-arpg-92.

9147 P. Malraison. Constraining a quadratic rational Bezier to be an elliptical arc. *Internat. J. Comput. Geom. Appl.*, 6:435–441, 1996. [m-cqrbb-96]

9148 G. K. Manacher. An application of pattern matching to a problem in geometrical complexity. *Inform. Process. Lett.*, 5:6–7, 1976. [m-apmpg-76] *Precedes:* a-cgmap-78.

9149 G. K. Manacher and A. L. Zobrist. A fast, space-efficient average-case algorithm for the "greedy" triangulation of a point set, and a proof that the greedy triangulation is not approximately optimal. In *Proc. 16th Allerton Conf. Commun. Control Comput.*, pages 824–832, 1978. [mz-fseac-78]

9150 G. K. Manacher and A. L. Zobrist. Neither the greedy nor the Delaunay triangulation of a planar point set approximates the optimal triangulation. *Inform. Process. Lett.*, 9:31–34, 1979. [mz-ngndt-79]

9151 Glenn K. Manacher and Albert L. Zobrist. Probabilistic methods with heaps for fast average-case greedy algorithms. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 261–278. JAI Press, Greenwich, Conn., 1983. [mz-pmhfa-83] *Annote:* By using a $O(1)$ "pretest" for edges to be added get average case $\Theta(n^2)$ algorithm for Greedy Triangulation.

9152 M. S. Manasse, L. A. McGeoch, and D. D. Sleator. Competitive algorithms for online problems. In *Proc. 20th Annu. ACM Sympos. Theory Comput.*, pages 322–333, May 1988. [mms-caolp-88]

9153 M. Manav. Methods for finding all vertices of a convex polyhedron. *Ekonom. Mat. Obzor*, 5:325–342, 1969. [m-mfavc-69]

9154 M. Manav and J. Nedoma. Finding all vertices of a convex polyhedron. *Numer. Math.*, 12:226–229, 1968. [mn-favcp-68]

9155 U. Manber. *Introduction to Algorithms: A Creative Approach.* Addison-Wesley, 1989. [m-iaca-89]

9156 U. Manber and M. Tompa. Probabilistic, nondeterministic and alternating decision trees. Technical Report 82-03-01, Univ. Washington, 1982. [mt-pnadt-82]

9157 U. Manber and M. Tompa. The complexity of problems on probabilistic, nondeterministic, and alternating decision trees. *J. ACM*, 32(3):720–732, 1985. [mt-cppna-85] *Keywords:* lower bounds.

9158 A. Mandel. *Topology of Oriented Matroids.* PhD thesis, Univ. Waterloo, Waterloo, 1982. [m-tom-82] *Keywords:* doctoral thesis.

A. Mandel. See also [3542].

9159 P. Mandel and C. Chryssostomidis. A design methodology for ships and other complex systems. *Philosophical Transactions of the Royal Society of London*, A 273:85–98, 1972. [mc-dmsoc-72]

I. Mandhyan. See also [4391].

9160 A. Mangen and N. Lasudry. Search for the intersection polygon of any two polygons: Application at the garment industry. *Comput. Graph. Forum*, 10(3):195–208, September 1991. [ml-sipat-91]

Dorin Mangu. See also [3639].

9161 P. Mani-Levitska. Types of hyperplane arrangements. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [m-tha-89]

P. Mani-Levitska. See also [3870, 7464].

9162 M. Mani and R. D. W. Wilson. A programmable orienting system for flat parts. In *Proc. North American Mfg. Research Inst. Conf XIII*, 1985. [mw-posfp-85]

P. Mani. See also [2537].

S. Mann. See also [1522, 4406].

C. M. Mannaerts. See also [9501].

9163 H. Mannila and D. Wood. A note on the largest empty rectangle problem. *BIT*, 28:179–183, 1988. [mw-nlerp-88]

9164 H. Mannila and D. Wood. A simple proof of the rectilinear art gallery theorem. Report C-1984-16, Dept. Comput. Sci., Univ. Helsinki, Helsinki, Finland, 1984. [mw-sprag-84] *Precedes:* mw-sprag-85.

9165 H. Mannila and D. Wood. A simple proof of the rectilinear art gallery theorem. *Internat. J. Comput. Math.*, 17:141–149, 1985. [mw-sprag-85] *Succeeds:* mw-sprag-84.

H. Mannila. See also [2244, 3750].

9166 J. Manning, M. Atallah, K. Cudjoe, J. Lozito, and R. Pacheco. A system for drawing graphs with geometric symmetry. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 262–265. Springer-Verlag, 1995. [maclp-sdggs-95] *Keywords:* graph drawing, system, symmetry.

9167 J. Manning and M. J. Atallah. Fast detection and display of symmetry in outerplanar graphs. Technical Report CSD-TR-606, Department of Computer Science, Purdue University, 1986. [ma-fddso-86] *Keywords:* graph drawing.

9168 J. Manning and M. J. Atallah. Fast detection and display of symmetry in trees. *Congr. Numer.*, 64:159–169, 1988. [ma-fddst-88] *Keywords:* graph drawing.

J. Manning. See also [1049].

C. Mannino. See also [1863–1865].

R. Mannss. See also [8347].

I. S. Manoach. See also [695].

9169 D. Manocha and J. F. Canny. A new approach for surface intersection. *Internat. J. Comput. Geom. Appl.*, 1(4):491–516, 1991. [mc-nasi-91] *Keywords:* surface, curve, intersection, solid modeling, resultants, matrix operations.

9170 D. Manocha, Y. Zhu, and W. Wright. Conformational analysis of molecular chains using nano-kinematics. *Computer Application of Biological Sciences (CABIOS)*, 11(1):71–86, 1995. [mzw-camcu-95]

Dinesh Manocha. See also [3412–3417, 6210, 7003, 7192, 8018, 8019, 8359–8362, 8405–8412, 8819, 8823–8825, 10059, 10828–10830, 13874, 13875].

Yannis Manolopoulos. See also [5121, 10608].

9171 Y. Mansour, J. Park, B. Schieber, and S. Sen. Improved selection in totally monotone arrays. *Internat. J. Comput. Geom. Appl.*, 3:115–132, 1993. [mpss-istma-93] *Keywords:* Planar distance, convex polygons, totally monotone arrays, Monge arrays.

Y. Mansour. See also [7815, 8869, 8870].

9172 M. Mansouri and G. T. Toussaint. On the reachability of a ladder in two convex polygons. In *Proc. 13th IFIP Conf. on System Modelling and Optimization*, 1987. [mt-rltcp-87]

9173 M. Mansouri and G. T. Toussaint. Translation queries for convex polygons. In *Proc. IASTED, International Symposium on Robotics and Automation*, 1985. [mt-tqcp-85]

9174 M. Mansouri and G. T. Toussaint. Translation queries for convex polygons. *Internat. J. Robot. Autom.*, 1(3):90–95, 1986. [mt-tqcp-86]

Andrea Mantler. See also [1793, 8017].

9175 M. Mäntylä. A note on the modeling space of Euler operators. *Comput. Vison Graph. Image Process.*, 26:45–60, 1984. [m-nmseo-84]

9176 M. Mäntylä. *An Introduction to Solid Modeling.* Computer Science Press, Rockville, MD, 1988. [m-ism-88]

9177 M. Mäntylä. An introduction to solid modeling, part I: fundamentals. Report HTKK-TKO-C10, Lab. Inform. Process., Helsinki Univ. Tech., Helsinki, Finland, 1984. [m-ismp1-84]

9178 M. Mäntylä. An introduction to solid modeling, part II: boundary models. Report HTKK-TKO-C11, Lab. Inform. Process., Helsinki Univ. Tech., Helsinki, Finland, 1984. [m-ismp2-84]

9179 M. Mäntylä. An introduction to solid modeling, part III: advanced topics. Report HTKK-TKO-C12, Lab. Inform. Process., Helsinki Univ. Tech., Helsinki, Finland, 1984. [m-ismp3-84]

M. Mäntylä. See also [6894].

9180 M. J. Mäntylä. Computational topology: a study of topological manipulations and interrogations in computer graphics and geometric modeling. *Acta Polytech. Scand. Math. Comput. Sci. Ser.*, 37:??, 1983. [m-ctstm-83]

9181 M. J. Mäntylä and R. Sulonen. GWB: A solid modeler with Euler operators. *IEEE Comput. Graph. Appl.*, 2(5):17–31, 1982. [ms-gsmeo-82]

M. J. Mäntylä. See also [12913].

9182 Y. Maon, B. Schieber, and U. Vishkin. Parallel ear decomposition search (eds) and *st*-numbering in graphs. *Theoret. Comput. Sci.*, 47:277–298, 1986. [msv-pedse-86]

9183 D. Maple. A hierarchy preserving hierarchical compaction. In *Proc. 27th Design Autom. Conf.*, pages 375–381, 1990. [m-hphc-90]

9184 C. D. Maranas, I. P. Androulakis, and C. A. Floudas. A deterministic global optimization approach for the protein folding problem. In P. M. Pardalos, D. Shalloway, and G. Xue, editors, *Global Minimization of Nonconvex Energy Functions: Molecular Conformation and Protein Folding*, volume 23 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 133–150. America Mathematical Society, 1996. [maf-dgoap-96]

R. Maranzana. See also [7436].

9185 J. Marasa and D. Matula. A simulative study of correlated error propagation in various finite-precision arithmetics. *IEEE Trans. Comput.*, C-22(6):587–597, June 1973. [mm-sscep-73]

M. Marathe. See also [4325].

9186 M. V. Marathe, H. Breu, H. B. Hunt III, S. S. Ravi, and D. J. Rosenkrantz. Simple heuristics for unit disk graphs. *Networks*, 25:59–68, 1995. [mbhrr-shudg-95]

9187 M. V. Marathe, H. B. Hunt III, and S. S. Ravi. Geometry-based approximations for intersection graphs. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 244–249, 1992. [mhr-gbaig-92] *Cites:* ccj-udg-90, cs-splg-88, gj-cigtn-79, g-agtpg-80, hm-ascpp-85, be-lrtaw-85, b-aancp-83, fr-amdst-92, gl-ofcg-88, h-fata-80, h-ebssv-83, i-cigol-90, i-amids-91, k-amrts-84, s-caig-87, yws-opmtd-84, wk-stglp-88, be-avcpg-82, kt-eprc-81, r-gtaps-78, ZZZ.

9188 M. V. Marathe, V. Radhakrishnan, H. B. Hunt III, and S. S. Ravi. Hierarchically specified unit disk graphs. In *Proc. 19th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, page ??, 1993. [mrhr-hsudg-93]

M. V. Marathe. See also [4326, 7211, 11062].

D. F. Marble. See also [10749–10751, 12944].

9189 Pedro V. Marcal. Constructive solid geometry, the cad-fem connection. In *Proc. 5th International Meshing Roundtable*, pages 157–167, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [m-csgcf-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

F. E. Marchetti. See also [11099].

A. Marchetti-Spaccamela. See also [1119].

9190 A. Marchetti-Spaccamela. The *p*-center problem in the plane is NP-complete. In *Proc. 19th Allerton Conf. Commun. Control Comput.*, pages 31–40, 1981. [m-pcppi-81]

A. Marchetti-Spaccamela. See also [5225, 7844].

P. Marchioro. See also [8924, 8925].

9191 O. Marcotte and Subhash Suri. Fast matching algorithms for points on a polygon. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 60–65, 1989. [ms-fmapp-89] *Succeeds:* ms-gm-89. *Precedes:* ms-fmapp-91.

9192 O. Marcotte and Subhash Suri. Fast matching algorithms for points on a polygon. *SIAM J. Comput.*, 20:405–422, 1991. [ms-fmapp-91] *Succeeds:* ms-fmapp-89.

9193 O. Marcotte and Subhash Suri. On geometric matching. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 302–314, 1989. [ms-gm-89] *Precedes:* ms-fmapp-89. *Cites:* akt-om-84, a-nemts-83, c-wcanh-76, df-pamwe-84, gh-ospqs-87, kl-tscap-75, kk-altag-88, k-aapge-78, l-conm-76, ps-coac-82, v-ghm-88, wpmk-bgmpl-86, e-mmpv-65, ZZZ.

9194 K. V. Mardia, J. T. Kent, and J. M. Bibby. Multivariate analysis. *Academic Press*, ??:213–250, 1979. [mkb-ma-79]

9195 M. Marek-Sadowska. Planarization algorithms for integrated circuits engineering. In *Proc. IEEE Internat. Sympos. on Circuits and Systems*, pages 919–923, 1978. [m-paice-78] *Keywords:* graph drawing.

9196 M. Maresca and H. Li. Connection autonomy and SIMD computers: a VLSI implementation. *J. Parallel Distrib. Comput.*, 7:302–320, 1989. [ml-cascv-89]

F. Margot. See also [5660, 8803].

9197 G. A. Margulis. Explicit group-theoretical constructions of combinatorial schemes and their applications to the design of expanders and superconcentrators. *Problemy Peredachi Informatsii*, 24:51–60, 1988. In Russian, Englisch Translation in Problems of Information Transmission 24, 39-46. [m-egtcc-88]

9198 A. Mariano and L. Upson. Penumbral shadows. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, page 390, 1994. [mu-ps-94] *Keywords:* video review. *Cites:* hs-rt-67, fdfh-cgpp-90, v-gspc-92, t-caals-92, ZZZ.

David Marimont. See also [6378, 6379].

S. P. Marin. See also [2758].

R. J. Marisa. See also [4882].

9199 D. M. Mark, J. J. Little, and D. G. Kirkpatrick. Minimum spanning trees and minimum weight triangulations. Report 8, Geog. Data Struct. Project, Simon Fraser Univ., Burnaby, BC, 1976. [mlk-mstmw-76] *Keywords:* survey paper, design of algorithms, triangulations, minimum spanning trees.

D. M. Mark. See also [26, 10748].

9200 X. Markenscoff, L. Ni, and C. H. Papadimitriou. The geometry of grasping. *Internat. J. Robot. Res.*, 9(1), February 1990. [mnp-gg-90]

9201 X. Markenscoff, L. Ni, and Ch. H. Papadimitriou. Optimal grip of a polygon. *Internat. J. Robot. Res.*, 8(2):17–29, 1989. [mnp-ogp-89]

R. Markot. See also [5247].

9202 G. Markowsky and M. A. Wesley. Fleshing out wire frames. *IBM J. Res. Develop.*, 24(5):582–597, 1980. [mw-fowf-80]

G. Markowsky. See also [13495, 13496].

9203 J. Marks. A formal specification for network diagrams that facilitates automated design. *J. Visual Lang. Comput.*, 2:395–414, 1991. [m-fsndt-91] *Keywords:* graph drawing.

J. Marks. See also [656, 3267–3270, 3979, 4591, 4592, 4796, 8280, 8281, 11489].

9204 E. Marom. Real-time image subtraction using a liquid crystal light valve. *Optical. Eng.*, 25(2):274–276, 1986. [m-rtisu-86]

Alberto Márquez. See also [2639, 2640, 2749, 3384, 3385, 3553–3555, 3720, 3721, 5801, 5802, 6284, 6285, 6840, 7535].

9205 D. Marr. *Vision: A computational investigation into human representation and processing of visual information.* W. H. Freeman, 1982. [m-vcihr-82]

9206 D. Marr and H. K. Nishihara. Representation and recognition of the spatial organization of three dimensional shapes. Report AIM 416, Comput. Sci. Lab., Massachusetts Inst. Tech., Cambridge, MA, 1977. [mn-rrsot-77]

Kim Marriott. See also [6737].

9207 C. Martel, A. Park, and R. Subramonian. Work-optimal asynchronous algorithms for shared memory parallel computers. *SIAM J. Comput.*, 21(6):1070–1099, 1992. [mps-woaas-92]

9208 C. Martel, R. Subramonian, and A. Park. Asynchronous PRAMs are (almost) as good as synchronous PRAMs. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 590–599, 1990. [msp-apaag-90]

C. Martel. See also [6494].

9209 G. Martelli. *Jemmy Twitcher - A Life of the Fourth Earl of Sandwich, 1718-1792.* Jonathan Cape, London, UK, 1962. [m-jtlfe-62]

L. Martha. See also [6248].

9210 A. Martin. A simple primal algorithm for intersecting 3-polyhedra in linear time. Technical Report 91-16, Dept. Comput. Sci., Univ. British Columbia, Vancouver, BC, 1991. [m-spai3-91]

C. Martin. See also [6834].

G. Martin. See also [5976].

9211 G. E. Martin. *Transformation Geometry: An Introduction to Symmetry*. Springer-Verlag, New York, NY, 1966. [m-tgis-66] *Precedes:* m-tgis-82.

9212 G. E. Martin. *Transformation Geometry: An Introduction to Symmetry*. Springer-Verlag, 1982. [m-tgis-82] *Succeeds:* m-tgis-66.

9213 J. L. Martin. Solution to problem 62-8, spatial navigation. *SIAM Rev.*, 7:132–134, 1965. [m-sp628-65]

9214 W. N. Martin and J. K. Aggarwal. Volumetric description of objects from multiple views. *IEEE Trans. Pattern Anal. Mach. Intell.*, 5:150–158, 1983. [ma-vdomv-83]

9215 Y. Martin, M. Bures, E. Danaher, J. DeLazzer, and I. Lico. A fast new approach to pharmacophore mapping and its application to dopaminergic and benzodiazepine agonists. *J. Computer Aided Molecular Design*, 7:83–102, 1993. [mbddl-fnapm-93]

9216 Y. C. Martin, M. G. Bures, and P. Willet. Searching databases of three-dimensional structures. In K. Lipkowitz and D. B. Boyd, editors, *Reviews in Computational Chemistry*, volume 1, pages 213–256. VCH Publishers, 1990. [mbw-sdtds-90]

9217 T. Martinetz and K. Schulten. Competitive Hebain rule forms manifold representing networks. *Neural Networks*, ??, ?? To appear. [ms-chrfm-]

9218 H. Martini. Convex polytopes whose projections bodies and difference sets are polars. *Discrete Comput. Geom.*, 6:83–91, 1991. [m-cpwpb-91]

9219 H. Martini and V. Soltan. Minimum convex partition of polygonal domains by guillotine cuts. *Discrete Comput. Geom.*, 19:291–304, 1998. [ms-mcppd-98]

H. Martini. See also [8269, 8270].

9220 V. Martynchik, N. Metelski, and D. Wood. O-Convexity: Computing hulls, approximations, and orientation sets. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 2–7, 1996. [mmw-occha-96]

V. N. Martynchik. See also [1205].

9221 K. Maruyama. A procedure to determine intersections between polyhedral objects. *Internat. J. Comput. Inform. Sci.*, 1:255–266, 1972. [m-pdibp-72]

9222 K. Maruyama. A study of visual shape perception. Report UIUCDCS-R-72-533, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1972. [m-svsp-72]

9223 Michael N. Maryukov. Problems of pattern recognition on the set of polyhedra and their plane images. In *Abstracts 14th European Workshop Comput. Geom.*, pages 115–116. Universitat Politècnica de Catalunya, Barcelona, 1998. [m-pprsp-98]

P. Marzano. See also [3846].

9224 A. Marzetta and J. Nievergelt. Enumerating the k best plane spanning trees. *Comput. Geom. Theory Appl.*, 18:55–64, 2001. [mn-ekbps-01]

A. Marzetta. See also [2544].

M. Marzetta. See also [2422].

D. C. Masa. See also [1578].

9225 T. Masada. An algorithm for the enumeration of regular triangulations. Master's thesis, Department of Information Science, University of Tokyo, Tokyo, Japan, March 1995. [m-aert-95] *Keywords:* master thesis.

9226 T. Masada. An output size sensitive algorithm for the enumeration of regular triangulations. Technical Report 94-1, Department of Information Science, University of Tokyo, Tokyo, Japan, November 1994. [m-ossae-94]

9227 Tomonari Masada, Hiroshi Imai, and Keiko Imai. Enumeration of regular triangulations. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 224–233, 1996. [mii-ert-96] *Cites:* af-pachv-92, bfs-ccsp-90, c-ochan-91, l-crtpc-94, lst-gbtsh-95, es-itfwr-92, f-iradr-95, gkz-drmd-94, j-3dtlt-89, l-rtp-91, m-ossae-94, m-aert-95, r-dchhd-92, s-chdch-86, s-gbtv-91, s-gbcp-95, ZZZ.

T. Masada. See also [10285].

S. Mascarella. See also [1323].

C. Mascle. See also [7436].

9228 W. J. Masek. Some np-complete set covering problems. Manuscript, MIT, 1978. [m-ncscp-78]

9229 W. J. Masek. Some NP-complete set covering problems. unpublished manuscript, 1979. [m-snpcs-79]

9230 J. Maserjian and P. O. Anderson. Optically addressed spatial light modulator by MBE - grown nipi MQW structures. *Appl. Optics*, 28(22):4801–4807, 1989. [ma-oaslm-89]

M. Mason. See also [4976].

9231 M. T. Mason. Automatic planning of fine motions: Correctness and completeness. In *IEEE International Conference on Robotics*, 1984. [m-apfmc-84]

9232 M. T. Mason. Compliance and force control for computer controlled manipulators. *IEEE Trans. Syst. Man Cybern.*, SMC-11:418–432, 1981. [m-cfccc-81]

9233 M. T. Mason. Compliance and force control of computer controlled manipulator. Technical Report A. I. Memo No. 605, Massachusetts Inst. Tech., Cambridge, MA, 1979. [m-cfccc-79]

9234 M. T. Mason. Manipulator grasping and pushing operations. Technical Report MIT-AI-TR 690, Artificial Intelligence Laboratory, MIT, 1982. [m-mgpo-82]

9235 M. T. Mason. Mechanics and planning of manipulator pushing operations. *Internat. J. Robot. Res.*, 5:53–71, 1986. [m-mpmpo-86]

9236 M. T. Mason and J. K. Salisbury. *Robot hands and the mechanics of manipulation.* MIT Press, 1985. [ms-rhmm-85]

M. T. Mason. See also [188, 397, 398, 2498, 4975, 6021, 9002, 9058].

9237 R. M. Mason. The digital approximation of contours. *J. ACM*, 3:355–359, 1956. [m-dac-56]

Henry Massalin. See also [13648].

9238 W. S. Massey. *Algebraic Topology: An Introduction*, volume 56 of *Graduate Texts in Mathematics*. Springer-Verlag, 1977. [m-ati-77]

9239 W. S. Massey. *Homology and Cohomology Theory*. Marcel Dekker, Inc., New York, NY, 1978. [m-hct-78]

Annalisa Massini. See also [2650].

G. M. Masson. See also [12643].

C. Wayne Mastin. See also [12902].

9240 Howard Masur. Closed trajectories for quadratic differentials with an application to billiards. *Duke Math. J.*, 53:307–314, 1986. [m-ctqdab-86]

9241 S. Masuyama, T. Ibaraki, and T. Hasegawa. The computational complexity of the m-center problem. *Trans. IECE Japan*, E 64(2):57–64, 1981. [mih-ccmcp-81]

9242 C. Mata. A constant factor approximation algorithm for the red-blue separation problem. Technical report, Manuscript, Dept. of Computer Science, SUNY Stony Brook, NY, 1995. [m-cfaar-95] *Keywords:* TSP, k-MST, approximation, separation.

9243 Cristian Mata and Joseph S. B. Mitchell. A new algorithm for computing shortest paths in weighted planar subdivisions. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 264–273, 1997. [mm-nacsp-97] *Cites:* ar-ppopm-90, ckt-spqwo-95, c-aaspm-87, d-reidt-92, d-lcpgi-93, gmmn-pp0wr-90, gs-pmgsc-85, j-wdmim-97, kg-cgwac-92, ksr-sawrp1-91, ksr-sawrp2-91, lms-awspp-97i, l-ccm-94, lm-crm-95, m-aaspt-91, m-lsppo-92, mp-wrpfs-91, mpk-pravc-87, p-aspmt-85, r-edt-93, rrzm-sgtdr-87, rr-eslmo-90, w-tsplr-57, y-cmstk-82, ZZZ.

9244 C. Mata and J. S. B. Mitchell. Approximation algorithms for geometric tour and network design problems. Technical report, Department of Applied Mathematics, SUNY Stony Brook, NY, 1994. [mm-aagtn-94] *Keywords:* watchman route, TSP, k-MST, approximation, separation, covering TSP. *Precedes:* mm-aagtn-95.

9245 Cristian Mata and Joseph S. B. Mitchell. Approximation algorithms for geometric tour and network design problems. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 360–369, 1995. [mm-aagtn-95] *Keywords:* watchman route, TSP, k-MST, approximation, separation, covering TSP. *Succeeds:* mm-aagtn-94. *Cites:* as-sagp-94, ah-aagcs-94, akm-gkp-93, aabv-iagmw-95, bk-rdlsn-93, bcv-cfakm-95, cjn-fswrs-93, cn-owr-88, c-wcanh-76, c-aapts-91, dps-melgr-86, er-ccmsp-93, e-amwt-92, f-cmlrb-92, gh-oaakm-94, grz-edcaa-90, hs-parss-93, irw-sncpp-91, l-fhmlr-86, l-hmdp-87, ll-blcpp-84, m-aagsp-93, n-gagmm-95, py-ebsph-90, py-obspo-92, rw-bspvo-89, ZZZ.

P. Mateti. See also [4240].

9246 G. Matheron. *Random Sets and Integral Geometry*. John Wiley & Sons, New York, 1975. [m-rsig-75]

H. David Mathias. See also [2554].

P. C. Mathias. See also [3776].

9247 C. Mathieu. Some problems in computational geometry. *Algorithmica*, 2:131–134, 1987. [m-spcg-87]

9248 C. Mathieu, C. Puech, and H. Yahia. Average efficiency of data structures for binary image processing. *Inform. Process. Lett.*, 26:89–93, 1987. [mpy-aedsb-87]

9249 Y. Matias. Semi-dynamic closest-pair algorithms. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 264–271, 1993. [m-sdcpa-93] *Cites:* aesw-emstb-90, b-lbact-83, b-dsp-79, b-mdc-80, bs-dcms-76, clr-ia-90, dd-ekdnp-91, dgmp-phfr-92, dm-nuchf-90, fh-nrnna-79, fks-sstwc-84, fw-bitbf-90, grss-rdsdc-93i, grss-sracp-93, hns-psscp-88, km-srsac-91, ms-ufetp-91, m-iaca-89, mv-chpnc-91, m-mdscg-84, ps-cgi-85 , r-ppass-85, s-sisie-91, ss-oaolc-92, sss-oaolc-92, sh-cpp-75, s-mmdpsl-91a, s-mmdpsp-92a, s-ntsdc-90, gmv-ttnct-92, r-pa-76, y-lbact-91, ZZZ.

9250 Y. Matias and U. Vishkin. Converting high probability into nearly constant time - with appliccations to parallel hashing. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 307–316, May 1991. [mv-chpnc-91]

9251 Y. Matias, J. S. Vitter, and W.-C. Ni. Dynamic generation of discrete random variates. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 187–194, 1993. [mvn-dgdrv-93]

9252 Y. Matias, J. S. Vitter, and M. Wang. Wavelet-based histograms for selectivity estimation. In *Proc. ACM SIGMOD Conf. on Management of Data*, 1998. [mvw-wbhse-98]

9253 Y. Matias, J. S. Vitter, and N. Young. Approximate data structures with applications. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 187–194, 1994. [mvy-adsa-94]

Y. Matias. See also [4200, 5933, 5943, 6175, 6176, 8028, 8029].

R. Matikalli. See also [1367].

9254 Jiří Matoušek. A Helly-type theorem for unions of convex sets. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 138–146, 1995. [m-httuc-95] *Keywords: Cites:* abfk-pswen-92, ak-pcs-92a, ak-bpn-95, a-htglp-93, a-bbhdn-94, bfl-nhp-90, bk-gdtmc-76, c-lvalp-88, de-ctchp-93, d-httdb-70, dp-epgh-94, e-hrctt-93, e-gtp-59, f-undkd-, g-saaop-92, gm-csfs-61, grs-rt-90, h-usvam-30, l-htpuc-68, m-gofvc-94, m-tphpu-73, msw-sblp-92, m-eat-84, ps-cncsr-90, s-sesc-92, sw-cblpr-92, k-ker-32, ZZZ.

9255 J. Matoušek. Algorithms for abstract linear programming: Lower bounds and experiments. Technical report, Princeton University, February 1993. [m-aalpl-93] *Comments:* DIMACS Workshop on Randomized Algorithms for Combinatorial Optimization.

9256 J. Matoušek. Approximate halfplanar range counting. KAM Series 59-87, Charles Univ., Prague, Czechoslovakia, 1987. [m-ahrc-87]

9257 J. Matoušek. Approximate levels in line arrangements. *SIAM J. Comput.*, 20:222–227, 1991. [m-alla-91]

9258 J. Matoušek. Approximations and optimal divide-and-conquer. Manuscript, 1990. [m-aodq-90]

9259 J. Matoušek. Approximations and optimal geometric divide-and-conquer. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 505–511, 1991. [m-aogdc-91] *Keywords:* approximations, VC-dimension, shatter function, derandomization, cutting, partition.

9260 J. Matoušek. Approximations and optimal geometric divide-and-conquer. *J. Comput. Syst. Sci.*, 50:203–208, 1995. [m-aogdc-95]

9261 J. Matoušek. Combinatorial and algorithmic geometry. Unpublished lecture notes. [m-cag-]

9262 J. Matoušek. Computing dominances in E^n. *Inform. Process. Lett.*, 38:277–278, 1991. [m-cde-91]

9263 J. Matoušek. Computing the center of planar point sets. In J. E. Goodman, R. Pollack, and W. Steiger, editors, *Computational Geometry: Papers from the DIMACS Special Year*, pages 221–230. American Mathematical Society, Providence, 1991. [m-ccpps-91] *Keywords:* centerpoint, parametric search, cutting, k-level.

9264 J. Matoušek. Construction of ϵ-nets. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 1–10, 1989. [m-cen-89] *Precedes:* m-cen-90. *Cites:* aks-osn-83, c-ghscp-79, csss-otass-89, e-acg-87, ew-cbtda-86, hw-ensrq-87, l-roifc-75, m-ahrc-87, s-pptld-86, w-pttco-88, ZZZ.

9265 J. Matoušek. Construction of ϵ-nets. *Discrete Comput. Geom.*, 5:427–448, 1990. [m-cen-90] *Succeeds:* m-cen-89.

9266 J. Matoušek. Cutting hyperplane arrangements. Technical Report 90-7, DIMACS, Rutgers Univ., 1990. [m-cha-90t] *Precedes:* m-cha-90i.

9267 J. Matoušek. Cutting hyperplane arrangements. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 1–9, 1990. [m-cha-90i] *Precedes:* m-cha-91. *Cites:* ahu-dsa-83, a-dapal-89, a-rsoas-89, cegs-lscaa-89, cf-dvrsi-88t, c-arscg-88, c-racpq-88, cegsw-ccbac-88, e-acg-87, eghsssw-irals-89, eos-calha-86, hw-ensrq-87, m-cen-89, m-ahrc-87, pw-snben-89, yy-gaddg-85, ZZZ.

9268 J. Matoušek. Cutting hyperplane arrangements. *Discrete Comput. Geom.*, 6:385–406, 1991. [m-cha-91] *Succeeds:* m-cha-90i.

9269 J. Matoušek. Derandomization in computational geometry. *J. Algorithms*, 20:545–580, 1996. [m-dcg-96]

9270 Jiří Matoušek. Derandomization in computational geometry. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 559–595. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [m-dcg-00] *Annote:* Chapter 13 of su-hcg-00.

9271 J. Matoušek. Efficient partition trees. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 1–9, 1991. [m-ept-91] *Keywords:* range search, simplex, partition trees. *Cites:* a-pal2a-90, ahl-sqrpc-90, b-dsp-79, c-lbcpr-89, cgl-pgd-85, csw-qoubs-90, cf-dvrsi-90, cp-hrsaa-86, cw-qorss-89, ew-hrsls-86, hw-ensrq-87, m-aogdc-91, m-cha-90i, m-mcast-90, o-ddds-83, so-dpt-90, vc-ucrfe-71, w-pttco-88, w-pr-82, yy-gaddg-85, ZZZ.

9272 J. Matoušek. Efficient partition trees. *Discrete Comput. Geom.*, 8:315–334, 1992. [m-ept-92] *Keywords:* simplex range searching, crossing number, multilevel data structure, approximations. *Succeeds:* m-ept-91.

9273 J. Matoušek. Epsilon-nets and computational geometry. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 69–89. Springer-Verlag, Heidelberg, 1993. [m-encg-93] *Keywords:* survey paper, epsilon-nets, range spaces, VC-dimension, cuttings, derandomization.

9274 J. Matoušek. Geometric range searching. Tech. Report B-93-09, Fachbereich Mathematik und Informatik, Free Univ. Berlin, 1993. [m-grs-93] *Comments:* A survey paper.

9275 J. Matoušek. Geometric range searching. *ACM Comput. Surv.*, 26:421–461, 1994. [m-grs-94] *Keywords:* survey paper.

9276 J. Matoušek. Half-space range reporting. Report 90-188, Charles Univ., Prague, Czechoslovakia, 1990. [m-hsrr-90] *Keywords:* range search, half spaces, polyhedra.

9277 J. Matoušek. Line arrangements and range search. *Inform. Process. Lett.*, 27:275–280, 1988. [m-lars-88]

9278 J. Matoušek. Linear optimization queries. *J. Algorithms*, 14:432–448, 1993. [m-loq-93] *Keywords:* multidimensional parametric search, linear programming, separation, range search. *Annote:* See also J. Matoušek and O. Schwarzkopf *Proc. 8th ACM Sympos. Comput. Geom.*, 1992, pp. 16–25.

9279 J. Matoušek. Lower bound for a subexponential optimization algorithm. *Random Structures & Algorithms*, 5(4):591–607, 1994. [m-lbsoa-94]

9280 J. Matoušek. Lower bounds on the length of monotone paths in arrangements. *Discrete Comput. Geom.*, 6:129–134, 1991. [m-lblmp-91]

9281 J. Matoušek. More on cutting arrangements and spanning trees with low crossing number. Technical Report B-90-2, Fachbereich Mathematik, Freie Universität Berlin, Berlin, 1990. [m-mcast-90]

9282 J. Matoušek. On approximate geometric k-clustering. to appear in *Discrete Comput. Geom.*, 2000. [m-agkc-00]

9283 J. Matoušek. On enclosing k points by a circle. KAM Series 93-245, Charles University, 1993. [m-ekpc-93]

9284 J. Matoušek. On enclosing k points by a circle. *Inform. Process. Lett.*, 53:217–221, 1995. [m-ekpc-95]

9285 J. Matoušek. On geometric optimization with few violated constraints. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 312–321, 1994. [m-gofvc-94] *Cites:* acegsw-ptphp-91, abms-claho-94, aiks-fkpmd-91, am-dhsrr-91, a-htglp-93, c-narsc-87, c-lvalp-88, c-blmat-92, cm-ltdao-93, cs-arscg-89, csy-khrp-87, de-ctchp-93, dlss-sdakp-93i, ec-eargd-92, ee-innfm-93, els-fmcsh-93, em-sstcd-90, erk-oalla-93, es-blbda-93, esz-cskec-93i, g-saaop-92, go-nhpcg-93, k-srsa-92, m-loq-93, m-ekpc-93, m-we1cp-83, msw-sblp-92, m-lavd-91, m-gdsrs-91, ol-mcp-81, s-nmpgc-94, sw-cblpr-92, w-sedbe-91a, y-gctsp-90, ZZZ.

9286 J. Matoušek. On geometric optimization with few violated constraints. *Discrete Comput. Geom.*, 14:365–384, 1995. [m-gofvc-95]

9287 J. Matoušek. On vertical ray shooting in arrangements. *Comput. Geom. Theory Appl.*, 2(5):279–285, March 1993. [m-vrsa-93] *Keywords:* ray shooting, zone theorem, cutting, hyperplane arrangement.

9288 J. Matoušek. Randomized optimal algorithm for slope selection. *Inform. Process. Lett.*, 39:183–187, 1991. [m-roass-91]

9289 J. Matoušek. Range searching with efficient hierarchical cuttings. Manuscript, ??, 1991. [m-rsehc-91]

9290 J. Matoušek. Range searching with efficient hierarchical cuttings. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 276–285, 1992. [m-rsehc-92] *Cites:* a-palle-90, as-anps-91, cf-dvrsi-90, c-lbcpr-89, c-chdc-91, csw-qoubs-90, cw-qorss-89, de-ssio-87, e-acg-87, eghsssw-irals-89, m-aogdc-91, m-cha-91, m-ept-91, m-splcn-91, oss-slspt-90, ps-cgi-85, ZZZ.

9291 J. Matoušek. Range searching with efficient hierarchical cuttings. *Discrete Comput. Geom.*, 10(2):157–182, 1993. [m-rsehc-93] *Succeeds:* m-rsehc-92.

9292 J. Matoušek. Reporting points in halfspaces. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 207–215, 1991. [m-rph-91] *Precedes:* m-rph-92.

9293 J. Matoušek. Reporting points in halfspaces. *Comput. Geom. Theory Appl.*, 2(3):169–186, 1992. [m-rph-92] *Succeeds:* m-rph-91.

9294 J. Matoušek. Spanning trees with low crossing numbers. *Informatique Théorique et Applications*, 6(25):103–123, 1991. [m-splcn-91] *Keywords:* spanning trees.

9295 J. Matoušek. Tight upper bounds for the discrepancy of halfspaces. Kam series, Charles University, 1994. Also submitted to *Discr. Comput. Geom.* [m-tubdh-94]

9296 J. Matoušek, N. Miller, J. Pach, Micha Sharir, S. Sifrony, and Emo Welzl. Fat triangles determine linearly many holes. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 49–58, 1991. [mmpssw-ftdlm-91]

9297 J. Matoušek, D. M. Mount, and N. S. Netanyahu. Efficient randomized algorithms for the repeated median line estimator. in preparation, 1992. [mmn-erarm-92] *Precedes:* mmn-erarm-93.

9298 J. Matoušek, D. M. Mount, and N. S. Netanyahu. Efficient randomized algorithms for the repeated median line estimator. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 74–82, January 1993. [mmn-erarm-93] *Succeeds:* mmn-erarm-92.

9299 J. Matoušek, J. Pach, Micha Sharir, S. Sifrony, and Emo Welzl. Fat triangles determine linearly many holes. Technical Report 174/90, Eskenasy Inst. Comput. Sci., Tel Aviv Univ., Tel Aviv, Israel, May 1990. [mpssw-ftdlm-90]

9300 J. Matoušek, J. Pach, Micha Sharir, S. Sifrony, and Emo Welzl. Fat triangles determine linearly many holes. *SIAM J. Comput.*, 23:154–169, 1994. [mpssw-ftdlm-94]

9301 J. Matoušek and O. Schwarzkopf. A deterministic algorithm for the three-dimensional diameter problem. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 478–484, 1993. [ms-datdd-93] *Keywords:* diameter, three-dimensional, parametric search. *Precedes:* ms-datdd-96. *Cites:* cegs-dwclp-92. *Abstract:* A deterministic algorithm for computing the diameter of an n point set in three dimensions with $O(n \log^c n)$ running time is given, c a constant.

9302 J. Matoušek and O. Schwarzkopf. A deterministic algorithm for the three-dimensional diameter problem. *Comput. Geom. Theory Appl.*, 6:253–262, 1996. [ms-datdd-96] *Succeeds:* ms-datdd-93.

9303 J. Matoušek and O. Schwarzkopf. Linear optimization queries. Technical Report B 91-19, Freie Universität Berlin, Berlin, Germany, 1991. [ms-loq-91]

9304 J. Matoušek and O. Schwarzkopf. Linear optimization queries. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 16–25, 1992. [ms-loq-92] *Keywords:* separation, linear programming, prune-and-search. *Cites:* am-dhsrr-91, am-rsps-92, cf-dvrsi-90, c-lpot-86, c-lvalp-88, c-arscg-88, cm-sptna-89, c-sdsno-87, csw-qoubs-90, csy-khrp-87, d-mstia-86, e-acg-87, e-dtdlp-91, gsc-srttd-87, hw-ensrq-87, m-aogdc-91, m-ept-91, m-rph-91, m-loq-93, ms-loq-91, m-apcad-83, m-lpltw-84, m-mdscg-84, m-rmstl-91, npt-usafd-90, ph-chfsp-77, s-pop-91, s-rscp-92, s-chdch-86, s-sdlpc-91, ZZZ.

9305 J. Matoušek and O. Schwarzkopf. On ray shooting in convex polytopes. *Discrete Comput. Geom.*, 10(2):215–232, 1993. [ms-rscp-93] *Keywords:* ray shooting, convex polytope, range searching. *Comments:* another part of the results of the conference version is in m-loq-93. *Succeeds:* ms-loq-92.

9306 Jiří Matoušek, Otfried Schwarzkopf, and Jack Snoeyink. Non-canonical randomized incremental construction. Manuscript, 1997. [mss-ncric-96]

9307 J. Matoušek and R. Seidel. A tail estimate for Mulmuley's segment intersection algorithm. In *Proc. 19th Internat. Colloq. Automata Lang. Program.*, volume 623 of *Lecture Notes Comput. Sci.*, pages 427–438. Springer-Verlag, 1992. [ms-temsi-92]

9308 J. Matoušek, R. Seidel, and Emo Welzl. How to net a lot with little: small ϵ-nets for disks and halfspaces. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 16–22, 1990. [msw-hnlls-90] *Cites:* a-dapal-89, behw-clgcv-89, cf-dvrsi-88, cw-qorss-89, c-narsc-87, es-vda-86, ew-nlsfs-85, hw-ensrq-87, m-cen-89, pw-snben-90, w-uekgf-65, yy-gaddg-85, ZZZ.

9309 J. Matoušek, Micha Sharir, and Emo Welzl. A subexponential bound for linear programming. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 1–8, 1992. [msw-sblp-92] *Cites:* b-udkuu-38, c-ochan-91, c-lpot-86, c-lvali-89, dll-udleu-57, d-lpe-63, d-mstia-86, d-ccpac-92, df-rafdl-87, j-levso-90, j-udkkd-01, k-srsa-92, k-nptal-84a, k-palp-80, km-hgisa-72, m-lpltw-84, p-mse-84, s-sdlpc-91, s-barga-91, sw-cblpr-92, w-sedbe-91a, ZZZ.

9310 J. Matoušek, Micha Sharir, and Emo Welzl. A subexponential bound for linear programming. *Algorithmica*, 16:498–516, 1996. [msw-sblp-96]

9311 J. Matoušek and P. Valtr. The complexity of the lower envelope of segments with h endpo ints. In I. Bar' any, editor, *Intuitive Geometry, Colloq. Math. Society János Bolyai*, pages 407–411. North-Holland, Amsterdam, 1997. [mv-clesh-97]

9312 J. Matoušek and P. Valtr. The complexity of the lower envelope of segments with h endpoints. Technical report, ??, Prague, 1995. [mv-clesh-95]

9313 J. Matoušek and Emo Welzl. Good splitters for counting points in triangles. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 124–130, 1989. [mw-gscpt-89] *Cites:* b-gtfga-80, cgl-pgd-83, cw-rsvdc-88, csss-otass-89, e-acg-87, eghsssw-irals-88, ew-hrsls-86, ekm-pis-82, es-cpg-35, hw-ensrq-87, m-splcn-91, m-lars-88, w-pr-82, ZZZ.

9314 J. Matoušek and Emo Welzl. Good splitters for counting points in triangles. *J. Algorithms*, 13:307–319, 1992. [mw-gscpt-92] *Succeeds:* mw-gscpt-89.

9315 J. Matoušek, Emo Welzl, and L. Wernisch. Discrepancy and ε-approximations for bounded VC-dimension. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 424–430, 1991. [mww-deabv-91]

9316 J. Matoušek, Emo Welzl, and L. Wernisch. Discrepancy and ε-approximations for bounded VC-dimension. *Combinatorica*, 13:455–466, 1993. [mww-deabv-93] *Succeeds:* mww-deabv-91.

J. Matoušek. See also [157, 158, 170, 200–213, 335, 337, 852–854, 1736, 1737, 2473, 2474, 3003–3006, 6391, 6392, 6944, 6945, 8315, 8316, 8493, 8936, 8937].

S. Matsui. See also [7396, 7397].

T. Matsui. See also [5662, 13627].

9317 T. Matsuyama, L. V. Hao, and M. Nagao. A file organization for geographic information systems based on the spatial proximity. In *Proc. 6th IEEE Internat. Conf. Pattern Recogn.*, pages 83–88, 1982. [mhn-fogis-82]

9318 T. Matsuyama and T. Phillips. Digital realization of the labelled Voronoi diagram and its application to closed boundary detection. In *Proc. IEEE Internat. Conf. Pattern Recogn.*, pages 478–480, 1984. [mp-drlvd-84] *Annote:* Discrete VD of set of segments. Medial axis is used to reconstruct a closed boundary.

9319 T. H. Mattheiss. An algorithm for determining irrelevant constraints and all vertices in systems of linear inequalities. *Oper. Res.*, 21:247–260, 1973. [m-adica-73]

9320 T. H. Mattheiss and D. Rubin. A survey and comparison of methods for finding all vertices of convex polyhedral sets. *Math. Oper. Res.*, 5:167–185, 1980. [mr-scmfa-80]

9321 T. H. Mattheiss and B. K. Schmidt. Computational results on an algorithm for finding all vertices of a polytope. *Math. Program.*, 18:308–329, 1980. [ms-crafa-80]

D. Matula. See also [8272, 9185].

9322 D. W. Matula and R. R. Sokal. Properties of Gabriel graphs relevant to geographic variation research and clustering of points in the plane. *Geogr. Anal.*, 12(3):205–222, 1980. [ms-pggrg-80]

9323 Joseph M. Maubach. The efficient location of neighbors for locally refined n-simplicial grids. In *Proc. 5th International Meshing Roundtable*, pages 137–153, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [m-elnlr-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

9324 H. A. Maurer. The post-office problem and related questions. In *Proc. 6th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 100 of *Lecture Notes Comput. Sci.*, pages 1–19. Springer-Verlag, 1980. [m-poprq-80]

9325 H. A. Maurer and T. A. Ottmann. Dynamic solutions of decomposable searching problems. In U. Pape, editor, *Discrete Structures and Algorithms*, pages 17–24. Carl Hanser Verlag, München, Germany, 1979. [mo-dsdsp-79]

9326 H. A. Maurer and T. A. Ottmann. Manipulating sets of points: a survey. In M. Nagl and H. J. Schneider, editors, *Applied Computer Science 13*, pages 9–29. Carl Hanser Verlag, 1979. [mo-msps-79]

H. A. Maurer. See also [1646, 1647, 4717, 4722–4725, 8660].

9327 A. Maus. Delaunay triangulation and the convex hull of n points in expected linear time. *BIT*, 24:151–163, 1984. [m-dtchn-84] *Keywords:* designing algorithms, convex hull, Delaunay triangulations, two-dimensional, expected-case analysis.

9328 Dimtri J. Mavriplis. Adaptive mesh generation for viscous flows using Delaunay triangulation. *J. Comp. Physik*, 90(2):271–291, October 1990. [m-amgvf-90]

9329 D. J. Mavriplis. An advancing front Delaunay triangulation algorithm designed for robustness. Report 92-49, NASA Langly Research Center, 1992. [m-adtad-92]

9330 N. Max. Weights for computing vertex normals from facet normals. *J. Graphics Tools*, 4(2):1–6, 1999. [m-wcvnf-99]

9331 N. Max, P. Hanrahan, and R. Crawfis. Area and volume coherence for efficient visualization of 3d scalar functions. *Comput. Graph.*, 24(5):27–33, 1990. [mhc-avcev-90]

9332 J. C. Maxwell. On reciprocal figures and diagrams of forces. *Phil. Mag. Ser.*, 27:250–261, 1864. [m-orfdf-64] *Keywords:* graph drawing.

J. May. See also [4968, 4969, 8202].

9333 M. May and P. Mennecke. Layout of schematic drawings. *Syst. Anal. Model. Simul.*, 1(4):307–338, 1984. [mm-lsd-84] *Keywords:* graph drawing.

9334 M. May and K. Szkatula. On the bipartite crossing number. *Control and Cybernetics*, 17(1):85–98, 1988. [ms-bcn-88] *Keywords:* graph drawing.

S. Maybank. See also [4008].

U. Maydell. See also [6009].

9335 E. Mayr and A. Meyer. The complexity of the word problems for commutative semigroups and polynomial ideals. *Adv. Math.*, 46:305–329, 1982. [mm-cwpcs-82]

E. W. Mayr. See also [665].

9336 N. Mayya and V. T. Rajan. An efficient shape-representation scheme using Voronoi skeletons. *Pattern Recogn. Lett.*, 16(2):147–160, 1995. [mr-esrsu-95]

N. Mayya. See also [13225].

9337 Marisa Mazón and Daciana Bochis. Computing periodic Voronoi partitions on the Euclidean plane. In *Abstracts 12th European Workshop Comput. Geom.*, pages 45–47. Universität Münster, 1996. [mb-cpvpe-96]

9338 Marisa Mazón and Tomas Recio. The computation of Voronoi diagrams on the Euclidean and spherical 2-orbifolds. In *Abstracts 10th European Workshop Comput. Geom.*, pages 12–15. Universidad de Cantabria, Santander, 1994. [mr-cvdes-94]

9339 M. Mazón, T. Recio, and F. Santos, editors. *Abstracts 10th European Workshop Comput. Geom.* Universidad de Cantabria, Santander, 1994. [mrs-ewcg-94]

Marisa Mazon. See also [2120, 3531–3534].

9340 M. L. Mazón. *Diagrams de Voronoi en caleidoscopios*. PhD thesis, Universidad de Cantabria, Santander, Spain, 1992. [m-ddvec-92] *Keywords:* doctoral thesis.

9341 M. L. Mazón and T. Recio. Voronoi diagrams bases on stricly convex distances on the plane. Manuscript, Departamento de Matemáticas, Universidad del Cantabria, Santander, Spain, 1991. [mr-vdbsc-91]

9342 M. L. Mazón and T. Recio. Voronoi diagrams coming from discrete groups on the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 223–226, 1990. [mr-vdcdg-90] *Cites:* b-gtfga-80, dk-oacvd-87, ei-drmwc-79, k-cavd-89, ns-gg-87, ZZZ.

S. Mazzone. See also [9019].

M. McAffer. See also [8202].

M. A. McAlear. See also [13035].

9343 Michael McAllister, David Kirkpatrick, and Jack Snoeyink. A compact piecewise-linear Voronoi diagram for convex sites in the plane. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 573–582, 1993. [mks-cplvd-93] *Precedes:* mks-cplvd-96.

9344 M. McAllister, D. Kirkpatrick, and J. Snoeyink. A compact piecewise-linear Voronoi diagram for convex sites in the plane. *Discrete Comput. Geom.*, 15:73–105, 1996. [mks-cplvd2-96] *Succeeds:* mks-cplvd-93.

9345 M. McAllister, D. Kirkpatrick, and J. Snoeyink. A compact piecewise-linear Voronoi diagram for convex sites in the plane. *Discrete Comput. Geom.*, 15:73–105, 1996. [mks-cplvd-96]

9346 M. McAllister, D. Kirkpatrick, and J. Snoeyink. An approximate Voronoi diagram for planning translation motion, 1993. In preparation. [mks-avdpt-93]

9347 M. McAllister and J. Snoeyink. The spoke diagram: a compact approximate Voronoi diagram for spatial computation. In *Proc. GIS'94*, 1994. [as-sdcav-94]

9348 M. McAllister and J. Snoeyink. Two-dimensional computation of the three-dimensional reachableregion for a welding head. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 437–442, 1993. [ms-tdctd-93] *Cites:* bo-arcgi-79, cegghss-rspug-91, cg-vippg-89, hs-parss-93, klps-ujrcf-86, ZZZ.

M. McAllister. See also [1587, 2308].

9349 A. D. McAulay. *Optical Computer Architecture*. John Wiley & Sons, New York, NY, 1991. [m-oca-91]

9350 D. McCallum and D. Avis. A linear algorithm for finding the convex hull of a simple polygon. *Inform. Process. Lett.*, 9:201–206, 1979. [ma-lafch-79] *Keywords:* polygons, convex hull.

S. McCallum. See also [820–822].

9351 M. McClellan. The exact solution of systems of lienear equations with polynomial coefficients. *J. ACM*, 20(4):563–588, 1973. [m-essle-73]

9352 D. E. McClure and R. A. Vitale. Polygonal approximation of plane convex bodies. *J. Math. Anal. Appl.*, 51:326–358, 1975. [mv-papcb-75]

D. E. McClure. See also [1996].

9353 M. C. McCord. Homotopy type comparison of a space with complexes associated with its open covers. *Proc. Amer. Math. Soc.*, 18:705–708, 1967. [m-htcsc-67]

9354 J. S. McCranie. An investigation of the size of epsilon-nets. M.Sc. thesis, Univ. Illinois, Urbana, IL, 1986. [m-isen-86] *Keywords:* master thesis.

9355 C. McCreary, F.-S. Shieh, and H. Gill. CG: a graph drawing system using graph-grammar parsing. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 270–273. Springer-Verlag, 1995. [msg-cgdsu-95] *Keywords:* graph drawing, system, grammar.

McCreight. See also [1538].

E. McCreight. See also [6406].

9356 E. M. McCreight. Efficient algorithms for enumerating intersecting intervals and rectangles. Report CSL-80-9, Xerox Palo Alto Res. Center, Palo Alto, CA, 1980. [m-eaeii-80]

9357 E. M. McCreight. Priority search trees. Technical Report CSL-81-5, XEROX Palo Alto Research Centre, Palo Alto, CA, 1981. [m-pst-81]

9358 E. M. McCreight. Priority search trees. *SIAM J. Comput.*, 14(2):257–276, 1985. [m-pst-85]

9359 K. McCroan and R. Lacher. Region coloring, edge coloring, and scan-conversion of maps. *Internat. J. Comput. Geom. Appl.*, 4:423–455, 1994. [ml-rcecs-94] *Keywords:* polygon filling, polygon scan conversion, curve filling, color cycle, edge colring, region coloring.

9360 M. J. McCullagh and C. G. Ross. Delaunay triangulation of a random data set for isarithmic mapping. *The Cartographic Journal*, 17(2):93–99, 1980. [mr-dtrds-80] *Annote:* Circumcircle algorithm with 2D bucketing for search. Discusses order of triangle construction. Bucket search order discussed.

M. J. McCullagh. See also [3818].

W. McCune. See also [4345].

C. McDiarmid. See also [3520, 5617].

C. J. H. McDiarmid. See also [4561].

G. McDonald. See also [7676].

J. McDonald. See also [7115–7117].

9361 Kenneth M. McDonald and Joseph G. Peters. Smallest paths in simple rectilinear polygons. Technical Report TR 89-4, School of Computing Science, Simon Fraser Univ., 1989. [mp-spsrp-89] *Precedes:* mp-spsrp-92, mp-spsrp-90.

9362 Kenneth M. McDonald and J. G. Peters. Smallest paths in simple rectilinear polygons. Manuscript, March 1990. [mp-spsrp-90] *Succeeds:* mp-spsrp-89. *Precedes:* mp-spsrp-92.

9363 Kenneth M. McDonald and Joseph G. Peters. Smallest paths in simple rectilinear polygons. *IEEE Trans. on Computer Aided Design*, 11:864–875, 1992. [mp-spsrp-92] *Keywords:* bicriteria shortest paths, link distance, L1 metric, rectilinear shortest paths. *Comments:* Gives an $O(n)$ algorithm for finding a path that is 'smallest' in the sense of minimizing both L_1 length and rectilinear link distance at the same time (after proving that such a path always exists in a rectilinear simple polygon). They also give a parallel algorithm that takes time $O(\log n)$, on $O(n/\log n)$ processors, in EREW PRAM, after the polygon is triangulated. *Succeeds:* mp-spsrp-90, mp-spsrp-89.

Scott McElfresh. See also [4428].

Scott A. McElfresh. See also [4182, 4185].

H. S. McFaddin. See also [714].

9364 C. McGeoch. *Experimental analysis of algorithms*. PhD thesis, School Comput. Sci., Carnegie Mellon Univ., Pittsburgh, PA, 1986. [m-eaa-86] *Keywords:* doctoral thesis.

L. A. McGeoch. See also [7575, 9152].

R. McGhee. See also [11224].

C. A. McGleenan. See also [807].

J. McGrew. See also [1223].

B. McKay. See also [4593].

9365 B. D. McKay. Computing automorphisms and canonical labelings of graphs. In *??*, volume 686 of *Lecture Notes Math.*, pages 223–232. Springer-Verlag, 1977. [m-caclg-77]

9366 B. D. McKay. Spanning trees in regular graphs. *European J. Combin.*, 4:149–160, 1983. [m-strg-83]

B. D. McKay. See also [1608, 4585].

N. D. McKay. See also [12159].

R. M. McKeag. See also [807, 4345].

R. McKee. See also [11141].

S. A. McKee. See also [1450].

A. C. McKellar. See also [5528].

9367 David G. McKenna. The inward spiral method: An improved TIN generation technique and data structure for land planning applications. In *Proceedings, AUTOCARTO 8*, pages 670–679, 1987. [m-ismit-87] *Annote:* CDT via selection. Bucket search. Extra vertices are added on boundary edges so that no constraint edge is longer than the grid size. Queue to store boundary.

9368 M. McKenna. *Applications of arrangements to geometric problems in higher dimensions*. PhD thesis, Johns Hopkins University, 1989. [m-aagph-89] *Keywords:* doctoral thesis.

9369 M. McKenna. Worst-case optimal hidden-surface removal. Technical Report JHU/EECS-86/05, Johns Hopkins Univ., Baltimore, MD, 1986. [m-wcohs-86]

9370 M. McKenna. Worst-case optimal hidden-surface removal. *ACM Trans. Graph.*, 6:19–28, 1987. [m-wcohs-87] *Keywords:* design of algorithms, complexity theory, computer graphics, visibility, plane-sweep, hidden line/surface elimination.

9371 M. McKenna and J. O'Rourke. Arrangements of lines in 3-space: a data structure with applications. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 371–380, 1988. [mo-al3sd-88] *Cites:* ahu-daca-74, aw-alts-87, cgl-pgd-85, eg-tsa-86, egs-oplms-86, eos-calha-86, f-pp-87, gs-ccrs-86, hs-ndssg-86, kl-sc-72, m-wcohs-87, ms-foscp-85, w-cgpsl-87, ZZZ.

9372 M. McKenna, J. O'Rourke, and Subhash Suri. Finding maximal rectangles inscribed in an orthogonal polygon. In *Proc. 23rd Allerton Conf. Commun. Control Comput.*, pages 486–495, 1985. [mos-fmrio-85] *Keywords:* packing, area, rectangles.

9373 M. McKenna and R. Seidel. Finding the optimal shadows of a convex polytope. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 24–28, 1985. [ms-foscp-85] *Keywords:* optimization, volume, arrangements. *Cites:* eos-calha-86, eos-calha-83, g-cp-67, t-sgprc-83, ZZZ.

9374 M. McKenna and G. T. Toussaint. Finding the minimum vertex distance between two disjoint convex polygons in linear time. Technical Report SOCS-83-6, School Comput. Sci., McGill Univ., Montreal, PQ, April 1983. [mt-fmvdb-83]

9375 M. McKenna and G. T. Toussaint. Finding the minimum vertex distance between two disjoint convex polygons in linear time. *Comput. Math. Appl.*, 11:1227–1242, 1985. [mt-fmvdb-85] *Keywords:* separation.

9376 M. McKenna and D. Zeltzer. Dynamic simulation of autonomous legged locomotion. *Comput. Graph.*, ??:29–38, 1990. Proc. SIGGRAPH '90. [mz-dsall-90]

9377 P. J. McKerrow. *Introduction to Robotics*. Addison-Wesley, Reading, MA, 1991. [m-ir-91]

9378 D. H. McLain. Drawing contours from arbitrary data points. *Comput. J.*, 17:318–324, 1974. [m-dcadp-74]

9379 D. H. McLain. Errata to "Two dimensional interpolation from random data". *Comput. J.*, 19(4):384, 1976. [m-etdir-76] *Succeeds:* m-tdird-76.

9380 D. H. McLain. Two dimensional interpolation from random data. *Comput. J.*, 19:178–181, 1976. [m-tdird-76] *Precedes:* m-etdir-76.

M. McLeish. See also [5830].

9381 M. J. McLennan. [Inc Tcl]: object-oriented programming in Tcl. In *Proceedings of the Tcl/Tk Workshop 1993*, 1993. [m-ioopt-93] *URL:* http://www.wn.com/biz/itcl.

9382 R. McLeod. The Steiner surface revisited. *Proc. Roy. Soc. London Ser. A*, 369:157–174, 1979. [m-ssr-79]

9383 S. McMains and C. Séquin. A coherent sweep plane slicer for layered manufacturing. In *Proc. 5th ACM Symposium on Solid Modeling and Applications*, pages 285–295, 1999. [ms-cspsl-99]

9384 R. B. McMaster. A statistical analysis of mathematical measures for linear simplification. *Amer. Cartogr.*, 13:103–116, 1986. [m-samml-86]

9385 R. B. McMaster. Automated line generation. *Cartographica*, 24(2):74–111, 1987. [m-alg-87]

9386 P. McMullen. On zonotopes. *Trans. Amer. Math. Soc.*, 159:91–109, 1971. [m-z-71]

9387 P. McMullen. The maximal number of faces of a convex polytope. *Mathematika*, 17:179–184, 1970. [m-mnfcp-70]

9388 P. McMullen and G. C. Shephard. *Convex Polytopes and the Upper Bound Conjecture*, volume 3 of *Lecture Notes*. Cambridge University Press, Cambridge, England, 1971. [ms-cpubc-71]

9389 P. McMullen and D. Walkup. A generalized lower-bound conjecture for simplical polytopes. *Mathematika*, 18:246–273, 1971. [mw-glbcs-71]

P. McMullen. See also [1901, 2047, 5762].

W. A. McNeely. See also [8951].

H. McQueen. See also [11556].

9390 M. M. McQueen and G. T. Toussaint. On the ultimate convex hull algorithm in practice. Technical Report SOCS-84.2, School Comput. Sci., McGill Univ., Montreal, PQ, February 1984. [mt-uchap-84]

9391 M. M. McQueen and G. T. Toussaint. On the ultimate convex hull algorithm in practice. *Pattern Recogn. Lett.*, 3:29–34, 1985. [mt-uchap-85]

9392 W. B. McRae and E. R. Davidson. An algorithm for the extreme rays of a pointed convex polyhedral cone. *SIAM J. Comput.*, 2:281–293, 1973. [md-aerpc-73]

9393 E. J. McShane. Extensions of range functions. *Bull. Amer. Math. Soc.*, 40:837–842, 1934. [m-erf-34]

9394 J. D. McWhirter. A demonstration of interactive graph based visual language applications. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 274–277. Springer-Verlag, 1995. [m-digbv-95] *Keywords:* graph drawing, system, visual language.

9395 C. Mead. *Analog VLSI and neural systems*. Addison-Wesley, Reading, MA, 1989. [m-avns-89]

9396 C. Mead and L. Conway. *Introduction to VLSI Systems*. Addison-Wesley, 1980. [mc-ivs-80]

C. Mead. See also [12234].

9397 R. Mead. A relation between the individual plant-spacing and yield. *Annals of Botany, N.S.*, 30:301–309, 1966. [m-ripsy-66]

9398 D. J. R. Meagher. Geometric modeling using quadtree encoding. *Comput. Graph. Image Process.*, 19:129–147, 1982. [m-gmuqe-82]

9399 D. J. R. Meagher. Octree generation, analysis and manipulation. Report IPL-TR-027, Image Process. Lab., Rensselaer Polytech. Inst., Troy, NY, 1982. [m-ogam-82]

9400 D. J. R. Meagher. The octree encoding method for efficient solid modeling. Report IPL-TR-032, Image Process. Lab., Rensselaer Polytech. Inst., Troy, NY, 1982. [m-oemes-82]

9401 J. E. Mebius. Artibodies: A system for modelling articulated bodies. In *Abstracts 8th European Workshop Comput. Geom.*, pages 9–11. Utrecht University, 1992. [m-asmab-92]

9402 J. Mecke. Random tesselations generated by hyperplanes. In R. Ambartzumian and W. Weil, editors, *Stochastic Geometry, Geometric Statistics, Stereology*, pages 104–109. B. G. Teubner, Leipzig, 1984. [m-rtgh-84]

J. Mecke. See also [12557, 12558].

A. Medepalli. See also [5217].

9403 M. R. Mediano, M. A. Casanova, and M. Dreux. V-trees: A storage method for long vector data. In *Proc. 20th VLDB Conference*, pages 321–329, 1994. [mcd-vtsml-94]

9404 N. N. Medvedev. The algorithm for three dimensional Voronoi polyhedra. *J. Comput. Phys.*, 67:223–229, 1986. [m-atdvp-86] *Annote:* Construction of a single Voronoi polyhedron. Effectively follows edges.

J. R. Meehan. See also [11093].

P. Meek. See also [2068].

P. Meer. See also [7592].

Sonja A. L. Meerbaum. See also [10267].

L. Meertens. See also [8302].

D. Megherbi. See also [8958].

9405 C. Meghini. An image retrieval model based on classical logic. In *Proc. 16th Annu. Internat. ACM SIGIR Conf. Research and Develop. in Inform. Retrieval*, pages 300–308, 1995. [m-irmbc-95]

9406 N. Megiddo. A note on degeneracy in linear programming. *Math. Program.*, 35:365–367, 1986. [m-ndlp-86] *Keywords:* complexity theory, linear programming.

9407 N. Megiddo. Applying parallel computation algorithms in the design of serial algorithms. *J. ACM*, 30(4):852–865, 1983. [m-apcad-83] *Keywords:* design of algorithms, parallel computation, binary search.

9408 N. Megiddo. Combinatorial optimization with rational objective functions. *Math. Oper. Res.*, 4:414–424, 1979. [m-corof-79] *Keywords:* complexity theory, design of algorithms, optimization, binary search.

9409 N. Megiddo. Dynamic location problems. *Oper. Res.*, 6:313–319, 1986. [m-dlp-86] *Keywords:* design of algorithms, balls, optimization.

9410 N. Megiddo. Improved asymptotic analysis of the average number of steps performed by the self-dual simplex algorithm. *Math. Program.*, 35:140–172, 1986. [m-iaaan-86] *Keywords:* average-case analysis, linear programming.

9411 N. Megiddo. Is binary encoding appropriate for the problem-language relationship? *Theoret. Comput. Sci.*, 19:337–341, 1982. [m-ibeap-82] *Keywords:* computational model.

9412 N. Megiddo. Linear programming (1986). *Annu. Rev. Comput. Sci.*, 2:119–145, 1987. [m-lp198-87] *Keywords:* survey paper.

9413 N. Megiddo. Linear programming in linear time when the dimension is fixed. *J. ACM*, 31:114–127, 1984. [m-lpltw-84] *Keywords:* design of algorithms, linear programming, worst-case analysis, prune-and-search.

9414 N. Megiddo. Linear-time algorithms for linear programming in R^3 and related problems. In *Proc. 23rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 329–338, 1982. [m-ltalp-82] *Precedes:* m-ltalp-83.

9415 N. Megiddo. Linear-time algorithms for linear programming in R^3 and related problems. *SIAM J. Comput.*, 12(4):759–776, 1983. [m-ltalp-83] *Keywords:* design of algorithms, linear programming, three-dimensional, graph theory, prune-and-search, geometric transformations, points, lines, planes. *Succeeds:* m-ltalp-82.

9416 N. Megiddo. New approaches to linear programming. *Algorithmica*, 1:387–394, 1986. [m-nalp-86] *Keywords:* survey paper.

9417 N. Megiddo. On some planar location problems. Report ??, Dept. Statist., Tel-Aviv Univ., Tel-Aviv, Israel, 1981. [m-splp-81]

9418 N. Megiddo. On the ball spanned by balls. *Discrete Comput. Geom.*, 4:605–610, 1989. [m-bsb-89]

9419 N. Megiddo. On the complexity of linear programming. In T. Bewley, editor, *Advances in Economic Theory*, page ?? Cambridge University Press, 1985. [m-clp-85] *Keywords:* survey paper, linear programming, complexity theory, computational model.

9420 N. Megiddo. On the complexity of polyhedral separability. *Discrete Comput. Geom.*, 3:325–337, 1988. [m-cps-88] *Keywords:* NP-completeness, separation, hyperplanes, two-dimensional, d-dimensional.

9421 N. Megiddo. On the complexity of some geometric problems in unbounded dimension. Report RJ 5744, IBM Almeden Res. Center, San Jose, CA, 1987. [m-csgpu-87] *Keywords:* balls, covering, stabbing, d-dimensional, NP-completeness.

9422 N. Megiddo. On the complexity of some geometric problems in unbounded dimension. *J. Symbolic Comput.*, 10:327–334, 1990. [m-csgpu-90] *Keywords:* balls, covering, stabbing, d-dimensional, NP-completeness.

9423 N. Megiddo. On the complexity of the one-terminal network design problem. *Oper. Res. Lett.*, 3:105–107, 1982. [m-cotnd-82] *Keywords:* VLSI design, NP-completeness.

9424 N. Megiddo. Parallel algorithms for finding the maximum and median almost surely in constant-time. Report ??, Grad. School Indust. Admin., Carnegie-Mellon Univ., Philadelphia, PA, 1982. [m-pafmm-82] *Keywords:* complexity theory, parallel computation, searching, Las Vegas.

9425 N. Megiddo. Partitioning with two lines in the plane. *J. Algorithms*, 6:430–433, 1985. [m-ptlp-85] *Keywords:* prune-and-search, design of algorithms, points, lines, two-dimensional.

9426 N. Megiddo. Poly-log parallel algorithms for LP with an application to exploding flying objects. Technical Report ??, Grad. School Indust. Admin., Carnegie-Mellon Univ., Philadelphia, PA, 1982. [m-plpal-82] *Keywords:* design of algorithms, parallel computation, optimization, balls, three-dimensional, d-dimensional.

9427 N. Megiddo. Poly-log parallel algorithms for LP with an application to exploding flying objects. Unpublished manuscript, 1990. [m-ppaa-90]

9428 N. Megiddo. The weighted Euclidean 1-center problem. *Math. Oper. Res.*, 8(4):498–504, 1983. [m-we1cp-83] *Keywords:* design of algorithms, binary search, two-dimensional, circles, weighted, proximity.

9429 N. Megiddo. Towards a genuinely polynomial algorithms for linear programming. *SIAM J. Comput.*, 12:347–353, 1983. [m-tgpal-83] *Keywords:* design of algorithms, linear programming, binary search, worst-case analysis, convex, d-dimensional.

9430 N. Megiddo, S. L. Hakimi, M. R. Garey, D. S. Johnson, and C. H. Papadimitriou. On the complexity of searching a graph. In *Proc. 22nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 376–385, 1981. [mhgjp-csg-81] *Keywords:* worst-case analysis, graph theory, dynamic programming, NP-completeness. *Precedes:* mhgjp-csg-88.

9431 N. Megiddo, S. L. Hakimi, M. R. Garey, D. S. Johnson, and C. H. Papadimitriou. On the complexity of searching a graph. *J. ACM*, 35:18–44, 1988. [mhgjp-csg-88] *Succeeds:* mhgjp-csg-81.

9432 N. Megiddo and K. J. Supowit. On the complexity of some common geometric location problems. *SIAM J. Comput.*, 13(1):182–196, 1984. [ms-cscgl-84] *Keywords:* NP-completeness, packing, covering, proximity.

9433 N. Megiddo and A. Tamir. Finding least-distances lines. *SIAM J. Algebraic Discrete Methods*, 2:207–211, 1983. [tt-fldl-83] *Keywords:* design of algorithms, optimization, statistics.

9434 N. Megiddo and A. Tamir. New results on the complexity of p-center problems. *SIAM J. Comput.*, 12:751–758, 1983. [mt-nrcpc-83] *Keywords:* design of algorithms, graph theory, binary search, trees.

9435 N. Megiddo and A. Tamir. On the complexity of locating linear facilities in the plane. *Oper. Res. Lett.*, 1:194–197, 1982. [mt-cllfp-82] *Keywords:* VLSI design, NP-completeness, points, lines, two-dimensional.

9436 N. Megiddo, A. Tamir, E. Zemel, and R. Chandrasekaran. An $O(n(\log n)^2)$ algorithm for the k-th nearest pair in a tree with applications to location problems. *SIAM J. Comput.*, 10:328–337, 1981. [mtzc-oaktn-81] *Keywords:* complexity theory, network algorithms, optimization, searching, centroid decomposition.

9437 N. Megiddo and E. Zemel. A randomized $O(n \log n)$ algorithm for the weighted Euclidean 1-center problem. *J. Algorithms*, 7:358–368, 1986. [mz-roawe-86] *Keywords:* Las Vegas, circles, proximity, weighted, worst-case analysis.

9438 N. Megiddo, E. Zemel, and S. L. Hakimi. The maximum coverage location problem. Discuss. Paper 490, Cent. Math. Stud. Econ. Manage. Sci., North-Western Univ., Evanston, IL, 1981. [mzh-mclp-81]

N. Megiddo. See also [97–99, 394, 395, 546, 3408–3410, 4541, 5714, 6711–6713, 6961, 8615, 9027, 9028, 10397].

H. Mehldau. See also [5602].

9439 K. Mehlhorn. An implementation of the Hopcroft and Tarjan planarity test and embedding algorithm. Report MPI-I-93-151, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [m-ihtpt-93]

9440 K. Mehlhorn. Arbitrary weight changes in dynamic trees. *Theoretical Informatics*, 15:183–211, 1981. [m-awcdt-81]

9441 Kurt Mehlhorn. *Data Structures and Algorithm 1: Sorting and Searching*, volume 1 of *EATCS Monographs on Theoretical Computer Science*. Springer-Verlag, Berlin/Heidelberg, Germany, 1981. [m-dsass-81] *Precedes:* m-ss-84.

9442 Kurt Mehlhorn. *Data Structures and Algorithms*. Springer-Verlag, Heidelberg, Germany, 1984. Volumes 1–3. [m-dsa-84]

9443 Kurt Mehlhorn. *Data Structures and Algorithms 1: Sorting and Searching*, volume 1 of *EATCS Monographs on Theoretical Computer Science*. Springer-Verlag, Heidelberg, Germany, 1984. [m-ss-84] *ISBN:* 3-540-13302-X. *Succeeds:* m-dsass-81.

9444 Kurt Mehlhorn. *Data Structures and Algorithms 2: Graph Algorithms and NP-Completeness*, volume 2 of *EATCS Monographs on Theoretical Computer Science*. Springer-Verlag, Heidelberg, Germany, 1984. [m-ganc-84] *ISBN:* 3-540-13641-X.

9445 Kurt Mehlhorn. *Data Structures and Algorithms 3: Multi-dimensional Searching and Computational Geometry*, volume 3 of *EATCS Monographs on Theoretical Computer Science*. Springer-Verlag, Heidelberg, Germany, 1984. [m-mdscg-84] *ISBN:* 3-540-13642-8. *Keywords:* data structures, algorithms, computational geometry, book.

9446 K. Mehlhorn. *Datenstrukturen und effiziente Algorithmen 1*. B. G. Teubner, Stuttgart, Germany, 1986. [m-dea-86]

9447 K. Mehlhorn. Lower bounds on the efficiency of transforming static data structures into dynamic structures. *Math. Syst. Theory*, 15:1–16, 1985. [m-lbets-85]

9448 K. Mehlhorn. Position paper for panel discussion. In *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, pages 111–112, May 1996. [m-pppd-96]

9449 K. Mehlhorn, S. Meiser, and C. Ó'Dúnlaing. On the construction of abstract Voronoi diagrams. Report A01/89, Department of Computer Science, Universität des Saarlandes, Saarbrücken, Germany, 1989. [mmo-cavd-89] *Keywords:* Voronoi diagrams, randomized algorithms. *Precedes:* mmo-cavd-90.

9450 K. Mehlhorn, S. Meiser, and C. Ó'Dúnlaing. On the construction of abstract Voronoi diagrams. In *Proc. 7th Sympos. Theoret. Aspects Comput. Sci.*, volume 415 of *Lecture Notes Comput. Sci.*, pages 227–239. Springer-Verlag, 1990. [mmo-cavd-90] *Succeeds:* mmo-cavd-89. *Precedes:* mmo-cavd-91.

9451 K. Mehlhorn, S. Meiser, and C. Ó'Dúnlaing. On the construction of abstract Voronoi diagrams. *Discrete Comput. Geom.*, 6:211–224, 1991. [mmo-cavd-91] *Keywords:* Voronoi diagrams, randomized algorithms. *Succeeds:* mmo-cavd-90.

9452 K. Mehlhorn, S. Meiser, and R. Rasch. Furthest site abstract Voronoi diagrams. Report MPI-I-92-135, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [mmr-fsavd-92]

9453 K. Mehlhorn, M. Müller, S. Näher, S. Schirra, M. Seel, C. Uhrig, and J. Ziegler. A computational basis for higher dimensional computational geometry and applications. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 254–263, 1997. [mmnssuz-cbhdc-97] *Cites:* bdh-qach-96, blr-scanp-90, cms-frric-93, e-acg-87, e-sdrla-67, fgkss-ckbgc-96, mn-lpcgc-95, mnssssu-cgpvg-96, nu-lmum-95, mz-icha-94, s-tlip-86, y-fpaa-93, ZZZ.

9454 K. Mehlhorn, M. Müller, S. Näher, S. Schirra, M. Seel, C. Uhrig, and J. Ziegler. A computational basis for higher-dimensional computational geometry and applications. *Comput. Geom. Theory Appl.*, 10(4):289–303, 1998. [mmnssuz-cbhdc-98] *Succeeds:* mmnssuz-cbhdc-97.

9455 Kurt Mehlhorn and Stefan Näher. Algorithm design and software libraries: Recent developments in the LEDA project. In *Algorithms, Software, Architectures, Information Processing 92*, volume 1, pages 493–505, Amsterdam, 1992. Elsevier Science Publishers B.V. North-Holland. [mn-adslr-92]

9456 Kurt Mehlhorn and Stefan Näher. Bounded ordered dictionaries in $O(\log\log n)$ time and $O(n)$ space. *Inform. Process. Lett.*, 35:183–189, 1990. [mn-bodot-90]

9457 Kurt Mehlhorn and Stefan Näher. *Checking Geometric Structures*, December 1996. Program Documentation. [mn-cgs-96]

9458 Kurt Mehlhorn and Stefan Näher. Dynamic fractional cascading. Technical Report ??, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1986. [mn-dfc-86] *Precedes:* mn-dfc-90.

9459 Kurt Mehlhorn and Stefan Näher. Dynamic fractional cascading. *Algorithmica*, 5:215–241, 1990. [mn-dfc-90] *Succeeds:* mn-dfc-86.

9460 Kurt Mehlhorn and Stefan Näher. Implementation of a sweep line algorithm for the straight line segment intersection problem. Report MPI-I-94-160, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [mn-islas-94]

9461 Kurt Mehlhorn and Stefan Näher. LEDA, a library of efficient data types and algorithms. Report A 04/89, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1989. [mn-lledt-89] *Comments:* revisions published in MFCS '89 and ICALP '90. *Precedes:* mn-lledt-89a.

9462 Kurt Mehlhorn and Stefan Näher. LEDA, a library of efficient data types and algorithms. In *Proc. 14th Internat. Sympos. Math. Found. Comput. Sci.*, volume 379 of *Lecture Notes Comput. Sci.*, pages 88–106. Springer-Verlag, 1989. [mn-lledt-89a] *Succeeds:* mn-lledt-89.

9463 Kurt Mehlhorn and Stefan Näher. LEDA: a platform for combinatorial and geometric computing. *Commun. ACM*, 38(1):96–102, 1995. [mn-lpcgc-95] *URL:* http://www.mpi-sb.mpg.de/guide/staff/uhrig/leda.html.

9464 Kurt Mehlhorn and Stefan Näher. *LEDA: A Platform for Combinatorial and Geometric Computing*. Cambridge University Press, Cambridge, UK, 2000. [mn-lpcgc-00]

9465 Kurt Mehlhorn and Stefan Näher. The implementation of geometric algorithms. In *Proc. 13th World Computer Congress IFIP94*, volume 1, pages 223–231, 1994. [mn-iga-94]

9466 Kurt Mehlhorn, Stefan Näher, and Helmut Alt. A lower bound for the complexity of the union-split-find problem. Technical Report ??, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1986. [mna-lbcus-86] *Precedes:* mna-lbcus-88.

9467 Kurt Mehlhorn, Stefan Näher, and Helmut Alt. A lower bound on the complexity of the union-split-find problem. *SIAM J. Comput.*, 17:1093–1102, 1988. [mna-lbcus-88] *Succeeds:* mna-lbcus-86.

9468 Kurt Mehlhorn, Stefan Näher, Thomas Schilz, Stefan Schirra, Michael Seel, Raimund Seidel, and Christian Uhrig. Checking geometric programs or verification of geometric structures. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 159–165, 1996. [mnssssu-cgpvg-96] *Cites:* as-rst-89, abs-hgach-97, bk-ptctw-89, blr-scanp-90, bms-dgc-94, cs-arscg-89, cms-frric-93, egs-oplms-86, k-osps-83, m-dsa-84, mn-adslr-92, mn-lpcgc-95, mz-icha-94, nu-lmum-95, r-dcptr-94, st-pplup-86, s-chdch-86, ZZZ.

9469 Kurt Mehlhorn, Stefan Näher, Thomas Schilz, Stefan Schirra, Michael Seel, Raimund Seidel, and Christian Uhrig. Checking geometric programs or verification of geometric structures. Manuscript, 1997. [mnssssu-cgpvg-97]

9470 K. Mehlhorn, S. Näher, S. Schirra, M. Seel, and C. Uhrig. A computational basis for higher-dimensional computational geometry. Report MPI-I-96-1-016, Max-Planck-Institut Inform., Saarbrücken, Germany, 1996. [mnssu-acbhd-96]

9471 K. Mehlhorn, S. Näher, M. Seel, R. Seidel, T. Schilz, S. Schirra, and C. Uhrig. Checking geometric programs or verification of geometric structures. *Comput. Geom. Theory Appl.*, 12(1–2):85–103, 1999. [mnssssu-cgpvg-99] *Succeeds:* mnssssu-cgpvg-96.

9472 K. Mehlhorn, S. Näher, and C. Uhrig. Hidden line elimination for isooriented rectangles. *Inform. Process. Lett.*, 35:137–143, 1990. [mnu-hleir-90]

9473 Kurt Mehlhorn, Stefan Näher, and Christian Uhrig. The LEDA platform for combinatorial and geometric computing. In P. Degano, R. Gorrieri, and A. Marchetti-Spaccamela, editors, *Automata, Languages and Programming (Proc. ICALP '97)*, volume 1256 of *Lecture Notes Comput. Sci.*, pages 7–16. Springer-Verlag, 1997. [mnu-lpcgc-97]

9474 K. Mehlhorn and M. H. Overmars. Optimal dynamization of decomposable searching problems. *Inform. Process. Lett.*, 12:93–98, 1981. [mo-oddsp-81]

9475 K. Mehlhorn and F. P. Preparata. Routing through a rectangle. *J. ACM*, 33:60–85, 1986. [mp-rtr-86]

9476 K. Mehlhorn, F. P. Preparata, and M. Sarrafzadeh. Channel routing in knock-knee mode: Simplified algorithms and proofs. *Algorithmica*, 1:213–221, 1986. [mps-crkkm-86]

9477 Kurt Mehlhorn and Michael Seel. Infimaximal frames: A technique for making lines look like segments. In *Abstracts 17th European Workshop Comput. Geom.*, pages 78–81. Freie Universität Berlin, 2001. [ms-iftml-01]

9478 K. Mehlhorn, Micha Sharir, and Emo Welzl. Tail estimates for the efficiency of randomized incremental algorithms for line segment intersection. Report MPI-I-93-103, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [msw-teeri-93t] *Succeeds:* msw-tescr-92. *Precedes:* msw-teeri-93a.

9479 K. Mehlhorn, Micha Sharir, and Emo Welzl. Tail estimates for the efficiency of randomized incremental algorithms for line segment intersection. *Comput. Geom. Theory Appl.*, 3:235–246, 1993. [msw-teeri-93a] *Succeeds:* msw-teeri-93t.

9480 K. Mehlhorn, Micha Sharir, and Emo Welzl. Tail estimates for the space complexity of randomized incremental algorithms. Report MPI-I-91-113, Max-Planck-Institut Inform., Saarbrücken, Germany, 1991. [msw-tescr-91] *Precedes:* msw-tescr-92.

9481 K. Mehlhorn, Micha Sharir, and Emo Welzl. Tail estimates for the space complexity of randomized incremental algorithms. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 89–93, 1992. [msw-tescr-92] *Succeeds:* msw-tescr-91. *Precedes:* msw-tescr-93.

9482 K. Mehlhorn, Micha Sharir, and Emo Welzl. Tail estimates for the space complexity of randomized incremental algorithms. *Comput. Geom. Theory Appl.*, 4:185–246, 1993. [msw-tescr-93]

9483 K. Mehlhorn, T. Shermer, and C. Yap. A complete roundness classification procedure. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 129–138, 1997. [msy-crcp-97] *Cites:* cy-sp-87, dgr-eaoac-97, efnn-rauvd-89, fh-rcgtt-91, f-gta-92, gr-fspc-97, ll-orpr-91, pbc-muccm-93, rlw-rdtrp-91, rz-epccm-92, sj-wrspp-94, sv-dtm-93, s-oardc-93, y-ecgtm-95, yc-imgt-96, ZZZ.

9484 K. Mehlhorn and K. Simon. Intersecting two polyhedra one of which is convex. In L. Budach, editor, *Proc. Found. Comput. Theory*, volume 199 of *Lecture Notes Comput. Sci.*, pages 534–542. Springer-Verlag, 1985. [ms-itpow-85]

9485 K. Mehlhorn and A. Tsakalidis. Data structures. In J. van Leeuwen, editor, *Algorithms and Complexity*, volume A of *Handbook of Theoretical Computer Science*, pages 303–334. Elsevier, Amsterdam, 1990. [mt-ds-90] *Keywords:* dictionary problem, persistence, union-split-find problem, priority queues, nearest common ancestors, selection, merging, dynamization techniques, survey paper.

9486 K. Mehlhorn and U. Vishkin. Randomized and deterministic simulations of PRAMs by parallel machines with restricted granularity of parallel memories. *Acta Inform.*, 9(1):29–59, 1984. [mv-rdspp-84]

9487 K. Mehlhorn and C. Yap. Constructive Whitney-Graustein theorem, or how to untangle closed planar curves. *SIAM J. Comput.*, 20:603–621, 1991. [my-cwgth-91]

9488 K. Mehlhorn and C. K. Yap. Constructive Hopf's theorem: or how to untangle closed planar curves. In *Proc. 15 Internat. Colloq. Automata Lang. Program.*, volume 317 of *Lecture Notes Comput. Sci.*, pages 410–423. Springer-Verlag, 1988. [my-chthu-88]

K. Mehlhorn. See also [572, 576, 577, 581, 593–597, 604, 605, 1470, 1528–1531, 2111, 2609–2611, 2614–2617, 3222, 3365–3367, 3602, 3603, 4106, 4107, 4203, 4204, 4320, 4321, 5263, 5330, 5331, 5615, 5616, 5673, 5743, 5744, 6894–6896, 7051–7053, 7073, 7191, 7914, 7915, 8172–8175, 8390, 10022].

A. Mehrez. See also [4420].

9489 H. Mehrotra and J. E. Gary. Feature-based retrieval of similar shapes. In *Proc. 9th IEEE Intl. Conf. on Data Engineering*, pages 108–115, 1996. [mg-fbrss-93]

Dinesh Mehta. See also [8962].

M. Mehta. See also [12001].

9490 S. Mehta, M. Mukherjee, and G. Nagy. Constrained integer approximation to 2-d line intersections. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 302–305, 1990. [mmn-cia2d-90] *Cites:* ZZZ.

9491 Aohan Mei and Yoshihide Igarashi. A robot navigation strategy in unknown environment and its efficiency. *IEICE Trans. Fundamentals Electronics, Comm. and Comput. Sci.*, E77-A(7):1157–1162, July 1994. [mi-rnsue-94] *Keywords:* competitive analysis, shortest paths, on-line navigation.

9492 Aohan Mei and Yoshihide Igarashi. An efficient strategy for robot navigation in unknown environment. *Inform. Process. Lett.*, 52:51–56, 1994. [mi-esrnu-94] *Keywords:* competitive analysis, shortest paths, on-line navigation. *Precedes:* mi-esrnu-94a.

9493 Aohan Mei and Yoshihide Igarashi. Efficient strategies for robot navigation in unknown environment. In *Proc. 21st Internat. Colloq. Automata Lang. Prog.*, volume 820 of *Lecture Notes Comput. Sci.*, pages 630–641. Springer-Verlag, 1994. [mi-esrnu-94a] *Succeeds:* mi-esrnu-94.

J. Meidanis. See also [7617].

9494 A. Meier. Applying relational database techniques to solid modeling. In *Proc. GI Conf. Database Syst. for Auto. Eng. and Sci. Applic.*, page ??, 1985. [m-ardts-85]

9495 H. Meijer and D. Rappaport. Computing the minimum weight triangulation of a set of linearly ordered points. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 175–178, August 1991. [mr-cmwts-91] *Cites:* a-pmwt-90, gj-cigtn-79, g-nrpt-79, k-ndot-80, k-mtpd-80, l-olbng-87, l-gdtan-86, ZZZ.

9496 H. Meijer and D. Rappaport. Minimum polygon covers of parallel line segments. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 324–327, 1990. [mr-mpcpl-90] *Cites:* cr-wim-41, gs-spscp-89, lmr-mpcil-90, t-p4-87, ZZZ.

9497 H. Meijer and D. Rappaport. Upper and lower bounds for the number of monotone crossing free Hamiltonian cycles from a set of points. *Ars Combin.*, 30:203–208, 1990. [mr-ulbnm-90]

9498 H. Meijer and S. Skiena. Reconstructing polygons from x-rays. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 381–386, 1993. [ms-rpxr-93] *Precedes:* ms-rpxr-96. *Cites:* by-psncp-89, cy-sp-87, es-pcpxr-88, f-hxpsm-83, f-xpps-83, g-sxpcb-83, g-xrp-92, gg-sdvpx-92, gm-hxp-80, g-beess-62, h-p2-63, h-irpfc-80, h-sict-83, l-rpp-88, lb-rpscu-91, n-rpoca-88, r-bfigm-17, rsfl-sudp-91, sk-ctnmx-78, s-gp-88, s-ckpps-90, s-irgp-92, ssw-pmapr-77, v-tpshp-86, ZZZ.

9499 H. Meijer and S. Skiena. Reconstructing polygons from x-rays. *Geom. Dedicata*, 61:191–204, 1996. [ms-rpxr-96] *Succeeds:* ms-rpxr-93.

H. Meijer. See also [378, 379, 413, 427, 428, 794, 795, 1738, 1739, 2309, 2310, 3478–3480, 4868, 5186, 5227, 7220, 8875, 8876, 9060, 9063–9065, 10933–10936].

J. Meijer. See also [429].

9500 J. L. Meijering. Interface area, edge length, and number of vertices in crystal aggregates with random nucleation. Research Report 8, Philips, 1953. [m-iaeln-53]

9501 A. M. J. Meijerink, H. A. M. de Brouwer, C. M. Mannaerts, and C. R. Valenzuela. *Introduction to the Use of Geographic Information Systems for Practical Hydrology*. Number 23 in ITC Publications. ITC, Enschede, 1994. [mbmv-iugis-94]

9502 A. Meir. A geometric problem involving the nearest neighbor algorithms. *Oper. Res. Lett.*, 6:289–291, 1987. [m-gpinn-87]

9503 A. Meir and J. W. Moon. On the altitude of nodes in random trees. *Cand. J. Math.*, 30:997–1015, 1978. [mm-anrt-78]

A. Meir. See also [2245, 7859].

9504 S. Meiser. On the construction of abstract Voronoi diagrams. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [m-cavd-89]

9505 S. Meiser. Point location in arrangements. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 71–84. Springer-Verlag, 1988. [m-pla-88] *Succeeds:* m-seavh-88. *Precedes:* m-plah-93. *Annote:* 4th Intern. Workshop Comput. Geom.

9506 S. Meiser. Point location in arrangements of hyperplanes. *Inform. Comput.*, 106:286–303, 1993. [m-plah-93] *Succeeds:* m-pla-88.

9507 S. Meiser. Suche in einem Arrangement von Hyperebenen. Report ??, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1988. [m-seavh-88] *Precedes:* m-pla-88.

9508 S. Meiser. *Zur Konstruktion abstrakter Voronoidiagramme.* Ph.D. thesis, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1993. [m-zkav-93] *Keywords:* doctoral thesis.

S. Meiser. See also [4038–4043, 8172–8175, 9449–9452].

M. Meißner. See also [1471].

9509 G. Meisters. Polygons have ears. *Amer. Math. Monthly*, 82:648–651, 1975. [m-phe-75] *Keywords:* two-dimensional, triangles, polygon triangulation.

9510 E. A. Melissaratos and D. L. Souvaine. Coping with inconsistencies: a new approach to produce quality triangulations of polygonal domains with holes. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 202–211, 1992. [ms-cinap-92] *Succeeds:* ms-cinap-91. *Cites:* bgr-ntp-88, b-pug-90, beg-pgmg-90, be-psntp-91, be-mgot-92i, ceghss-sdash-90, c-cdt-87, c-gqtm-89, etw-otama-90, ff-mrnti-, f-cfemg-72, j-fetcr-84, lg-gcvfm-85, ll-gdtpg-86, ms-cinap-91, s-qrhds-84, s-dasds-90, sf-afem-73, s-aagcf-88, t-brtgi-80, ys-mqafe-83, ZZZ.

9511 E. A. Melissaratos and D. L. Souvaine. Coping with inconsistencies: a new approach to produce quality triangulations of polygonal domains with holes for the finite element method. Report LCSR-TR-163, Lab. Comput. Sci. Res., Rutgers Univ., New Brunswick, NJ, 1991. [ms-cinap-91] *Keywords:* mesh generation, aspect ratio, quality triangulation, finite element method. *Precedes:* ms-cinap-92.

9512 E. A. Melissaratos and D. L. Souvaine. On solving geometric optimization problems using shortest paths. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 350–359, 1990. [ms-sgopu-90] *Precedes:* ms-sphsg-90. *Cites:* a-lncg-88, acy-macp-85, akmsw-gamsa-87, ap-nsmma-88, bddg-fep-85, cy-psppp-86, c-pop-86, cg-vippg-85, ck-plscc-89, d-paope-87, dko-fliet-87, ds-gmmmc-79, ds-cgcw-90, dsv-diss-88, f-fapct-85, gjpt-tsp-78, ghlst-ltavs-87, gs-ccrs-87, gs-pmgsc-85, h-ovgat-89, kl-fstcg-85, fm-tspep-84, l-tpfc-88, ms-sabcp-89, oamb-oafme-86, ol-mcp-81, s-cgcw-86, tv-otats-88, ZZZ.

9513 E. A. Melissaratos and D. L. Souvaine. Shortest paths help solve geometric optimization problems on planar regions. Report LCSR-TR-150, Lab. Comput. Sci. Res., Rutgers Univ., New Brunswick, NJ, 1990. [ms-sphsg-90] *Keywords:* design of algorithms, visibility, shortest paths, optimization, inscribed, circumscribed, separator, curved polygon, splinegon. *Succeeds:* ms-spvop-90, ms-sgopu-90.

9514 E. A. Melissaratos and D. L. Souvaine. Shortest paths, visibility, and optimization problems in planar curvilinear objects. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 337–342, 1990. [ms-spvop-90] *Precedes:* ms-sphsg-90. *Cites:* cg-vippg-85, ds-cgcw-90, dsv-diss-88, egs-oplms-86, gh-ospqs-87, ghlst-ltavs-87, h-ovgat-89, fm-tspep-84, ms-sgopu-90, s-cgcw-86, tv-tsp-87, ZZZ.

L. Melkemi. See also [9519].

9515 M. Melkemi. A-shapes and their derivatives. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 367–369, 1997. [m-astd-97] *Cites:* eks-sspp-83, mm-addp-95, m-cspps-96, m-asfps-96, ZZZ.

9516 M. Melkemi. A-shapes of a finite point set. Technical Report LIGIM-TR.02.96, LIGIM Université Claude Bernard Lyon, 1996. [m-asfps-96]

9517 M. Melkemi. Computing the shape of a planar point set. Technical Report LIGIM-TR.01.96, LIGIM Université Claude Bernard Lyon, 1996. Submitted to Pattern Recognition Journal. [m-cspps-96]

9518 Mahmoud Melkemi and Mourad Djebali. Computing the shape of a planar points set. In *Abstracts 15th European Workshop Comput. Geom.*, pages 69–71. INRIA Sophia-Antipolis, 1999. [md-cspps-99]

9519 M. Melkemi and L. Melkemi. An algorithm for detecting dot patterns. In R. A. Earnshaw and J. A. Vince, editors, *Computer Graphics*, pages 161–169. Academic Press, Leeds, UK, 1995. [mm-addp-95]

9520 A. Melkman. On-line construction of the convex hull of a simple polyline. *Inform. Process. Lett.*, 25:11–12, 1987. [m-olcch-87]

9521 A. Melkman. On the approximation of polygonal curves in the plane. Report ??, Dept. Math. Comput. Sci., Univ. Negev, 1985. [m-apcp-85]

9522 A. Melkman and J. O'Rourke. On polygonal chain approximation. In G. T. Toussaint, editor, *Computational Morphology*, pages 87–95. North-Holland, Amsterdam, Netherlands, 1988. [mo-pca-88] *Keywords:* approximation, circles.

9523 L. S. H. d. Mello. *Computer-Aided Mechanical Assembly Planning.* Kluwer Academic Publishers, Boston, 1991. [m-camap-91]

9524 T. W. Melnyk, O. Knop, and W. R. Smith. Extremal arrangements of points and unit charges on a sphere: equilibrium configurations revisited. *Can. J. Chem.*, ??, 1977. [mks-eapuc-77]

R. Melter. See also [13489].

R. Melville. See also [301].

9525 R. C. Melville. An implementation study of two algorithms for the minimum spanning circle problem. In G. T. Toussaint, editor, *Computational Geometry*, pages 267–294. North-Holland, Amsterdam, Netherlands, 1985. [m-istam-85]

9526 Z. A. Melzak. *Companion to concrete mathematics*, volume 2. John Wiley & Sons, New York, NY, 1976. [m-ccm-76]

9527 Z. A. Melzak. On the problem of Steiner. *Canad. Math. Bull.*, 4:143–148, 1961. [m-ps-61]

9528 Z. A. Melzak. Plane motion with curvature limitations. *J. Soc. Indust. Appl. Math.*, 9:422–432, 1961. [m-pmcl-61]

Z. A. Melzak. See also [3395].

R. Menard. See also [13036].

9529 Robert Mencl. Surface reconstruction from unorganized points in space. In *Abstracts 11th European Workshop Comput. Geom.*, pages 67–70. Universität Linz, 1995. [m-srups-95]

9530 B. Mendelson. *Introduction to Topology.* Allyn & Bacon, Boston, 1962. [m-it-62]

A. Mendelzon. See also [6705].

A. O. Mendelzon. See also [3510, 3511, 7461].

M. A. Mendez. See also [5321].

P. O. de Mendez. See also [5519–5523].

9531 X. Mendonca. Heuristics for planarization by vertex splitting, 1992. [m-hpvs-92] *Keywords:* graph drawing.

A. Meng. See also [5871, 5872].

9532 A. C.-C. Meng. Free-space modeling and geometric motion planning under unexpected obstacles. Technical Report, Texas Instruments Artificial Intelligence Lab, 1987. [m-fsmgm-87]

9533 A. C.-C. Meng. Free-space modeling and path planning under uncertainty for autonomous air robots. Manuscript, School of Operations Research and Industrial Engineering, Cornell University, ?? [m-fsmpp-??]

9534 K. Menger. Untersuchungen über allgemeine Metrik. *Math. Ann.*, 100:75–163, 1928. [m-uuam-28]

K. Menger. See also [2112].

I. Mengersen. See also [6677].

9535 A. Menn and A. K. Somani. An efficient sorting algorithm for the star graph interconnection network. In *Proc. Internat. Conf. Parallel Process.*, pages 1–8, August 1990. [ms-esasg-90]

P. Mennecke. See also [9333].

9536 J. Menon and B. Guo. Free-form modeling in bilateral brep and csg representation schemes. *Internat. J. Comput. Geom. Appl.*, 8:537–576, 1998. [mg-ffmbb-98]

J. Menon. See also [2048, 6451].

9537 J. P. Menon and D. M. Robinson. Advanced NC verification via massively parallel raycasting. *Manufact. Review*, 6(2):141–154, June 1993. [mr-anvmp-93]

9538 J. P. Menon and H. B. Voelcker. Toward a comprehensive formulation of NC verification as a mathematical and computational problem. *J. Design & Manufact.*, 3:263–277, 1993. [mv-tcfnv-93]

J. P. Menon. See also [4882].

H. Mercure. See also [8490].

Karl Merkley. See also [1662].

Jean-Pierre Merlet. See also [10833].

T. H. Merrett. See also [10293].

9539 M. L. Merriam. Parallel implementation of an algorithm for Delaunay triangulation. In *1st European Comput. Fluid Dynamics Conf.*, pages 907–912, September 1992. [m-piadt-92]

9540 R. D. Merrill. Representation of contours and regions for efficient computer search. *Commun. ACM*, 16:69–82, 1973. [m-rcrec-73]

B. Merriman. See also [13876].

Antonio Mesa. See also [5226].

9541 A. Mesa Henriquez. CONVY: an algorithm for the nonoverlapping covering of polygons by convex sets (Spanish English summary). *Investigación Oper.*, 6:79–94, 1985. [m-cancp-85]

9542 A. Mesa Henriquez. HODY: an algorithm for constructing the hodograph of convex polygons (Spanish English summary). *Investigación Oper.*, 6:95–110, 1985. [m-hachc-85]

9543 S. Meshkat, J. Ruppert, and H. Li. Three-dimensional unstructured grid generation based on Delaunay tetrahedralization. In *Proc. 3 Int. Conf. Numerical Grid Generation*, pages 841–851, June 1991. [mrl-tdugg-91]

9544 S. N. Meshkat and C. M. Sakkas. Voronoi diagram for multiply-connected polygonal domains II: implementation and application. *IBM J. Res. Develop.*, 31:373–381, 1987. [ms-vdmcp-87] *Keywords:* Voronoi diagram, polygonal domains, resistance networks, two-dimensional VLSI geometry, boundary representation.

S. N. Meshkat. See also [12437, 12438].

E. Messinger. See also [11447].

9545 E. B. Messinger. Automatic layout of large directed graphs. Technical Report 88-07-08, Department of Computer Science, University of Washington, 1988. [m-alldg-88] *Keywords:* graph drawing.

9546 E. B. Messinger, L. A. Rowe, and R. H. Henry. A divide-and-conquer algorithm for the automatic layout of large directed graphs. *IEEE Trans. Syst. Man Cybern.*, SMC-21(1):1–12, 1991. [mrh-dcaal-91] *Keywords:* graph drawing.

9547 P. T. Metaxas, G. E. Pantziou, and A. Symvonis. A note on parallel algorithms for optimal h-v drawings of binary trees. *Comput. Geom. Theory Appl.*, 9:145–158, 1998. [mps-anpao-98]

9548 P. T. Metaxas, G. E. Pantziou, and A. Symvonis. Parallel h-v drawings of binary trees. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 487–495. Springer-Verlag, 1994. [mps-phvdb-94] *Keywords:* graph drawing, trees.

N. Metelski. See also [9220].

9549 N. N. Metel'skii and V. S. Krikun. Optimal arrangement of isothetic blocks with respect to approximation criteria (in russian). *Doklady Akad. Nauk SSSR*, 317(2):320–323, 1991. [mk-oaibr-91] *Keywords:* generalized convexity, visibility, isothetic domain, $S-$convex hull. *Annote:* The S-convex hull for an isothetic domain is in fact the minimal externally isothetically visible hull. An $O(n \log n + r)$ time algorithm for computing the S-convex hull of an n-vertex isothetic domain is given, where r is the number of vertices of the hull.

N. N. Metel'skii. See also [1205].

N. N. Metelskij. See also [8271].

D. Metha. See also [7125].

G. Meunier. See also [3567].

M. Mevenkamp. See also [3865]

A. Meyer. See also [9335].

9550 F. Meyer auf der Heide. A polynomial time linear search algorithm for the n-dimensional knapsack problem. *J. ACM*, 31:668–676, 1984. [m-ptlsa-84] *Keywords:* NP-complete, knapsack, linear search algorithm, nonuniform algorithm. *Annote:* For every fixed n, there exists a linear search algorithm which solves the n-dimensional knapsack problem in $O(n^4 \log n)$ time.

9551 F. Meyer auf der Heide. Hashing stratefies for simulating shared memory on distributed memory machines. In *Parallel Architectures and Their Efficient Use: First Heinz Nixdorf Symposium*, volume 678 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1993. [m-hsssm-93]

F. Meyer auf der Heide. See also [1208, 1532, 4203, 4204, 4206, 4207, 7840].

C. Meyer. See also [11447].

E. F. Meyer, Jr. See also [1845].

P. R. Meyer. See also [8265].

U. Meyer. See also [3602, 3603].

W. Meyer. See also [2530].

9552 D. Meyers. Multiresolutional tiling. *Comput. Graph. Forum*, 13(5):325–340, December 1994. [m-mt-94]

9553 David Meyers, Shelley Skinner, and Kenneth Sloan. Surfaces from contours. *ACM Trans. Graph.*, 11(3):228–258, July 1992. [mss-sc-92] *Annote:* Makes triangulated mesh from contour slices. Breaks into four subproblems: correspondence (which contours to connect), tiling (how to connect), branching (what to do with branches), and fitting surface to the mesh. Interesting (to me) bit is branching – when two contours merge we must triangulate the polygon between them. Uses ear cutting to construct original triangulation and Delaunay flips to improve it. Also considers flips that encourage triangles that connect the contours to be merged.

9554 D. Meyers, S. Skinner, and K. Sloan. Surfaces from contours: the correspondence and branching problem. In *Proc. Graphics Interface '91*, pages 246–254, 1991. [mss-sccbp-91]

9555 Scott Meyers, Carolyn K. Duby, and Steven P. Reiss. Constraining the structure and style of object-oriented programs. *Proc. First Workshop on Principles and Practice of Constraint Programming*, ??, April 1993. [mdr-cssoo-93]

9556 Scott Meyers and Steven P. Reiss. An empirical study of multiple-view software development. *Software Engineering Notes*, 17(5):47–57, December 1992. [mr-esmvs-92]

S. Meyers. See also [4470, 8690, 11163].

H. Meyniel. See also [4471].

9557 P. G. Mezey. *J. Math. Chem.*, 8, 1991. [m--91]

9558 P. G. Mezey. Molecular surfaces. In K. B. Lipkowitz and D. B. Boyd, editors, *Reviews in Computational Chemistry*, volume 1. VCH Publishers, 1990. [m-ms-90]

9559 P. G. Mezey. *Shape in Chemistry: An Introduction to Molecular Shape and Topology*. VCH Publ., New York, 1993. [m-scims-93]

9560 P. G. Mezey. The t-hull approach to shape analysis. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 231–236, 1994. [m-thasa-94] *Cites:* eks-sspp-83, m–91, m-scims-93.

L. Mezzalira. See also [5218].

Z. Michalewicz. See also [2746].

Henri Michel. See also [2199].

C. Michelot. See also [4503].

9561 Dominique Michelucci. A quadratic non–standard arthmetic. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 123–128, 1997. [d-qnsa-97]

9562 D. Michelucci. Arithmetic isuues in geometric computations. In *Proc. 2nd Real Numbers and Computer Conf.*, pages 43–69, 1996. [m-aigc-96]

9563 D. Michelucci. *Les représentations par les frontiéres: quelques constructions; difficulteés rençonctrées.* Thèse de doctorat en sciences, École Nationale Supérieure des Mines de Saint-Étienne, 1987. [m-rfqcd-87] *Keywords:* doctoral thesis.

D. Michelucci. See also [1616, 8464].

9564 S. R. Middila and D. Zhou. Lower and upper bounds for the general junction routing problem. Report ACT-90, Coordinated Science Lab., Univ. of IL, May 1988. [mz-lubgj-88]

9565 S. R. Middila and D. Zhou. Routing in general junctions. *IEEE Trans. on CAD*, 8(11):1174–1184, November 1989. [mz-rgj-89]

A. Middleditch. See also [5060].

9566 A. E. Middleditch. Survey of numerical controller technology. Technical report, Univ. Rochester, Rochester, NY, 1973. Production Automation Project TR-1-D. [m-snct-73]

9567 A. E. Middleditch. The representation and manipulation of convex polygons. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 211–252. Springer-Verlag, Berlin, West Germany, 1988. [m-rmcp-88]

9568 A. E. Middleditch and K. H. Sears. Blend surfaces for set theoretic volume modeling systems. *Comput. Graph.*, 19(3):161–170, 1985. Proc. SIGGRAPH '85. [ms-bsstv-85a]

9569 A. E. Middleditch, T. W. Stacey, and S. B. Tor. Intersection algorithms for lines and circles. *ACM Trans. Graph.*, 8:25–40, 1989. [mst-ialc-89]

A. E. Middleditch. See also [12949].

9570 T. Midtbø. *Spatial Modelling by Delaunay Networks of Two and Three Dimensions*. Ph.D. thesis, Norvegian Institute of Technology, Trondheim, 1993. [m-smdnt-93] *Keywords:* doctoral thesis.

T. Mietzener. See also [8123].

Alexander A. Migdal. See also [318].

9571 M. Mignotte. *Mathematics for Computer Algebra*. Springer-Verlag, 1992. [m-mca-92]

M. Mihal. See also [3705].

9572 A. Mikheev, M. Nozik, and J. Rubinstein. Computation of offset curves by the huygens principle. *Comput. Graph. Forum*, 13(4):249–252, October 1994. [mnr-cochp-94]

9573 V. Milenkovic. Calculating approximate curve arrangements using rounded arithmetic. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 197–207, 1989. [m-cacau-89] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation. *Cites:* acm-aacad-88, acm-cad1b-84, acm-cad2a-84, c-qercf-75, cr-tlcra-88, em-sstcd-87, gy-frcg-86, hhk-tirgc-88, hhk-rsops-87, h-pargc-88, k-rmrs-89, kln-edtur-89, m-vigau-88a, m-vigau-88t, otu-nsga-87, r-paff-80, gss-egbra-89, ss-pmp2g-83, ss-ccsm-85, ss-pponp-88, s-aefsm-87, t-dmeag-51, y-gctsp-88, ZZZ.

9574 V. Milenkovic. Double precision geometry: A general technique for calculating line and segment intersections using rounded arithmetic. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 500–505, 1989. [m-dpggt-89] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation.

9575 Victor Milenkovic. Position-based physics: Animating and packing spheres inside polyhedra. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 79–84, 1995. [m-pbpap-95] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* computer graphics, simulation, physically-based modeling, linear programming, Minkowski sum, configuration space.

9576 Victor Milenkovic. Position-based physics: simulating the motion of many highly interacting spheres and polyhedra. In *Computer Graphics*, pages 129–136, 1996. Proc. SIGGRAPH '96. [m-pbpsm-96] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* computer graphics, animation, physically-based modeling, linear programming, Minkowski sum, configuration space.

9577 V. Milenkovic. Robust construction of the Voronoi diagram of a polyhedron. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 473–478, 1993. [m-rcvdp-93] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation. *Cites:* ck-acp-70, b-tends-67, cs-arscg-89, e-acg-87, f-smpst-90, f-savd-87, fm-nsala-91, ghms-apsml-91, hhk-tirgc-88, iss-nriac-92, l-knnvd-82, ld-gvdp-81, lm-cschu-90, m-vigau-88a, m-cacau-89, ms-saps-92, sh-cpp-75, si-cvd10-89, ls-ippvd-87, ls-pptmc-87, m-dpggt-89, ZZZ.

9578 V. Milenkovic. Robust polygon modeling. *Comput. Aided Design*, 25(9), 1993. [m-rpm-93] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* algorithms, polygons, geometric modeling.

9579 V. Milenkovic. Rotational polygon overlap minimization. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 334–343, 1997. [m-rpom-97] *Cites:* aaas-lpmpc-97, aas-mpcpp-92, a-peddf-89, ab-pptr-88, c-pcp-83, d-canpa-95, dm-cbspu-96, dm-mtcp1-97, dd-pp-92, d-tcpp-90, gc-cspum-93, gc-natpc-96, hss-cmpmi-84, l-canpt-94, lm-ccp-93, lm-csanp-95, m-tpcme-96, md-tpcme-95, m-mtcp2-97, m-pbpsm-96, sp-cppca-92, ZZZ.

9580 V. Milenkovic. Rounding face lattices in d dimensions. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 40–45, 1990. [m-rfldd-90] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation, geometric rounding. *Cites:* ZZZ.

9581 V. Milenkovic. Rounding face lattices in the plane. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 12, 1989. [m-rflp-89] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation, geometric rounding.

9582 V. Milenkovic. Translational polygon containment and minimal enclosure using linear programming based restriction. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 109–118, 1996. [m-tpcme-96] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* layout, packing, placement, nesting, concave, polygons, Minkowski sum, configuration space.

9583 V. Milenkovic. Verifiable implementations of geometric algorithms using finite precision arithmetic. Unpublished Manuscript, 1986. [m-vigau-86]

9584 V. Milenkovic. Verifiable implementations of geometric algorithms using finite precision arithmetic. In *International Workshop on Geometric Reasoning*, July 1986. [m-vigau-86i]

9585 V. Milenkovic. *Verifiable Implementations of Geometric Algorithms using Finite Precision Arithmetic*. Phd thesis, Carnegie Mellon University, 1988. [m-vigau-88p] *Keywords:* doctoral thesis, robust geometric computation. *Precedes:* m-vigau-88a.

9586 V. Milenkovic. Verifiable implementations of geometric algorithms using finite precision arithmetic. In D. Kapur and J. L. Mundy, editors, *Geometric Reasoning*. MIT Press, 1989. [m-vigau-89i]

9587 V. Milenkovic and K. Daniels. Translational polygon containment and minimal enclosure using geometric algorithms and mathematical programming. Technical Report 25-95, Center for Research in Computing Technology, Division of Applied Sciences, Harvard University, Cambridge, MA, 1995. [md-tpcme-95] *URL:* ftp://deas-ftp.harvard.edu/techreports/tr-1995.html. *Keywords:* packing, layout, nesting, placement, concave, polygons, linear programming, optimization, Minkowski sum, configuration space, overlap, subdivisions.

9588 V. Milenkovic, K. Daniels, and Z. Li. Automatic marker making. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 243–246, 1991. [mdl-amm-91] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* layout, nesting, placement, optimization.

9589 V. Milenkovic, K. Daniels, and Z. Li. Placement and compaction of nonconvex polygons for clothing manufacture. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 236–243, 1992. [mdl-pcnpc-92] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* concave, polygons, layout, nesting, packing, optimization, Minkowski sum, configuration space. *Cites:* dhks-isccd-90, g-ctfsr-86, grs-kfcg-83, kos-cmsrp-91i, ml-sipat-91, mdl-amm-91, s-iamm-82, tw-cmm-73, nh-aplpg-84, s-iamm-88, ZZZ.

9590 V. Milenkovic and V. Milenkovic. Rational orthogonal approximations to orthogonal matrices. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 485–490, 1993. [mm-roaom-93] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* geometric modeling, quaternion arithmetic, basis reduction, integer programming, exact arithmetic. *Precedes:* mm-roaom-97. *Cites:* cdr-rrmrg-92, c-sede-92, crss-igbra-91, e-sap-80, fw-eeacg-92, h-eq-69, kln-edtur-89, mn-fccrp-90a, m-rfldd-90, r-srsrf-77, lll-fprc-82, l-atngc-86, ls-gbra-92, m-rflp-89, s-qrm-78.

9591 V. Milenkovic and L. R. Nackman. Finding compact coordinate representations for polygons and polyhedra. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 244–252, 1990. [mn-fccrp-90i] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation. *Precedes:* mn-fccrp-90a. *Cites:* gj-cigtn-79, gps-crotr-89, h-gsm-89, m-rflp-89, mn-fccrp-90a, m-utcpc-89, s-fprgo-89, tt-pgelt-89, ZZZ.

9592 V. Milenkovic and L. R. Nackman. Finding compact coordinate representations for polygons and polyhedra. *IBM J. Res. Develop.*, 34(35):753–769, September 1990. [mn-fccrp-90a] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation. *Succeeds:* mn-fccrp-90i.

V. Milenkovic. See also [2843, 3725–3731, 5404, 8791–8795, 9590, 9601].

9593 Victor J. Milenkovic. Densest translational lattice packing of non-convex polygons. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 280–289, 2000. [m-dtlpn-00]

9594 Victor J. Milenkovic. Multiple translational containment, part ii: Exact algorithm. *Algorithmica*, 19(1–2):183–218, September 1997. [m-mtcp2-97]

9595 Victor J. Milenkovic. Practical methods for set operations on polygons using exact arithmetic. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 55–60, 1995. [m-pmsop-95] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation, shortest-path rounding, nonuniform grids, geometric modeling, geometric rounding.

9596 Victor J. Milenkovic. Rotational polygon overlap minimization and compaction. *Comput. Geom. Theory Appl.*, 10:305–318, 1998. [m-rpomc-98] *Succeeds:* m-rpom-97.

9597 V. J. Milenkovic. Shortest path geometric rounding. *Algorithmica*, 27(1):57–86, 2000. [m-spgr-00]

9598 V. J. Milenkovic. Verifiable implementations of geometric algorithms using finite precision arithmetic. Technical Report CMU-CS-88-168, Department of Computer Science, Carnegie Mellon University, Pittsburgh, PA15213, July 1988. [m-vigau-88t] *Precedes:* m-vigau-88a.

9599 V. J. Milenkovic. Verifiable implementations of geometric algorithms using finite precision arithmetic. *Artif. Intell.*, 37:377–401, 1988. [m-vigau-88a] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* robust geometric computation. *Succeeds:* m-vigau-88p, m-vigau-88t.

9600 V. J. Milenkovic and Z. Li. Constructing strongly convex hulls using exact or rounded arithmetic. In *Proc. ACM-SIAM Sympos. Discrete Algorithms*, 1989. [ml-csche-89]

9601 V. J. Milenkovic and V. Milenkovic. Rational orthogonal approximations to orthogonal matrices. *Comput. Geom. Theory Appl.*, 7:25–35, 1997. [mm-roaom-97] *URL:* http://www.cs.miami.edu/~vjm/papers.html. *Keywords:* geometric modeling, quaternion arithmetic, basis reduction, integer programming, exact arithmetic. *Succeeds:* mm-roaom-93.

V. J. Milenkovic. See also [3732,3733].

N. Miles. See also [5060].

9602 R. E. Miles. A synopsis of Poisson flats in Euclidean spaces. *J. Armenian Acad. Sci.*, ??:??, 1970. [m-spfes-70]

9603 R. E. Miles. A wide class of distributions in geometric probability. *Ann. Math. Statist.*, 35:1407–1415, 1964. [m-wcdgp-64]

9604 R. E. Miles. Asymptotic global proximity probabilities for 2 bivariate n-sample (abstract). *Ann. Math. Statist.*, 39:1160, 1968. [m-agpp2-68]

9605 R. E. Miles. Isotropic random simplices. *Adv. Appl. Probab.*, 3:353–382, 1971. [m-irs-71]

9606 R. E. Miles. On the homogenous planar Poisson point-process. *Math. Biosci.*, 6:85–127, 1970. [m-hpppp-70]

9607 R. E. Miles. Random points, sets and tessellations on the surface of a sphere. *Sankhyā: The Indian Journal of Statistics: Series A*, 33:145–174, 1971. [m-rpsts-71]

9608 R. E. Miles. Random polygons determined by random lines in a plane. *Proc. National Academy of Sciences*, 52:901–907 and 1157–1160, 1964. [m-rpdrl-64]

9609 R. E. Miles. *Random polytopes: the generalization to n dimensions of the intervals of a Poisson process.* Ph.D. thesis, Cambridge Univ., Cambridge, England, 1961. [m-rpgnd-61] *Keywords:* doctoral thesis.

9610 R. E. Miles. Solution to problem 67-15 (Probability distribution of a network of triangles). *SIAM Rev.*, 11:399–402, 1969. [m-sp671-69]

9611 R. E. Miles. The random division of space. *Suppl. Adv. Appl. Prob.*, ??:243–266, 1972. [m-rds-72]

R. E. Miles. See also [6928].

Miller. See also [4845].

9612 D. Miller. A spatial representation system for mobile robots. *Proc. IEEE Internat. Conf. Robot. Autom.*, ??:122–127, 1985. [m-srsmr-85]

9613 D. Miller, D. Atkinson, B. Wilcox, and A. Mishkin. pages 111–114. Pergamon Press, 1989. [mawm-ancmr-89]

E. W. Miller. See also [4511].

9614 G. Miller. Goal-directed animation of tubular articulated figures or how snakes play golf. In N. A. Badler, B. A. Barsky, and D. Zeltzer, editors, *Making Them Move: Mechanics, Control, and Animation of Articulated Figures*, pages 233–241. Morgan Kaufmann Publishers, San Mateo, CA, 1991. [m-gdata-91]

9615 G. Miller. Separating a planar graph using a simple cycle. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, 1984. [m-spgus-84]

G. Miller. See also [663, 5618, 6264].

9616 G. L. Miller. An additivity theorem for the genus of a graph. Manuscript, Dept. Math., Massachusetts Inst. Tech., Cambridge, MA, 1982. [m-atgg-82]

9617 G. L. Miller. Finding small simple cycle separators for 2-connected planar graphs. Report 85-336, Dept. Comput. Sci., Univ. Southern California, Los Angeles, CA, 1985. [m-fsscs-85]

9618 G. L. Miller. Finding small simple cycle separators for 2-connected planar graphs. *J. Comput. Syst. Sci.*, 32(3):265–279, 1986. [m-fsscs-86]

9619 G. L. Miller. Isomorphism testing for graphs of bounded genus. In *Proc. 12th Annu. ACM Sympos. Theory Comput.*, pages 225–235, 1980. [m-itgbg-80]

9620 G. L. Miller and J. H. Reif. Parallel tree contraction and its applications. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 478–489, 1985. [mr-ptcia-85] *Keywords:* graph drawing.

9621 G. L. Miller, D. Talmor, S.-H. Teng, and N. Walkington. A Delaunay based numerical method for three dimensions: generation, formulation, and partition. In *Proc. 27th Annu. ACM Sympos. Theory Comput.*, pages 683–692, 1995. [mttw-dbnmt-95]

9622 Gary L. Miller, Dafna Talmor, Shang-Hua Teng, Noel Walkington, and Han Wang. Control volume meshes using sphere packing: generation, refinement and coarsening. In *Proc. 5th International Meshing Roundtable*, pages 47–61, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [mttww-cvmus-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

9623 G. L. Miller and S.-H. Teng. Center points and point divisions. Manuscript, School of Comput. Sci., Carnegie Mellon Univ., Pittsburgh, PA, 1990. [mt-cppd-90]

9624 G. L. Miller, S.-H. Teng, W. Thurston, and S. A. Vavasis. Automatic mesh partitioning. In *Proc. of the 1992 Workshop on Sparse Matrix Computations: Graph Theory Issues and Algorithms*. Institute for Mathematics and its Applications, 1992. To appear. [mttv-amp-92]

9625 G. L. Miller, S.-H. Teng, W. Thurston, and S. A. Vavasis. Geometric separators for finite element meshes. *SIAM J. Sci. Comput.*, ??, 1995. Submitted. [mttv-gsfem-95]

9626 G. L. Miller, S.-H. Teng, W. Thurston, and S. A. Vavasis. Separators for sphere-packings and nearest neighbor graphs. *J. ACM*, 44:1–29, 1997. [mttv-sspnn-97]

9627 G. L. Miller, S.-H. Teng, and S. A. Vavasis. An unified geometric approach to graph separators. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 538–547, 1991. [mtv-ugags-91]

9628 Gary L. Miller and William Thurston. Separators in two and three dimensions. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, pages 300–309, 1990. [mt-sttd-90]

9629 G. L. Miller and S. A. Vavasis. An unified geometric approach to graph separators. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 331–336, 1991. [mv-dgs-91]

9630 G. L. Miller and S. A. Vavasis. Density graphs and separators. Technical Report 90-1169, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1990. [mv-dgs-90]

G. L. Miller. See also [666, 2075, 2076, 2081, 3361, 3362, 4965, 5254, 5829, 5957, 8469, 8470, 11104].

J. Miller. See also [2319, 7615].

9631 J. R. Miller. Geometric approaches to nonplanar quadric surface intersection curves. *ACM Trans. Graph.*, 6:274–307, 1987. [m-ganqs-87]

9632 N. Miller and M. Sharir. Efficient randomized algorithms for constructing the union of fat triangles and of pseudo-disks. Manuscript, ??, 1991. [ms-eracu-91]

9633 N. Miller and Micha Sharir. Efficient randomized algorithms for constructing the union of fat triangles and pseudodiscs. Unpublished manuscript. [nm-eracu-] *Precedes:* ms-ericu-91.

9634 N. Miller and M. Sharir. Efficient randomized incremental construction of the union of fat triangles. manuscript, 1991. [ms-ericu-91] *Succeeds:* nm-eracu-.

N. Miller. See also [9296].

9635 R. Miller. *Pyramid Computer Algorithms*. PhD thesis, State Univ. New York, Binghamton, 1985. [m-pca-85] *Keywords:* doctoral thesis.

9636 R. Miller and Q. F. Stout. Computational geometry on a mesh connected computer. In *Proc. Internat. Conf. Parallel Process.*, pages 66–73, 1984. [ms-cgmcc-84]

9637 R. Miller and Q. F. Stout. Computing convexity properties of images on a pyramid computer. *Algorithmica*, 6:658–684, 1991. [ms-ccpip-91] *Succeeds:* ms-pcadg-85.

9638 R. Miller and Q. F. Stout. Convexity algorithms for pyramid computers. In *Proc. Internat. Conf. Parallel Process.*, pages 177–184, 1984. [ms-capc-84]

9639 R. Miller and Q. F. Stout. Data movement techniques for the pyramid computer. Submitted. [ms-dmtpc-]

9640 R. Miller and Q. F. Stout. Efficient parallel convex hull algorithms. *IEEE Trans. Comput.*, C-37(12):1605–1618, 1988. [ms-epcha-88]

9641 R. Miller and Q. F. Stout. Geometric algorithms for digitized pictures on a mesh-connected computer. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-7:216–228, 1985. [ms-gadpm-85]

9642 R. Miller and Q. F. Stout. Intersection problems on a mesh-connected computer. Report ??, Dept. Comput. Sci., State Univ. New York Buffalo, Buffalo, NY, 1985. [ms-ipmcc-85]

9643 R. Miller and Q. F. Stout. Mesh computer algorithms for computational geometry. Report 86-18, Dept. Comput. Sci., State Univ. New York Buffalo, Buffalo, NY, 1986. [ms-mcacg-86]

9644 R. Miller and Q. F. Stout. Mesh computer algorithms for computational geometry. *IEEE Trans. Comput.*, 38(3):321–340, March 1989. [ms-mcacg-89]

9645 R. Miller and Q. F. Stout. Pyramid computer algorithms for determining geometric properties of images. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 263–271, 1985. [ms-pcadg-85] *Precedes:* ms-ccpip-91. *Cites:* as-mpabu-84, d-fpacp-80, m-pca-85, ms-capc-84, ms-dmtpc-, ms-cgmcc-84, ms-gadpm-85, ns-fccco-80, pu-mipa-82, r-dsls-74, s-pcpbg-81, s-ppmpe-, s-dslpc-82, s-smsft-83, s-pcscp-85, s-mpcig-85, t-pthpi-82, tk-scvmp-80, tk-smcpc-77, u-lrcnt-72, u-cav-84, vk-mnecd-82, ZZZ.

Russ Miller. See also [1026, 1027, 2356–2362, 3917].

9646 Robert D. Miller. Computing the area of a spherical polygon. In Paul Heckbert, editor, *Graphics Gems IV*, pages 132–137. Academic Press, Boston, MA, 1994. [m-casp-94] *Keywords:* cartography, Earth. *Annote:* Gives the formulas needed to find the area of a polygon on a sphere that is bounded by great circle arcs. This is useful in cartography. Contains C code.

R. E. Miller. See also [8896].

9647 S. W. Miller and S. S. Iyengar. Efficient polygon overlay for dense map image data sets. Manuscript, ??, ?? [mi-epodm-??]

9648 W. Miller. *Symmetry Groups and their Application*. Academic Press, 1972. [m-sgta-72]

9649 W. Miller and C. Wrathall. *Software for Roundoff Analysis of Matrix Algorithms*. Academic Press, New York, NY, 1980. [mw-srama-80]

9650 Z. Miller and J. B. Orlin. NP-completeness for minimizing maximum edge length in grid embeddings. *J. Algorithms*, 6:10–16, 1985. [mo-ncmme-85] *Keywords:* graph drawing.

9651 Kenneth C. Millett. Knotting of regular polygons in 3-space. *J. Knot Theory Ramifications*, 3(3):263–278, 1994. [m-krp3s-94]

9652 W. Mills. Some Davenport–Schinzel sequences. In R. Thomas and H. Williams, editors, *Congressus Numer. IX: Proc. 3rd Manitoba Conf. on Numer. Math. and Computing*, pages 307–313, 1973. [m-sdss-73]

J. Millson. See also [7784].

P. Milne. See also [2526].

W. J. Milne. See also [814].

9653 J. W. Milnor. Hyperbolic geometry: the first 150 years. *Bull. Amer. Math. Soc.*, 6(1):9–24, 1982. [m-hgf15-82]

9654 John W. Milnor. *Morse Theory*. Princeton University Press, Princeton, NJ, 1963. [m-mt-63]

9655 J. W. Milnor. On the Betti numbers of real algebraic varieties. *Proc. Amer. Math. Soc.*, 15:275–280, 1964. [m-bnrav-64]

T. Milo. See also [7461].

9656 L. S. Milor and V. Visvanathan. Preliminary studies on analog fault signature calculation. Manuscript in preparation, 1986. [mv-psafs-86]

L. S. Milor. See also [13257].

R. F. Milsom. See also [3382].

9657 P. B. Miltersen, S. Sairam, J. S. Vitter, and R. Tamassia. Complexity models for incremental computation. *Theoret. Comput. Sci.*, 130:203–236, 1994. [msvt-cmic-94] *Keywords:* dynamic computation, complexity theory. *Succeeds:* svt-ctaic-93.

Peter Bro Miltersen. See also [671].

9658 Lai Mingwu and Steven E. Benzley. An improved sweeping method for generating all hexahedral finite element meshes. In *Proc. 5th International Meshing Roundtable*, pages 217–225, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [mb-ismga-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

Lai Mingwu. See also [13512].

9659 H. Minkowski. Allgemeine Lehrsätze über die konvexen Polyeder. *Nachr. Ges. Wiss. Göttingen*, ??:198–219, 1897. [m-aludk-97]

9660 H. Minkowski. Volumen und Oberflächen. *Math. Ann.*, 57:447–495, 1903. [m-vuo-03]

9661 M. Minoux. *Mathematical programming-theory and algorithms*. John Wiley & Sons, Chichester, UK, 1986. [m-mpta-86]

M. Minoux. See also [3575].

G. J. Minty. See also [8137].

9662 Darka Mioc, François Anton, and Christopher M. Gold. An algorithm for the dynamic construction and maintenance of additively weighted Voronoi diagrams. In *Abstracts 14th European Workshop Comput. Geom.*, pages 117–119. Universitat Polytènica de Catalunya, Barcelona, 1998. [mag-adcma-98]

Darka Mioc. See also [703].

W. L. Miranker. See also [8398, 8399].

9663 A. Mirante and N. Weingarten. The radial sweep algorithm for constructing triangulated irreguler networks. *IEEE Comput. Graph. Appl.*, ??:11–21, May 1982. [mw-rsact-82] *Annote:* Triangulation of a set of point. Selects an internal point and joins it to all other points and then completes triangulation by proceeding around the boundary. Triangulation is improved by switchings picking the shorter diagonal.

9664 P. B. Mirchandani and R. L. Francis, editors. John Wiley & Sons, 1990. [mf-dlt-90] *Keywords:* facility location.

P. B. Mirchandani. See also [6636].

V. Mirelli. See also [6177].

9665 K. Miriyala, S. W. Hornick, and R. Tamassia. An incremental approach to aesthetic graph layout. In *Proc. Internat. Workshop on Computer-Aided Software Engineering*, 1993. [mht-iaagl-93]

K. Miriyala. See also [9053].

9666 C. Mirolo. Convex minimization on a grid and applications. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 314–319, 1994. [m-cmga-94] *Cites:* c-cdfdi-90, c-cdmp-86, cd-icott-87, dk-fdpi-83, dk-dsppu-90, dhks-isccd-90, egs-oplms-86, gf-cdgco-90, gw-dadpi-91, mp-smsra-89, ny-pcmeo-83, sk-ccmpc-92, ssk-cdmpp-93, m-pacdc-94, ZZZ.

9667 C. Mirolo. Polylogarithmic algorithms for collision detection based on convex minimization. Master's thesis, Univ. di Udine, January 1994. Dip. di Matematica e Informatica. [m-pacdc-94] *Keywords:* master thesis.

9668 C. Mirolo and E. Pagello. A solid modeling system for robot action planning. *IEEE Comput. Graph. Appl.*, 9(1):55–69, 1989. [mp-smsra-89]

E. V. Mironenko. See also [5717].

9669 B. Mirtich. Fast and accurate computation of polyhedral mass properties. *J. Graphics Tools*, 1(2):31–50, 1996. [m-facpm-96]

9670 B. Mirtich. Hybrid simulation: Combining constraints and impulses. In *Workshop on Simulation and Interaction in Virtual Environments*, pages 153–158. Office of Naval Research, July 1995. [m-hscci-95]

9671 B. Mirtich. V-Clip: Fast and robust polyhedral collision detection. Technical Report TR97-05, MERL, 201 Broadway, Cambridge, MA 02139, USA, July 1997. [m-vfrpc-97] *Annote:* URL: http://www.merl.com/reports/TR97-05/index.html; submitted to ACM ToG. *Abstract:* This paper presents the Voronoi-clip, or V-clip, collision detection algorithm for polyhedral objects specified by a boundary representation. V-clip tracks the closest pair of features between convex polyhedra, using an approach reminiscent of the Lin-Canny closest features algorithm. V-clip is an improvement over the latter in several respects. Coding complexity is reduced, and robustness is significantly improved; the implementation has no numerical tolerances and does not exhibit cycling problems. The algorithm also handles penetrating polyhedra, making it useful for nonconvex polyhedral collision detection. This paper presents the theoretical principles of V-clip, and gives a pseudocode description of the algorithm. It also documents various tests that compare V-clip, Lin-Canny, and the Enhanced Gilbert-Johnson-Keerthi algorithm, a simplex-based algorithm that is widely used for the same application. The results show V-clip to be a strong contender in this field, comparing favorably with the other algorithms in most of the tests, in terms of both performance and robustness.

From the V-Clip Collision Detection WWW page:

V-Clip is a low-level collision detection algorithm. The basic operation provided to the application is that of performing a collision check between two objects. The decisions of when to perform the checks between which object pairs are left to the application. In particular, the V-Clip library does not include facilities for higher level collision check culling, using bounding boxes or spheres, for example. If this is required, consider writing one yourself, or consider using a complete collision detection package such as I-Collide or V-Collide.

V-Clip is designed for objects that are bounded by closed surfaces, and not utterly nonconvex. If you need to detect collisions within polygon soup or between intricately intertwined objects, there are better alternatives: consider using Rapid.

9672 B. Mirtich. V-clip: Fast and robust polyhedral collision detection. *ACM Trans. Graph.*, 17(3):177–208, July 1998. [m-vcfrp-98] *Succeeds:* m-vfrpc-97.

9673 B. Mirtich and J. Canny. Impulse-based dynamic simulation. In K. Goldberg, D. Halperin, J.-C. Latombe, and R. Wilson, editors, *The Algorithmic Foundations of Robotics*. A. K. Peters, Wellesley, MA, 1995. [mc-ibds-95]

9674 B. Mirtich and J. Canny. Impulse-based simulation of rigid bodies. In *Symposium on Interactive 3D Graphics*. ACM Press, 1995. [mc-ibsrb-95]

9675 Brian Mirtich and John Canny. Testing control systems through impulse-based simulation. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V5–V6, 1996. [mc-tcsti-96] *Cites:* f-crdua-83, g-cbnnn-94, hwbo-aha-95, l-ecdar-93, mz-dsall-90, m-gdata-91, m-hscci-95, mc-ibds-95, mc-ibsrb-95, o-plfs-92, rh-adll-91, r-fhsdb-87, s-evc-94, tt-afplp-94, ZZZ.

9676 Brian Mirtich and John Canny. Using skeletons for nonholonomic path planning among obstacles. In *Proc. 9th IEEE Internat. Conf. Robot. Autom.*, pages 2533–2540, 1992. [mc-usnpp-92]

9677 A. Mirzaian. Circumscribing polygon of disjoint line segments. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 319–323, 1990. [m-cpdls-90] *Cites:* agss-ltacv-89, gt-ltafm-88, g-eadch-72, ms-fmapp-89, r-cscsl-87, rit-cscsl-90, ZZZ.

9678 A. Mirzaian. Hamiltonian triangulations and circumscribing polygons of disjoint line segments. *Comput. Geom. Theory Appl.*, 2(1):15–30, 1992. [m-htcpd-92]

9679 Andy Mirzaian. Minimum weight Euclidean matching and weighted relative neighborhood graphs. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 506–517. Springer-Verlag, 1993. [m-mwemw-93]

9680 A. Mirzaian. Triangulating simple polygons: pseudo-triangulations. Technical Report CS-88-12, Dept. Comput. Sci., York Univ., Toronto, ON, September 1988. [m-tsppt-88] *Annote:* “We propose the new concept of *pseudo-triangulation*, a generalized version of triangulation, in which the member triangles need not all have the same orientation. In this paper we explore some combinatorial and topological properties of pseudo-triangulations.”.

9681 A. Mirzaian, C. A. Wang, and Y.-F. Xu. On stable line segments in triangulations. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 62–67, 1996. [mwx-slst-96]

A. Mirzaian. See also [3978, 4325, 13894].

E. F. Mishchenko. See also [10838].

A. Mishkin. See also [9613].

9682 B. Mishra. Computational real algebraic geometry. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 29, pages 537–558. CRC Press LLC, Boca Raton, FL, 1997. [m-crag-97]

9683 B. Mishra. Workholding: Analysis and planning. In *Proc. IEEE/RSJ Internat. Conf. Intell. Robots Syst.*, July 1991. [m-wap-91]

9684 B. Mishra, J. T. Schwartz, and Micha Sharir. On the existence and synthesis of multifinger positive grips. *Algorithmica*, 2:541–558, 1987. [mss-esmpg-87] *Keywords:* robot grasping, convex hull.

9685 B. Mishra and N. Silver. Some discussion of static gripping and its stabiliy. *IEEE Trans. Syst. Man Cybern.*, 19(4), 1989. [ms-sdsgi-89]

9686 B. Mishra and C. K. Yap. Notes on Gröbner bases. Technical Report 257, Dept. Comput. Sci., New York. Univ., New York, NY, September 1986. [my-ngb-86]

B. Mishra. See also [4461, 5724, 8071–8073, 12847].

A. Misra. See also [900].

9687 J. Misra and D. Gries. Finding repeated elements. *Sc. Comp. Prog.*, 2:143–152, 1982. [mg-fre-82]

9688 K. Misue, Peter Eades, W. Lai, and K. Sugiyama. Layout adjustment and the mental map. *J. Visual Lang. Comput.*, 6(2):183–210, 1995. [mels-lamm-95]

K. Misue. See also [4578, 12635–12637].

9689 Curtis R. Mitchell, Gary S. Hufford, and Mahesh M. Athavale. Automated semi-structured prismatic grids for brush seals analysis. In *Proc. 4th International Meshing Roundtable*, pages 205–217, Albuquerque, NM, 1995. Sandia National Laboratories. [mha-asspg-95]

D. Mitchell. See also [4267].

9690 D. P. Mitchell. Spectrally optimal sampling for distribution ray tracing. *Comput. Graph.*, 25(4):157–162, 1991. Proc. SIGGRAPH '91. [m-sosdr-91]

9691 F. Mitchell. A comparisom of adaptive refinement techniques for elliptic problems. Report UIUCDCS-R-87-1375, Dept. Comput. Sci., Univ. Illinois, Urbana-Champaign, IL, 1987. [m-carte-87]

9692 F. Mitchell. Unified multilevel adaptive finite element methods for elliptic problems. Report UIUCDCS-R-88-1446, Dept. Comput. Sci., Univ. Illinois, Urbana-Champaign, IL, 1988. [m-umafe-88]

9693 J. Mitchell. Algorithmic computer vision. manuscript, The Probing Paradigm, November 1990. Workshop on Geometric Probing and Computer Vision. [m-acvpp-90]

9694 Joseph Mitchell. Approximation algorithms for geometric optimization problems. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 229–232, 1997. [m-aagop-97]

J. Mitchell. See also [754, 1404].

9695 Joseph S. B. Mitchell. A new algorithm for shortest paths among obstacles in the plane. Technical Report 832, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, October 1988. [m-naspo-88]

9696 Joseph S. B. Mitchell. A new algorithm for shortest paths among obstacles in the plane. *Ann. Math. Artif. Intell.*, 3:83–106, 1991. [m-naspo-91] *Keywords:* shortest paths, distance, continuous Dijkstra, visibility.

9697 Joseph S. B. Mitchell. Algorithmic approaches to optimal route planning. In *Proc. SPIE Conference on Mobile Robots*, page ??, November 1990. [m-aaorp-90] *Keywords:* shortest paths, visibility graphs, weighted regions.

9698 J. S. B. Mitchell. An algorithmic approach to some problems in terrain navigation. In *International Workshop on Geometric Reasoning*, June 1986. [m-aaspt-86]

9699 Joseph S. B. Mitchell. An algorithmic approach to some problems in terrain navigation. *Artif. Intell.*, 37:171–201, 1988. [m-aaspt-88] *Keywords:* path planning, geodesic distance, shortest paths, continuous Dijkstra. *Precedes:* m-aaspt-89.

9700 Joseph S. B. Mitchell. An algorithmic approach to some problems in terrain navigation. In D. Kapur and J. Mundy, editors, *Geometric Reasoning*. MIT Press, Cambridge, MA, 1989. [m-aaspt-89] *Keywords:* path planning, geodesic distance, shortest paths, continuous Dijkstra. *Succeeds:* m-aaspt-88.

9701 Joseph S. B. Mitchell. An algorithmic approach to some problems in terrain navigation. In S. Sitharama Iyengar and Alberto Elfes, editors, *Autonomous Mobile Robots: Perception, Mapping, and Navigation*, pages 408–427. IEEE Computer Society Press, Los Alamitos, CA, 1991. [m-aaspt-91]

9702 Joseph S. B. Mitchell. An autonomous vehicle navigation algorithm. In *Proc. SPIE Applications of Artificial Intelligence*, volume 485, pages 153–158, 1984. [m-avna-84]

9703 Joseph S. B. Mitchell. An efficient algorithm for minimum link distance paths among obstacles in the plane. Manuscript, Cornell Univ., 1989. [m-eamld-89]

9704 Joseph S. B. Mitchell. An optimal algorithm for shortest rectilinear paths among obstacles. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 22, 1989. [m-oasrp-89] *Keywords:* shortest paths, two-dimensional, distance, L_1 metric, continuous Dijkstra, plane-sweep, range search.

9705 Joseph S. B. Mitchell. Approximation algorithms for geometric separation problems. Technical report, Department of Applied Mathematics, SUNY Stony Brook, NY, July 1993. [m-aagsp-93] *URL:* http://ams.sunysb.edu/\~{}jsbm/jsbm.html.

9706 J. S. B. Mitchell. Computational geometry methods for virtual reality. Manuscript, Department of Applied Mathematics, SUNY Stony Brook, 1993. [m-cgmvr-93]

9707 Joseph S. B. Mitchell. Euclidean shortest paths among polygonal obstacles in the plane. Technical Report, University at Stony Brook, 1994. [m-esppo-94] *Precedes:* kmm-eaesp-97. *Annote:* Gives an $O(n + h^2 \log n)$ algorithm for shortest paths.

9708 Joseph S. B. Mitchell. Geometric shortest paths and network optimization. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 633–701. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [m-gspno-00] *Annote:* Chapter 15 of su-hcg-00.

9709 Joseph S. B. Mitchell. Guillotine subdivisions approximate polygonal subdivisions: A simple new method for the geometric k-MST problem. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 402–408, 1996. [m-gsaps-96] *Keywords:* k-MST, approximations, rectangular subdivisions, dynamic programming, red-blue separation, minimum spanning tree. *Precedes:* mbcv-cfaag-98.

9710 Joseph S. B. Mitchell. Guillotine subdivisions approximate polygonal subdivisions: A simple polynomial-time approximation scheme for geometric TSP, k-MST, and related problems. *SIAM J. Comput.*, 28:1298–1309, 1999. [m-gsaps-99] *URL:* http://ams.sunysb.edu/~jsbm/jsbm.html.

9711 Joseph S. B. Mitchell. Guillotine subdivisions approximate polygonal subdivisions: Part II – A simple polynomial-time approximation scheme for geometric TSP, k-MST, and related problems. Manuscript, University at Stony Brook, 1996. [m-gsaps-96t] *URL:* http://ams.sunysb.edu/~jsbm/jsbm.html. *Precedes:* m-gsaps-98.

9712 Joseph S. B. Mitchell. Guillotine subdivisions approximate polygonal subdivisions: Part III – Faster polynomial-time approximation schemes for geometric network optimization. Manuscript, University at Stony Brook, 1997. [m-gsaps-97] *URL:* http://ams.sunysb.edu/~jsbm/jsbm.html. *Comments:* Appears also as part of [9717] in CCCG'97.

9713 Joseph S. B. Mitchell. L_1 shortest paths among polygonal obstacles in the plane. *Algorithmica*, 8:55–88, 1992. [m-lsppo-92] *Keywords:* shortest paths, distance, L_1 metric, continuous Dijkstra, plane-sweep, range search. *Succeeds:* m-srpo-87.

9714 Joseph S. B. Mitchell. On computing a single face in an arrangement of line segments. Manuscript, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, July 1990. [m-csfal-90] *Keywords:* arrangements, divide-and-conquer.

9715 Joseph S. B. Mitchell. On maximum flows in polyhedral domains. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 341–351, 1988. [m-mfpd-88] *Precedes:* m-mfpd-90. *Cites:* aaghi-vpses-85, ckv-rsptp-87, ek-tiaen-72, g-namfp-87, gmmn-pp0wr-88, gt-namfp-86, h-ipnf-69, i-smp-79, is-mfpn-79, k-eccs-79, l-matps-82, m-psp-86, m-aaspt-86, m-spozc-87, m-srpo-87t, mmp-dgp-87, mp-wrp-85, p-spm-86, rs-spesp-85, s-mftd-83, y-oavds-87, ZZZ.

9716 Joseph S. B. Mitchell. On maximum flows in polyhedral domains. *J. Comput. Syst. Sci.*, 40:88–123, 1990. [m-mfpd-90] *Succeeds:* m-mfpd-88.

9717 Joseph S. B. Mitchell. On some applications of computational geometry in manufacturing and virtual environments. In M. C. Lin and D. Manocha, editors, *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, volume 1148 of *Lecture Notes Comput. Sci.*, pages 37–40. Springer-Verlag, 1996. [m-sacgm-96] *Annote:* invited lecture.

9718 J. S. B. Mitchell. On the maximum concealment problem. Technical report, Dept. Oper. Res., Cornell Univ., Ithaca, NY, ?? In preparation. [m-mcp-]

9719 Joseph S. B. Mitchell. *Planning shortest paths*. Ph.D. thesis, Stanford Univ., Stanford, CA, 1986. [m-psp-86] *Keywords:* doctoral thesis, motion planning, path planning, geodesic distance, shortest paths, Voronoi diagrams, plane-sweep, continuous Dijkstra. *Comments:* UMI AAC87-00791, 143 pp.

9720 Joseph S. B. Mitchell. Shortest paths among obstacles in the plane. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 308–317, 1993. [m-spop-93] *Precedes:* m-spop-96. *Cites:* a-rsoas-89, aaghi-vdp-86, c-asdii-88, cegghss-rspug-91, csw-qoubs-90, ch-spp-90, cj-sersi-91, gmmn-pp0wr-90, gm-osacv-91, km-eaesp-88, k-eccs-79, l-prp-78, l-prp-78, m-rsehc-92, m-apcad-83, m-lsppo-92, m-oasrp-89, m-mfpd-90, m-naspo-91, mmp-dgp-87, mp-wrpfs-91, ow-nmcvg-88, rs-spesp-85, ss-spps-86, w-cvgnl-85, ZZZ.

9721 Joseph S. B. Mitchell. Shortest paths among obstacles in the plane. *Internat. J. Comput. Geom. Appl.*, 6:309–332, 1996. [m-spop-96] *Keywords:* shortest paths, geodesic paths, continuous Dijkstra method. *Succeeds:* m-spop-93.

9722 Joseph S. B. Mitchell. Shortest paths among obstacles, zero-cost regions, and "roads". Technical Report 764, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, 1987. [m-spozc-87] *Keywords:* path planning, shortest paths, Voronoi diagrams, continuous Dijkstra.

9723 Joseph S. B. Mitchell. Shortest paths and networks. Technical Report, University at Stony Brook, 1996. [m-spn-96] *Annote:* A survey chapter written for the Handbook of Computational Geometry. This version is somewhat expanded, with all references, etc.

9724 Joseph S. B. Mitchell. Shortest paths and networks. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 24, pages 445–466. CRC Press LLC, Boca Raton, FL, 1997. [m-spn-97]

9725 Joseph S. B. Mitchell. Shortest paths in the plane in the presence of obstacles. Manuscript, Dept. Operations Research, Stanford Univ., Stanford, CA, 1984. [m-spppo-84]

9726 Joseph S. B. Mitchell. Shortest rectilinear paths among obstacles. In *Proc. 1st Internat. Conf. Indust. Applied Math.*, pages 39–84, 1987. [m-srpo-87] *Keywords:* shortest paths, distance, L_1 metric, continuous Dijkstra, plane-sweep, range search. *Precedes:* m-lsppo-92.

9727 Joseph S. B. Mitchell. Shortest rectilinear paths among obstacles in the plane. Technical Report 739, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, April 1987. [m-srpo-87t]

9728 Joseph S. B. Mitchell, A. Blum, P. Chalasani, and S. Vempala. A constant-factor approximation algorithm for the geometric k-MST problem in the plane. *SIAM J. Comput.*, 28:771–781, 1998. [mbcv-cfaag-98] *URL:* http://ams.sunysb.edu/\~{}jsbm/jsbm.html. *Succeeds:* m-gsaps-96.

9729 J. S. B. Mitchell, D. M. Mount, and C. H. Papadimitriou. The discrete geodesic problem. Technical Report, Dept. of Operations Research, Stanford Univ., Stanford, CA, 1985. [mmp-dgp-85]

9730 Joseph S. B. Mitchell, D. M. Mount, and C. H. Papadimitriou. The discrete geodesic problem. *SIAM J. Comput.*, 16:647–668, 1987. [mmp-dgp-87] *Keywords:* path planning, geodesic distance, shortest paths, polyhedra, Voronoi diagrams, continuous Dijkstra.

9731 Joseph S. B. Mitchell, D. M. Mount, and Subhash Suri. Query-sensitive ray shooting. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 359–368, 1994. [mms-qsrs-94] *Keywords:* ray shooting, octrees, quadtress, simple cover complexity. *Precedes:* mms-qsrs-97. *Cites:* a-dapal-89, amnsw-oaann-94, b-acpqh-93, beg-pgmg-90, ck-dmdps-92, cegghss-rspug-91, cg-vippg-85, cj-sersi-91, c-racpq-88, hs-parss-93, hb-atdis-87, m-cgmvr-93, mv-qmgtd-92i, m-smga-92, oss-slspt-90, s-dasds-90, v-oaann-89, ZZZ.

9732 Joseph S. B. Mitchell, D. M. Mount, and Subhash Suri. Query-sensitive ray shooting. *Internat. J. Comput. Geom. Appl.*, 7(4):317–347, August 1997. [mms-qsrs-97] *Keywords:* ray shooting, octrees, quadtress, simple cover complexity. *Succeeds:* mms-qsrs-94. *Annote:* Special issue devoted to SoCG'94.

9733 J. S. B. Mitchell and J. O'Rourke. Computational geometry column 42. *Internat. J. Comput. Geom. Appl.*, ??(??):??–??, 2001. Also in *SIGACT News* 32(3):63-72 (2001), Issue 120. [mo-cgc42-01] *Annote:* A compendium of thirty previously published open problems in computational geometry is presented.

9734 Joseph S. B. Mitchell and C. H. Papadimitriou. Planning shortest paths. In *SIAM Conf. Geometric Modelling & Robotics*, page ??, 1985. [mp-psp-85] *Keywords:* motion planning, path planning, geodesic distance, shortest paths, Voronoi diagrams, plane-sweep, continuous Dijkstra.

9735 J. S. B. Mitchell and C. H. Papadimitriou. The weighted region problem. Technical Report, Dept. Oper. Res., Stanford Univ., Stanford, CA, 1985. [mp-wrp-85]

9736 J. S. B. Mitchell and C. H. Papadimitriou. The weighted region problem. Technical Report, Dept. of Operations Research, Stanford Univ., Stanford, CA, 1986. [mp-wrp-86]

9737 Joseph S. B. Mitchell and C. H. Papadimitriou. The weighted region problem. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 30–38, 1987. [mp-wrp-87] *Keywords:* path planning, geodesic distance, shortest paths, Voronoi diagrams, continuous Dijkstra. *Precedes:* mp-wrpfs-91. *Cites:* d-ntpcg-59, gs-pms-, j-spivt1-80, km-psptv-84, l-prp-78, lp-esppr-84, m-psp-86, mp-psp-85, mp-wrp-86, mmp-dgp-85, qfp-dsarn-85, rs-spesp-85, ss-spps-86, ZZZ.

9738 Joseph S. B. Mitchell and C. H. Papadimitriou. The weighted region problem: finding shortest paths through a weighted planar subdivision. *J. ACM*, 38:18–73, 1991. [mp-wrpfs-91] *Keywords:* weighted, path planning, geodesic distance, shortest paths, Voronoi diagrams, continuous Dijkstra. *Succeeds:* mp-wrp-87.

9739 Joseph S. B. Mitchell, D. W. Payton, and D. M. Keirsey. Planning and reasoning for autonomous vehicle control. *Internat. J. Intell. Syst.*, II:129–198, 1987. [mpk-pravc-87]

9740 Joseph S. B. Mitchell, C. Piatko, and Esther M. Arkin. Computing a shortest k-link path in a polygon. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 573–582, 1992. [mpa-csklp-92]

9741 Joseph S. B. Mitchell, Günter Rote, Gopalakrishnan Sundaram, and G. Woeginger. Counting convex polygons in planar point sets. *Inform. Process. Lett.*, 56:191–194, 1995. [mrsw-ccppp-95] *Keywords:* convexity, combinatorics. *Cites:* rwzw-cksck-91, rw-cckgp-92, eorw-fmakg-92. *Abstract:* Given a set S of n points in the plane, we compute in time $O(n^3)$ the total number of convex polygons whose vertices are a subset of S. We give an $O(mn^3)$ algorithm for computing the number of convex k-gons with vertices in S, for all values $k = 3, \ldots, m$.

9742 Joseph S. B. Mitchell, Günter Rote, and G. Woeginger. Minimum-link paths among obstacles in the plane. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 63–72, 1990. [mrw-mlpop-90] *Precedes:* mrw-mlpop-92. *Cites:* a-idaac-89, cr-nlbtr-87, ce-oails-88t, eghsssw-irals-88, egs-cmfal-88, gm-osacv-87, hs-ndssg-86, km-eaesp-88, k-ealdp-89, m-eamld-89, mw-dmvg-89, rw-cmlps-89, so-wcoac-86, s-ltaml-86, ZZZ.

9743 Joseph S. B. Mitchell, Günter Rote, and G. Woeginger. Minimum-link paths among obstacles in the plane. *Algorithmica*, 8:431–459, 1992. [mrw-mlpop-92] *Keywords:* link distance, arrangements, visibility graphs. *Succeeds:* mrw-mlpop-90.

9744 J. S. B. Mitchell and S. Suri. A survey of computational geometry. manuscript. [ms-scg-] *Precedes:* ms-scg-95.

9745 Joseph S. B. Mitchell and Subhash Suri. A survey of computational geometry. In M. O. Ball, T. L. Magnanti, C. L. Monma, and G. L. Nemhauser, editors, *Network Models*, Handbook of Operations Research/Management Science, pages 425–479. Elsevier Science, Amsterdam, 1995. [ms-scg-95] *Succeeds:* ms-scg-.

9746 Joseph S. B. Mitchell and Subhash Suri. Separation and approximation of polyhedral objects. *Comput. Geom. Theory Appl.*, 5:95–114, 1995. [ms-sapo-95] *Keywords:* surface approximation, mesh simplification, set cover, greedy algorithms. *Succeeds:* ms-saps-92.

9747 Joseph S. B. Mitchell and Subhash Suri. Separation and approximation of polyhedral surfaces. Technical Report 974, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, 1991. [ms-saps-91] *Precedes:* ms-saps-92.

9748 Joseph S. B. Mitchell and Subhash Suri. Separation and approximation of polyhedral surfaces. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 296–306, 1992. [ms-saps-92] *Succeeds:* ms-saps-91. *Precedes:* ms-sapo-95.

9749 Joseph S. B. Mitchell and Emo Welzl. Dynamic methods for visibility graphs. Manuscript, Cornell Univ., 1989. [mw-dmvg-89]

9750 Joseph S. B. Mitchell and Emo Welzl. Dynamically maintaining a visibility graph under insertions of new obstacles. Technical report, Operations Research, Cornell University, 1990. [mw-dmvgi-90]

9751 Joseph S. B. Mitchell and E. L. Wynters. Finding optimal bipartitions of points and polygons. Technical Report 948, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, 1990. [mw-fobpp-90] *Keywords:* bipartitioning, separation, visibility, clustering, convex hulls. *Precedes:* mw-fobpp-91.

9752 Joseph S. B. Mitchell and E. L. Wynters. Finding optimal bipartitions of points and polygons. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 202–213. Springer-Verlag, 1991. [mw-fobpp-91] *Keywords:* bipartitioning, separation, visibility, clustering, convex hulls. *Succeeds:* mw-fobpp-90. *Precedes:* mw-fobpp-95.

9753 Joseph S. B. Mitchell and E. L. Wynters. Finding optimal bipartitions of points and polygons. Technical Report, Applied Math, SUNY Stony Brook, 1995. [mw-fobpp-95] *Keywords:* bipartitioning, separation, visibility, clustering, convex hulls. *Succeeds:* mw-fobpp-91. *Annote:* Full version of [9752], which also corrects a misstatement made in the proceedings version.

9754 J. S. B. Mitchell and E. L. Wynters. Optimal motion of covisible points among obstacles in the plane. Technical Report 896, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, March 1990. [mw-omcpo-90t] *Keywords:* path planning, visibility, shortest paths, multiple agents. *Precedes:* mw-omcpo-90i.

9755 J. S. B. Mitchell and E. L. Wynters. Optimal motion of covisible points among obstacles in the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 116–119, 1990. [mw-omcpo-90i] *Keywords:* path planning, shortest paths, multiple agents, visibility. *Succeeds:* mw-omcpo-90t. *Cites:* aaghi-vdp-86, cr-nlbtr-87, d-ntpcg-59, ft-fhtu-84, gm-osacv-87t, irwy-spls-89, km-eaesp-88, l-prp-78, lp-esppr-84, lw-apcfp-79, m-naspo-88, mw-omcpo-90t, ps-oplmo-86, ss-spps-86, w-cvgnl-85, ZZZ.

9756 Joseph S. B. Mitchell and E. L. Wynters. Watchman routes for multiple guards. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 126–129, 1991. [mw-wrmg-91] *Keywords:* watchman routes, shortest paths, multiple agents, art galleries, dynamic programming. *Cites:* c-tsplt-90t, c-ctpg-75, cn-owr-86, cn-owr-88, cn-wrsp-87, f-spcwt-78, gj-cigtn-79, k-mchco-86, ll-ccagp-86, nw-owrsp-90m, o-agta-87, mow-vv-87, ZZZ.

Joseph S. B. Mitchell. See also [459, 756–775, 779–783, 788–803, 3175–3177, 3960, 4483, 5187–5189, 5588–5590, 5871, 5872, 6178, 6179, 6401, 6402, 6407, 6408, 6769–6772, 6801–6805, 7776, 7982, 7983, 8030, 8199, 9243–9245, 11673, 11674, 12208, 12210–12212, 12327, 12772, 12773, 13719, 13724, 13896, 13897].

9757 S. Mitchell. A characterization of the quadrilateral meshes of a surface which admit a compatible hexahedral mesh of the enclosed volume. In *Proc. 5th Workshop Comput. Geom.*, 1995. [m-cqmsw-95]

9758 S. Mitchell. Approximating the maxmin angle covering triangulation. *Comput. Geom. Theory Appl.*, 7:93–111, 1997. [m-amact-97]

9759 S. Mitchell. Choosing corners of rectangles for mapped meshing. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 87–93, 1997. [m-ccrmm-97] *Cites:* bbehlmstwobclpwwt-cmgev-94, mmw-mrbfm-96, ta-femci-93, achkm-ecmcp-89, m-cqmsw-96, t-hdp-93, e-lchmg-96, ZZZ.

9760 S. Mitchell. Finding a covering triangulation whose maximum angle is provably small. *Internat. J. Comput. Geom. Appl.*, 7:5–20, 1997. [m-fctma-97] *Succeeds:* mp-fctma-93.

9761 Scott Mitchell and Timothy J. Tautges. Pillowing doublets: Refining a mesh to ensure that faces share at most one edge. In *Proc. 4th International Meshing Roundtable*, pages 231–241, Albuquerque, NM, 1995. Sandia National Laboratories. [mt-pdrme-95]

Scott Mitchell. See also [1798–1800, 1822, 12835].

9762 Scott A. Mitchell. A characterization of the quadrilateral meshes of a surface which admit a compatible hexahedral mesh of the enclosed volume. In *Proc. 13th Sympos. Theoret. Aspects Comput. Sci.*, volume 1046 of *Lecture Notes Comput. Sci.*, pages 465–476. Springer-Verlag, 1996. [m-cqmsw-96]

9763 Scott A. Mitchell. Approximating the MaxMin-angel covering triangulation. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 36–41, 1993. [m-amact-93] *Cites:* a-vdsfg-91, ba-acfem-76, b-ct-93, bde-tpwla-95, beemt-eiot-92i, be-mgot-92i, beg-pgmg-90, c-gqtm-89, etw-otama-90, f-vddt-92, l-scsi-77, m-mgpqb-93, mp-fctma-93, mv-qmgtd-92i, r-nsaq2-92, s-udzvd-28, ZZZ.

9764 S. A. Mitchell. Cardinality bounds for triangulations with bounded minimum angle. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 326–331, 1994. [m-cbtbm-94] *Cites:* beg-pgmg-90, e-acg-87, g-dpnet-84, m-adtad-92, m-amact-93, m-mgpqb-93, mv-qmgtd-92i, r-nsaq2-93, ZZZ.

9765 S. A. Mitchell. Finding a covering triangulation whose maximum angle is provably small. In *Proc. 17th Australian Annu. Comput. Sci. Conf.*, volume 16, pages 55–64, 1994. [m-fctwm-94] *Succeeds:* mp-fctma-93.

9766 S. A. Mitchell. *Mesh generation with provable quality bounds.* PhD thesis, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1993. Technical Report CS-TR-92-1327. [m-mgpqb-93] *Keywords:* doctoral thesis.

9767 Scott A. Mitchell. Refining a triangulation of a planar straight-line graph to eliminate large angles. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 583–591, 1993. [m-rtpsl-93]

9768 S. A. Mitchell and J. K. Park. Finding a covering triangulation whose maximum angle is provably small. manuscript, Sandia National Laboratories, 1993. [mp-fctma-93] *Precedes:* m-fctwm-94, m-fctma-97.

9769 Scott A. Mitchell and Stephen A. Vavasis. An aspect ratio bound for triangulating a d-grid cut by a hyperplace. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 48–57, 1996. [mv-arbtd-96] *Cites:* bgr-ntp-88, bcer-dbmgh-95, beg-pgmg-90, bmr-lsntp-94, c-gqtm-89, d-q3d-94, fsg-famg3-94, j-nspde-87, ms-cinap-92, mv-qmgtd-92i, mv-qmghd-95, t-cfpa-76, v-qfemg-95, v-sfepw-93, ZZZ.

9770 S. A. Mitchell and S. A. Vavasis. Quality mesh generation in higher dimensions. 1995. [mv-qmghd-95]

9771 S. A. Mitchell and S. A. Vavasis. Quality mesh generation in higher dimensions. *SIAM J. Comput.*, 29:1334–1370, 2000. [mv-qmghd-00]

9772 S. A. Mitchell and S. A. Vavasis. Quality mesh generation in three dimensions. Technical Report TR 92-1267, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, February 1992. [mv-qmgtd-92t] *Precedes:* mv-qmgtd-92i.

9773 S. A. Mitchell and S. A. Vavasis. Quality mesh generation in three dimensions. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 212–221, 1992. [mv-qmgtd-92i] *Succeeds:* mv-qmgtd-92t. *Cites:* ba-acfem-76, bde-tpwla-92, beemt-eiot-92t, beg-pgmg-90, be-mgot-92t, csw-cds2d-88, cp-tncp-89, c-cdt-89, c-gqtm-89, e-acg-87, ht-nggcf-86, mtv-ugags-91, mt-sttd-90, mv-dgs-90, m-carte-87, m-umafe-88, mw-mamg-90, ps-cgi-85, ZZZ.

S. A. Mitchell. See also [1661, 9980, 12836].

9774 Pinaki Mitra. Answering Gabriel neighbour queries. *Pattern Recogn. Lett.*, 13:557–560, 1992. [m-agnq-92]

9775 P. Mitra and B. Bhattacharya. Efficient approximate shortest-path queries among isothetic rectangular obstacles. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 518–529. Springer-Verlag, 1993. [mb-easpq-93]

9776 P. Mitra and S. C. Nandy. Efficient computation of rectilinear geodesic Voronoi neighbor in presence of obstacles. In *Proc. 16th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1180 of *Lecture Notes Comput. Sci.*, pages 76–87. Springer-Verlag, 1996. [mn-ecrgv-96] *Precedes:* mn-ecrgv-98.

9777 P. Mitra and S. C. Nandy. Efficient computation of rectilinear geodesic Voronoi neighbor in the presence of obstacles. *J. Algorithms*, 28:315–338, 1998. [mn-ecrgv-98] *Succeeds:* mn-ecrgv-96.

P. Mitra. See also [4869, 4870].

9778 D. S. Mitrinovic. *Analytic inequalities.* Springer-Verlag, 1970. [m-ai-70]

J. Mittleman. See also [1843].

9779 J. D. Mittleman and D. L. Souvaine. Shortest area-bisector of a convex polygon. Technical Report LCSR-TR-139, Rutgers Univ., New Brunswick, NJ, November 1989. [ms-sabcp-89]

Wayne Mitzner. See also [10776].

9780 Youzou Miyadera, Koushi Anzai, Hiroshi Unno, and Takeo Yaku. Depth-first layout algorithm for trees. *Inform. Process. Lett.*, 66:187–194, 1998. [mauy-dflat-98] *Keywords:* tree-structured diagram, tidy drawing problem, tree layout, hichart.

T. Miyazawa. See also [3124].

9781 R. Mizoguchi and O. Kakusho. Hierarchical clustering algorithms based on k-nearest neighbors. In *4th International Joint Conference on Pattern Recognition*, pages 314–316, 1978. [mk-hcabk-78]

T. Mizoguchi. See also [7570].

9782 M. E. Mnev. The Universality theorems on the classification problem of configuration varieties and convex polytopes varieties. In O. Y. Viro, editor, *Topology and Geometry - Rohlin Seminar*, volume 1346 of *Lecture Notes Math.*, pages 527–544. Springer-Verlag, 1989. [m-utcpc-89]

9783 N. E. Mnëv. The universality theorem on the oriented matroid stratification of the space of real matrices. In J. E. Goodman, R. Pollack, and W. Steiger, editors, *Discrete and Computational Geometry: Papers from the DIMACS Special Year*, volume 6 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 237–243. American Mathematical Society, Association for Computing Machinery, 1991. [m-utoms-91]

9784 N. E. Mnëv and Jürgen Richter-Gebert. Two constructions of oriented matroids with disconnected extention space. *Discrete Comput. Geom.*, 10:271–285, 1993. [mr-tcomd-93]

9785 N. E. Mnëv and G. M. Ziegler. Combinatorial models for the finite-dimensional Grassmannians. *Discrete Comput. Geom.*, 10:241–250, 1993. [mz-cmfdg-93]

9786 B. Mobasseri. Impact of uncertain terrain models on the weighted region problem. In *Proceedings of the SPIE, The International Society for Optical Engineering*, volume 1388, pages 270–277, 1991. [m-iutmw-91] *Keywords:* Uncertain terrain models, Weighted region problem, Obstacle avoidance problem, Surface patches, Traversability indices, Probability distribution, Decision basis, Search. *Abstract:* Outdoor navigation is characterized by motions through regions of varied terrain. The weighted region problem, (WRP), is a generalization of the obstacle avoidance problem with 1/ infinity cost structure. By assigning indices to surface patches proportional to their traversability, WRP seeks a path with the shortest length, in the weighted sense. This work generalizes the WRP paradigm by stating that the traversability indices may only be available through a probability distribution.

The reported indices, therefore, are not an exact description of the terrain, rather, they are an observation drawn from their respective distributions. Development of a decision basis directing the search is an objective of the paper.

9787 B. G. Mobasseri. Decision analytic approach to the weighted region problem. In *Proceedings of the SPIE, The International Society for Optical Engineering*, volume 1293, pages 438–445, 1990. [m-daawr-90] *Abstract:* The weighted region problem is a generalization of the obstacle avoidance problem. By defining a multiple-valued index, terrain patches can be distinguished on the basis of their traversability. The paper generalizes the weighted region problem by defining a probability distribution over the traversability indices hence reflecting one's uncertainty as to the true terrain condition. Path planning under uncertain traversability requires a proper framework for decision making. This paper proposes a formal approach to this problem using elements of decision analysis and states-of-the-world paradigm. The uncertainty over the traversability index, path length and planner's preferences defined over the consequence space are all encapsulated into a single decision making step.

9788 B. G. Mobasseri. Path planning under uncertainty from a decision analytic perspective. In *Proc. IEEE International Symposium on Intelligent Control*, pages 556–560, September 1989. [m-ppuda-89]

John Mocenigo. See also [1423].

J. W. Modestino. See also [5146].

F. Modugno. See also [11104].

9789 S. Moen. Drawing dynamic trees. *IEEE Softw.*, 7:21–28, 1990. [m-ddt-90] *Keywords:* graph drawing.

T. T. Moh. See also [1275, 1276].

9790 S. Mohaban. Ray shooting amidst spheres in three dimensions. M. Sc. thesis, Tel Aviv University, June 1993. [m-rsast-93] *Keywords:* master thesis.

9791 S. Mohaban and M. Sharir. Ray shooting amidst spheres in three dimensions. Manuscript, ??, 1993. [ms-rsast-93]

9792 S. Mohaban and Micha Sharir. Ray shooting amidst spheres in three dimensions and related problems. *SIAM J. Comput.*, 26:654–674, 1997. [ms-rsast-97]

9793 Ali Mohades and Mohammadreza Razzazi. Reaching a point with a linkage in two attached squares. In *Abstracts 17th European Workshop Comput. Geom.*, pages 162–165. Freie Universität Berlin, 2001. [mr-rplta-01]

B. Mohammadi. See also [2748].

Osama A. Mohammed. See also [5753].

9794 J. Mohan. A study in parallel computation: the travelling salesman problem. Technical Report CMU-CS-82-136(R), Dept. Computer Science, Carnegie-Mellon University, Pittsburgh, USA, 1983. [m-spcts-83]

9795 B. Mohar. A polynomial time circle packing algorithm. *Discrete Math.*, 117:257–263, 1993. [m-ptcpa-93]

9796 B. Mohar. Branched coverings. *Discrete Comput. Geom.*, 3:339–348, 1988. [m-bc-88]

9797 B. Mohar. Nonorientable genus of nearly complete bipartite graphs. *Discrete Comput. Geom.*, 3:137–146, 1988. [m-ngncb-88]

9798 B. Mohar and P. Rosenstiehl. A flow approach to upward drawings of toroidal maps. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 33–39. Springer-Verlag, 1995. [mr-faudt-95] *Keywords:* graph drawing, topological graph theory.

9799 Bojan Mohar and Carsten Thomassen. *Graphs on Surfaces.* Johns Hopkins University Press, Baltimore, 2001. [mt-gs-01]

B. Mohar. See also [6304].

9800 R. H. Möhring. Computationally tractable classes of ordered sets. In I. Rival, editor, *Algorithms and Order*, pages 105–193. 1989. [m-ctcos-89]

9801 Rolf H. Möhring and Matthias Müller-Hannemann. Complexity and modeling aspects of mesh refinement into quadrilaterals. In *Proc. 8th Annu. Internat. Sympos. Algorithms Comput.*, volume 1350 of *Lecture Notes Comput. Sci.*, pages 263–272. Springer-Verlag, 1997. [mm-cmamr-97]

9802 R. H. Möhring, M. Müller-Hannemann, and K. Weihe. Mesh refinement via bidirected flows: Modeling, complexity and computational results. Report 520, Dept. Math., Technische Universität Berlin, Berlin, Germany, 1996. [mmw-mrbfm-96] *URL:* http://www.math.TU-Berlin.DE/~mhannema/projecteng.html.

9803 Rolf H. Möhring, Matthias Müller-Hannemann, and Karsten Weihe. Using network flows for surface modeling. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 350–359, 1995. [mmw-unfsm-95] *Keywords:* mesh generation, CAD, surface refinement.

R. H. Möhring. See also [6537].

9804 E. Moise. *Geometric Topology in Dimensions 2 and 3.* Springer-Verlag, New York, 1977. [m-gtd23-77]

9805 D. Moitra. *Efficient parallel algorithms for covering binary images.* Ph.D. thesis, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1989. Technical Report TR-89-1013. [m-epacb-89] *Keywords:* doctoral thesis.

9806 D. Moitra. Finding a minimal cover for binary images: an optimal parallel algorithm. *Algorithmica*, 6:624–657, 1991. [m-fmcbi-91]

C. Moler. See also [5389].

C. B. Moler. See also [4378].

H. Moller. See also [9840].

9807 T. Möller and B. Trumbore. Fast, minimum storage ray-triangle intersection. *J. Graphics Tools*, 2(1):21–28, 1997. [mt-fmsrt-97]

Torsten Möller. See also [2741].

J. C. Molluzzo. See also [2709].

9808 J. Molnár. Über den zweidimensionalen topologischen Satz von Helly. *Mat. Lapok*, 8:108–114, 1957. Hungarian with German and Russian Summaries. [m-udzts-57]

S. Molnar. See also [5637, 6030].

Micheal B. Monagan. See also [2855–2857].

O. Monga. See also [1198].

9809 B. Monien, F. Ramme, and H. Salmen. A parallel simulated annealing algorithm for generating 3D layouts of undirected graphs. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 396–408. Springer-Verlag, 1996. [mrs-psaaf-96] *Keywords:* graph drawing, 3D, straight-line.

9810 L. Monier. Combinatorial solutions of multidimensional divide-and-conquer recurrences. *J. Algorithms*, 1:60–74, 1980. [m-csmdc-80]

L. Monier. See also [3007, 3008].

9811 C. Monma, M. Paterson, Subhash Suri, and F. Yao. Computing Euclidean maximum spanning trees. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 241–251, 1988. [mpsy-cemst-88] *Precedes:* mpsy-cemst-90. *Cites:* abky-cabmm-88, akmsw-gamsa-87, a-dp-86, c-hsh-85, e-ga-79, gbt-srtgp-84, gh-hmstp-85, j-hcs-67, j-nccog-82, l-fnvda-80, ps-cgi-85, s-cg-78, ss-pnt-63, tb-gatuf-81, y-cmstk-82, j-snnms-78, ZZZ.

9812 C. Monma, M. Paterson, Subhash Suri, and F. Yao. Computing Euclidean maximum spanning trees. *Algorithmica*, 5:407–419, 1990. [mpsy-cemst-90] *Succeeds:* mpsy-cemst-88.

9813 C. Monma and Subhash Suri. Partitioning points and graphs to minimize the maximum or the sum of diameters. In *Graph Theory, Combinatorics and Applications (Proc. 6th Internat. Conf. Theory Appl. Graphs)*, volume 2, pages 899–912, New York, NY, 1991. John Wiley & Sons. [ms-ppgmm-91]

9814 C. Monma and Subhash Suri. Some embedding and topological problems concerning minimum spanning trees. Technical report, December 1990. [ms-setpc-90]

9815 C. Monma and Subhash Suri. Transitions in geometric minimum spanning trees. Technical Memorandum, Bell Communications Research, 1991. [ms-tgmst-91t]

9816 C. Monma and Subhash Suri. Transitions in geometric minimum spanning trees. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 239–249, 1991. [ms-tgmst-91] *Keywords:* proximity, minimum spanning tree. *Cites:* abky-cabmm-88, a-sdcgp-85, ccpy-nubns-86, cd-vdbcd-85, c-oarn-85, d-mstia-86, e-acg-87, ggt-fpmfa-89, g-bpstp-79, g-saco-80, g-pccpp-83, gi-psmmc-89, gm-fagpm-89, ms-tgmst-91t, pq-samcn-82, pr-cardf-78, st-dsdt-83, t-dsna-83, y-cmstk-82, z-gtmdg-71, ZZZ.

9817 C. Monma and Subhash Suri. Transitions in geometric minimum spanning trees. *Discrete Comput. Geom.*, 8:265–293, 1992. [ms-tgmst-92] *Keywords:* proximity, minimum spanning tree.

C. Monma. See also [3865]

C. L. Monma. See also [2001–2003, 6068, 6069].

9818 C. T. Monma, B. Reed, and W. T. Trotter. Threshold tolerance graphs. *J. Graph Theory*, 12:343–362, 1988. [mrt-ttg-88]

9819 M. S. Monmonier. *Computer Assisted Cartography: Principles and Prospects.* Prentice Hall, Englewood Cliffs, 1982. [m-cacpp-82]

9820 M. S. Monmonier. *How to Lie with Maps.* The Chicago University Press, Chicago, 1991. [m-hlm-91]

9821 Paul-André Monney. Planar geometric reasoning with the theory of hints. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 141–159. Springer-Verlag, 1991. [m-pgrth-91] *Annote:* 7th Intern. Workshop Comput. Geom.

M. Montague. See also [4175].

Mark H. Montague. See also [4185, 4186].

9822 J. L. Montaña, J. E. Morais, and Luis M. Pardo. Lower bounds for arithmetic networks II: Sum of Betti numbers. In *Abstracts 10th European Workshop Comput. Geom.*, pages 45–48. Universidad de Cantabria, Santander, 1994. [mmp-lban2-94]

9823 U. Montanari. A method for obtaining skeletons using a quasi-Euclidean distance. *J. ACM*, 15:600–624, 1968. [m-mosuq-68]

9824 U. Montanari. Continuous skeletons from digitized images. *J. ACM*, 16:534–549, 1969. [m-csdi-69]

U. Montanari. See also [5715].

9825 Claudio Montani, Riccardo Scateni, and Roberto Scopigno. A modified look-up table for implicit disambiguation of Marching Cubes. *Visual Comput.*, 10:353–355, 1994. [mss-mluti-94]

C. Montani. See also [3312–3317].

A. Montanvert. See also [2868].

9826 Y. Montaudin and W. Tilles. The Cayley method in computer aided geometric design. *Comput. Aided Geom. Design*, 1:309–326, 1984. [mt-cmcag-84]

9827 L. Montejano and J. Urrutia. Immobilizing figures on the plane. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 46–49, 1991. [mu-ifp-91] *Cites:* csu-is-90, mnp-ogp-89, mnp-gg-90, k-dwp-90, o-cgc9-90, ZZZ.

9828 A. Monti and A. Roncato. On the complexity of some reachability problems. In *Proc. 2nd Italian Conference on Algorithms and Complexity*, 1994. [mr-csrp-94]

9829 J. Montroll. *Origami for the Enthusiast.* Dover, 1979. [m-oe-79]

9830 J. Montroll. *Prehistoric Origami.* Dover Publications, 1989. [m-po-89]

9831 J. Montroll and R. J. Lang. *Origami Sea Life.* Dover, 1990. [ml-osl-90]

9832 D. Montuno and A. Fournier. A linear time triangulation for simple polygons. Report ??, Dept. Comput. Sci., Univ. Toronto, Toronto, ON, 1985. [mf-lttsp-85]

9833 D. Montuno and A. Fournier. Detecting intersections among star polygons. Technical report, University of Toronto, 1982. [mf-diasp-82]

D. Y. Montuno. See also [5434].

H. P. Moon. See also [3234–3236].

J. W. Moon. See also [9503].

9834 D. Moore and J. Warren. Multidimensional adaptive mesh generation. Technical Report 90-106, Dept. Comput. Sci., Rice Univ., 1990. [mw-mamg-90]

9835 D. W. Moore. *Simplicial mesh generation with applications.* Ph.D. thesis, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1992. Report 92-1322. [m-smga-92] *Keywords:* doctoral thesis.

9836 E. Moore. Shortest path through a maze. In *Proc. of an International Symposium on the Theory of Switching*, pages 285–292. Harvard University Press. [m-sptm-]

E. Moore. See also [5946].

J. Moore. See also [13045].

9837 M. Moore and J. Willhelms. Collision detection and response for computer animation. *Comput. Graph.*, 22(4):289–298, August 1988. Proc. SIGGRAPH '88. [mw-cdrca-88]

9838 R. E. Moore. *Interval Analysis.* Prentice Hall, Englewood Cliffs, NJ, 1966. [m-ia-66]

9839 R. E. Moore. *Methods and Applications of Interval Analysis.* SIAM, 1979. [m-maia-79]

Richard E. M. Moore. See also [694].

9840 F. Mora and H. Moller. Computation of the Hilbert function. In *Proc. European Comput. Algebra Conf.*, volume 162 of *Lecture Notes Comput. Sci.*, pages 157–167. Springer-Verlag, 1983. [mm-chf-83]

Mercè Mora. See also [2941, 6840, 7221].

J. E. Morais. See also [9822].

A. Moran. See also [7605].

9841 B. A. Moran and W. Hansmann. Visual design verification of sculptured objects. In *Proceedings of the First International Offshore and Polar Engineering Conference*, 1991. [mh-vdvso-91]

B. A. Moran. See also [10663].

9842 P. A. P. Moran. A note on recent search in geometrical probability. *J. Appl. Probab.*, 3:453–463, 1966. [m-nrsgp-66]

P. A. P. Moran. See also [7997].

9843 S. Moran. On the complexity of designing optimal partial-match retrieval systems. *ACM Trans. Database Syst.*, 8:543–551, 1983. [m-cdopm-83]

9844 S. Moran. On the length of optimal TSP circuits in sets of bounded diameter. *J. Combin. Theory Ser. B*, 37:113–141, 1984. [m-lotcs-84]

S. Moran. See also [297, 298, 302].

9845 H. P. Moravac. *Robot Rover Visual Navigation.* PhD thesis, Stanford University, 1981. [m-rrvn-81] *Keywords:* doctoral thesis.

9846 H. P. Moravec. Obstacle avoidance and navigation in the real world by a setting robot rover. Report STAN-CS-80-813, Dept. Comput. Sci., Stanford Univ., Stanford, CA, 1980. [m-oanrw-80]

J. Morávek. See also [8367].

Nicole Morawe. See also [5205].

9847 J.-M. Moreau. *Facétisation et hiérarchisation de la représentation par segments d'un graphe planaire dans le cadre d'une arithmétique mixte.* PhD thesis, École Nationale Supérieure des Mines de Saint-Étienne, 1990. [m-fhrsg-90] *Keywords:* doctoral thesis.

9848 J.-M. Moreau. Hierarchical Delaunay triangulation. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 165–170, 1994. [m-hdt-94] *Cites:* a-vdsfg-91, c-cdt-89, c-ucplg-75, c-llpqb-72, f-savd-87, gs-pmgsc-85, ll-gdtpg-86, ls-tacdt-80, mv-cdtr-93, s-ac-90, hsa-fdsc-93, j-cegt-70, s-cdtvd-88, ZZZ.

9849 J.-M. Moreau and P. Volino. Constrained Delaunay triangulation revisited. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 340–345, 1993. [mv-cdtr-93] *Cites:* a-vdsfg-91, bt-hrodt-86, c-cdt-87, c-cdt-89, es-cvdpu-90, f-savd-86, f-savd-87, gs-pmgsc-85, k-eccs-79, l-prp-78p, ll-gdtpg-86, ls-tacdt-80, ps-cgi-85, s-cdtvd-88, sh-cpp-75, dmt-fddtl-91t, ws-oacdt-87, ZZZ.

Jean-Michel Moreau. See also [1616, 2040, 8693, 8694].

S. Morehouse. See also [4517].

Auxiliadora Moreno-González. See also [2639].

9850 B. Moret. Decision trees and diagrams. *ACM Comput. Surv.*, ??:593–623, 1982. [m-dtd-82]

B. Moret. See also [4325].

9851 B. M. E. Moret, M. Collins, J. Saia, and L. Yu. The ice rink problem. In *Proc. Workshop on Algorithm Engineering*, September 1997. [mcsy-irp-97] *URL:* http://www.dsi.unive.it/~wae97/proceedings/ONLY_PAPERS/pap11.ps.gz.

9852 B. M. E. Moret and H. D. Shapiro. An empirical analysis of algorithms for constructing a minimum spanning tree. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 400–411. Springer-Verlag, 1991. [ms-eaacm-91]

9853 B. M. E. Moret and H. D. Shapiro. How to find a minimum spanning tree in practice. In *Proc. Conf. on New Results and New Trends in Computer Science*, volume 555 of *Lecture Notes Comput. Sci.*, pages 192–203. Springer-Verlag, 1991. [ms-hfmst-91]

B. M. E. Moret. See also [2285, 3100, 4326, 8257–8260].

9854 F. Morgan. *Geometric Measure Theory: a Beginner's Guide.* Academic Press, 1988. [m-gmtbg-88]

9855 F. Morgan. Minimal surfaces, crystals, and norms on R^n. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 204–213, 1991. [m-mscnr-91] *Cites:* abfhz-csbp-90, achlkkmh-scmfe-90, achlkkmh-sspmn-91, c-sp-67, c-emnr-89, cr-wim-41, h-sprd-66, lm-mcnif-91, l-emnmo-90, m-gmtbg-88, m-rgbg-91, m-sbcsn-91, t-sssbl-76, ZZZ.

9856 F. Morgan. Riemannian geometry: a beginner's guide. Manuscript, Williams College, 1991. [m-rgbg-91]

9857 F. Morgan. Soap-bubble-clusters, shortest networks, and minimal surfaces. Preprint, Williams College, 1991. [m-sbcsn-91]

F. Morgan. See also [8539, 8540].

K. Morgan. See also [10728].

Ward Morgan. See also [12010].

A. Morgana. See also [8926, 8927].

9858 S. Mori, C. Suen, and K. Yamamoto. Historical review of OCR research and development. *Proc. IEEE*, 80:1029–1058, 1992. [msy-hrord-92]

9859 S. Mori, K. Yamamoto, and M. Yasuda. Research on machine recognition of handprinted characters. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-6:386–405, 1984. [myy-rmrhc-84]

P. Morin. See also [2327, 2328, 2481, 4469].

9860 T. L. Morin, N. Prabhu, and Z. Zhang. Complexity of the gravitational method for linear programming. In *Proc. 16th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1180 of *Lecture Notes Comput. Sci.*, pages 212–223. Springer-Verlag, 1996. [mpz-cgmlp-96]

R. H. Möring. See also [5203].

K. Morken. See also [9057].

9861 H. C. Morris. *Two pigeon hole principles and unions of convexly disjoint sets.* PhD thesis, Califonia Inst. Tech., Pasadena, CA, 1973. [m-tphpu-73] *Keywords:* doctoral thesis.

9862 J. G. Morris and J. P. Norback. A simple approach to linear facility location. *Transp. Sci.*, 14:1–8, 1980. [mn-salfl-80]

J. W. Morris Jr. See also [9112].

9863 W. Morris and V. Soltan. The Erdős-Szekeres problem on points in convex position - a survey. *Bull. Amer. Math. Soc.*, 37:437–458, 2000. [ms-esppc-00]

Jason Morrison. See also [2327, 2481].

S. P. Morse. See also [5581].

9864 M. E. Mortenson. *Computer Graphics Handbook: Geometry and Mathematics*. Industrial Press, 1990. [m-cghgm-90] *ISBN:* 0-8311-1002-3. *Annote:* a self-contained collection of analytic geometry concepts.

9865 M. E. Mortenson. *Geometric Modeling*. John Wiley & Sons, New York, NY, 1985. [m-gm-85]

9866 G. M. Morton. A computer oriented geodetic data base and a new technique in file sequencing. Technical report, IBM Ltd., Ottawa, Canada, 1966. [m-cogdb-66]

M. Morvan. See also [5202].

9867 S. M. Morvan and G. M. Fadel. Ivecs, interactive correction of .STL files in a virtual environment. In *Proc. Sympos. on Solid Freeform Fabrication*. Dept. Mech. Eng., Univ. Texas Austin, 1996. [mf-iicsf-96]

9868 M. A. Mosaad, X. Ye, S. L. Abrams, and N. M. Patrikalakis. Visualization and information modeling of propeller surface roughness. In *Proc. IMAM '95, 7th International Maritime Association of Mediterranean Congress*, 1995. [myap-vimps-95]

E. Mosel. See also [8917].

9869 L. Moser. On the different distances determined by n points. *Amer. Math. Monthly*, 59:85–91, 1952. [m-dddnp-52]

9870 W. Moser. Research problems in discrete geometry. Technical report, Dept. Math., McGill Univ., Montreal, PQ, 1981. [m-rpdg-81]

9871 W. Moser and J. Pach. Recent developments in combinatorial geometry. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 281–302. Springer-Verlag, 1993. [mp-rdcg-93] *Keywords:* survey paper, combinatorial geometry, distance distribution, geometric graphs, lines in space.

W. Moser. See also [7992].

9872 W. O. J. Moser. Problems on extremal properties of a finite set of points. In Goodman et al., editors, *??*, pages 52–64. New York Academy of Sciences, 1985. [m-pepfs-85]

W. O. J. Moser. See also [2290, 3588, 3589, 10115].

9873 G. S. Moss. "BURST:" Air Force vulnerability analyses from BRL-CAD models. In *Proc. BRL-CAD Symposium '89*, pages 88–109, Aberdeen Proving Ground, MD, 1989. American Defense Preparadness Assoc. [m-bafva-89]

9874 W. W. Moss. Some new analytic and graphic approaches to numerical taxonomy, with an example from the dermanyssidae. *Systematic Zoology*, 16:177–207, 1967. [m-snaga-67]

9875 R. C. Mosteller, A. H. Frey, and R. Suaya. 2-d compaction a Monte-Carlo method. In P. Lasleber, editor, *Advanced Research in VLSI*. MIT Press, 1987. [mfs-2dcmc-87]

A. Mostowski. See also [8421].

B. M. Mostue. See also [985].

9876 P. H. Mott, A. S. Argon, and U. W. Suter. The atomic strain tensor. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 125–128, 1990. [mas-ast-90] *Cites:* too-natdv-83, ZZZ.

9877 R. Motwani. Hashing molecules for common substructures. Working paper, ??, 1996. [m-hmcs-96]

9878 R. Motwani, J. Naor, and M. Naor. The probabilistic method yields deterministic parallel algorithms. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 8–13, 1989. [mnn-pmydp-89] *Keywords:* random sampling, derandomization. *Comments:* to appear in J. Comput. Syst. Sci.

9879 R. Motwani and P. Raghavan. Deferred data structuring: query-driven preprocessing for geometric search problems. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 303–312, 1986. [mr-ddsqd-86] *Precedes:* kmr-dds-88. *Cites:* b-lbact-83, b-mdc-80, cgl-pgd-83, d-ltatt-84, km-pstoo-85, ks-upcha-82, m-pst-85, m-ltalp-83, sh-cpp-75, sh-gip-76, s-cg-78, ZZZ.

9880 R. Motwani and P. Raghavan. *Randomized Algorithms*. Cambridge University Press, New York, NY, 1995. [mr-ra-95]

9881 R. Motwani, A. Raghunathan, and H. Saran. Covering orthogonal polygons with star polygons: the perfect graph approach. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 211–223, 1988. [mrs-copsp-88] *Precedes:* mrs-copsp-89. *Cites:* a-agpiv-84, cr-dduap-87, gj-cigtn-79, g-amcmc-72, g-agtpg-80, gls-emicc-81, h-wtg-85, hhm-owtg-87, k-mchco-86, l-pg-83, m-udzts-57, mrs-pgocc-89, o-agta-87, rc-csopm-87, r-cocpt-87, os-snhpd-83, ZZZ.

9882 R. Motwani, A. Raghunathan, and H. Saran. Covering orthogonal polygons with star polygons: the perfect graph approach. *J. Comput. Syst. Sci.*, 40:19–48, 1989. [mrs-copsp-89] *Keywords:* perfect graphs, polygon covering. *Succeeds:* mrs-copsp-88.

9883 R. Motwani, A. Raghunathan, and H. Saran. Perfect graphs and orthogonally convex covers. *4th SIAM Conf. on Discr. Math.*, ??, June 1988. [mrs-pgocc-88]

9884 R. Motwani, A. Raghunathan, and H. Saran. Perfect graphs and orthogonally convex covers. *SIAM J. Algebraic Discrete Methods*, 2:371–392, 1989. [mrs-pgocc-89] *Keywords:* perfect graphs, polygon covering.

R. Motwani. See also [199, 284, 285, 887, 1443, 2858, 2862, 5157, 5265–5267, 6409, 6410, 6583, 7152, 7384, 7385, 7841, 7845, 7926, 8024, 8534].

9885 T. Motzkin. The lines and planes connecting the points of a finite set. *Trans. Amer. Math. Soc.*, 70:451–464, 1951. [m-lpcpf-51]

9886 T. S. Motzkin, H. Raiffa, G. L. Thompson, and R. M. Thrall. The double desription method. *Annals of Math. Studies*, 8, 1953. [mrtt-ddm-53]

T. S. Motzkin. See also [6349].

9887 N. Mouawad. Minimal obscuring sets: the parallel view case. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 232–235, 1990. [m-mospv-90] *Cites:* ZZZ.

9888 N. Mouawad. On the nature of visibility graphs. Technical report, University of Waterloo, ?? [m-nvg-??]

9889 Naji Mouawad. The minimal cone-segment cover problem. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 100–103, 1991. [m-mcscp-91] *Cites:* b-lbact-83, dls-rphs-88, s-mplbc-85, h-tsm-85, hv-splsp-49, ll-ccmp-84, m-dsass-81, o-agta-87, v-msv-53, ZZZ.

9890 N. Mouawad and T. Shermer. The Superman problem. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 39, 1989. [ms-sp-89]

9891 N. Mouawad and T. Shermer. The Superman problem. *Visual Comput.*, 10:459–473, 1994. [ms-sp-94]

N. Mouawad. See also [4044, 9008].

9892 D. Mount. Geometric intersection. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 33, pages 615–632. CRC Press LLC, Boca Raton, FL, 1997. [m-gi-97]

D. Mount. See also [772, 901, 904, 1338, 7764, 12863].

9893 D. M. Mount. Intersection detection and separators for simple polygons. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 303–311, 1992. [m-idssp-92] *Cites:* c-tsplt-90i, cd-icott-87, cegghss-rspug-91, cg-vippg-89, ck-plscc-89, dk-dsppu-90, e-cedbt-85, f-fapct-85, gs-pmgsc-85, km-accvd-91, ls-pptmc-87, ps-cgi-85, s-dasds-90, s-ltaml-86, ZZZ.

9894 D. M. Mount. On finding shortest paths on convex polyhedra. Technical Report 1495, Department of Computer Science, University of Maryland, 1985. [m-fspcp-85]

9895 D. M. Mount. Storing the subdivision of a polyhedral surface. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 150–158, 1986. [m-ssps-86] *Precedes:* m-ssps-87. *Cites:* dk-fdpi-83, dm-eup-85, egs-oplms-86, gs-pmgsc-85, k-osps-83, lp-lppsi-77, mmp-dgp-87, m-fspcp-85, m-vdsp-85, mp-fitcp-78, p-nappl-81, sh-cpp-75, ss-spps-84, s-icpps-85, ZZZ.

9896 D. M. Mount. Storing the subdivision of a polyhedral surface. *Discrete Comput. Geom.*, 2:153–174, 1987. [m-ssps-87] *Succeeds:* m-ssps-86.

9897 D. M. Mount. The densest double-lattice packing of a convex polygon. Report 2584, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1991. [m-ddlpc-91] *Keywords:* packing, convex.

9898 D. M. Mount. The densest double-lattice packing of a convex polygon. In J. E. Goodman, R. Pollack, and W. Steiger, editors, *Discrete Comput. Geom.*, pages 245–262. American Mathematical Society, Providence, RI, 1991. [m-ddlpc-91i]

9899 D. M. Mount. The number of shortest paths on the surface of a polyhedron. Report, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1986. [m-nspsp-86]

9900 D. M. Mount. The number of shortest paths on the surface of a polyhedron. *SIAM J. Comput.*, 19:593–611, 1990. [m-nspsp-90]

9901 D. M. Mount. Voronoi diagrams on the surface of a polyhedron. Technical Report 1496, Department of Computer Science, University of Maryland, 1985. [m-vdsp-85]

9902 D. M. Mount and S. Chandran. A unified approach to finding enclosing and enclosed triangles. In *Proc. 26th Allerton Conf. Commun. Control Comput.*, 1988. [mc-uafet-88]

9903 D. M. Mount and N. Netanyahu. Efficient algorithms for robust circular arc estimators. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 79–84, 1993. [mn-earca-93] *Succeeds:* mn-earca-93u. *Cites:* am-rsss-92, a-afccf-90, c-ocfod-90, ck-ocfwd-93, csss-otass-89, clr-ia-90, dmn-rass-92, hrrs-rsabi-86, m-ept-91, m-roass-91, mmn-erarm-93, mn-earca-93u, rl-rrod-87, s-ercbk-68, s-rrurm-82, sw-rssf-92, to-lseec-89a, t-mlpra1-50, t-mlpra2-50, t-mlpra3-50, tc-saeca-89, ZZZ.

9904 D. M. Mount and N. S. Netanyahu. Computationally efficient algorithms for a highly robust line estimators. Technical Report CS-TR-2816, Center for Automation Research, University of Maryland, December 1991. [mn-ceahr-91]

9905 D. M. Mount and N. S. Netanyahu. Computationally efficient algorithms for high-dimensional robust estimators. Technical Report in preparation, Center for Automation Research, University of Maryland, 1992. [mn-ceahd-92u] *Precedes:* mn-ceahd-92.

9906 D. M. Mount and N. S. Netanyahu. Computationally efficient algorithms for high-dimensional robust estimators. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 257–263, 1992. [mn-ceahd-92] *Succeeds:* mn-ceahd-92u. *Cites:* dmn-rass-92, dh-nbp-83, es-cmsrl-90, gp-ms-83, m-roass-91, r-msr-84, ss-tseal-87, sw-frmrl-92, t-mlpra1-50, csss-otass-89, mmn-erarm-92, mn-ceahr-91, mn-ceahd-92u, n-ceare-91, on-rerc-84, rl-rrod-87, s-ercbk-68, s-rrurm-82, ZZZ.

9907 D. M. Mount and N. S. Netanyahu. Efficient algorithms for robust circular arc estimators. technical report in preparation. [mn-earca-93u] *Precedes:* mn-earca-93.

9908 D. M. Mount and N. S. Netanyahu. Efficient randomized algorithms for robust estimation of circular arcs and aligned ellipses. *Comput. Geom. Theory Appl.*, 19:1–33, 2001. [mn-erare-01]

9909 D. M. Mount, N. S. Netanyahu, C. D. Piatko, R. Silverman, and A. Y. Wu. Quantile approximation for robust statistical estimation and k-enclosing problems. *Internat. J. Comput. Geom. Appl.*, 10:593–608, 2000. [mnpsw-qarse-00]

9910 D. M. Mount, N. S. Netanyahu, K. R. Romanik, R. Silverman, and A. Y. Yu. A practical approximation algorithm for the lms line estimator. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 473–482, January 1997. [mnrsy-paall-97]

9911 David M. Mount, Nathan S. Netanyahu, Ruth Silverman, and Angela Y. Wu. Chromatic nearest neighbour searching: a query sensitive approach. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 261–266, 1995. [mnsw-cnnsq-95] *Precedes:* mnsw-cnnsq-00.

9912 David M. Mount, Nathan S. Netanyahu, Ruth Silverman, and Angela Y. Wu. Chromatic nearest neighbour searching: a query sensitive approach. *Comput. Geom. Theory Appl.*, 17:97–119, 2000. [mnsw-cnnsq-00] *Succeeds:* mnsw-cnnsq-95.

9913 D. M. Mount and A. Saalfeld. Globally-equiangular triangulations of co-circular points in $O(n \log n)$ time. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 143–152, 1988. [ms-getcc-88] *Cites:* e-p33-87, e-acg-87, or-imtfe-76, ps-cgi-85, ZZZ.

9914 D. M. Mount and R. Silverman. Packing and covering the plane with translates of a convex polygon. *J. Algorithms*, 11:564–580, 1990. [ms-pcptc-90] *Keywords:* packing, decomposition.

9915 D. M. Mount, R. Silverman, and A. Wu. On the area of overlap of translated polygons. *SPIE Vision Geometry II*, 2060:254–264, 1993. [msw-aotp-93]

D. M. Mount. See also [756–758, 902, 903, 905–915, 1054, 2828, 4214, 4226–4228, 5916–5918, 7759, 7766, 7767, 7979, 8250, 8251, 9297, 9298, 9729–9732, 9984, 10846, 11438].

R. Mountain. See also [13762].

Bernard Mourrain. See also [4022, 4023].

9916 J. T. Mowchenko. ?? PhD thesis, Department of Electrical Engineering, University of Waterloo, 1983. [m--83] *Keywords:* doctoral thesis.

H. Mu. See also [11915].

9917 Y. J. Mu. Computer construction of the convex hull of finite point sets (Chinese English summary). *J. Northwest Univ.*, 12:28–34, 1982. [m-ccchf-82]

9918 E. P. Mücke. A robust implementation for three-dimensional Delaunay triangulations. *Internat. J. Comput. Geom. Appl.*, 8(2):255–276, 1998. [m-ritdd-98]

9919 E. P. Mücke. Ein Modell zur Elimination degeneriertter Fälle in geometrischen Algorithmen. Master's thesis, Inst. Informationsverarb., Techn. Univ. Graz, Graz, Austria, 1985. Graduating thesis. [m-emzed-85] *Keywords:* master thesis.

9920 E. P. Mücke. *Shapes and Implementations in Three-Dimensional Geometry*. PhD thesis, Department of Computer Science, University of Illinois, Urbana, IL, 1993. Technical Report UIUCDCS-R-93-1836. [m-sitdg-93] *Keywords:* doctoral thesis.

9921 Ernst P. Mücke, Isaac Saias, and Binhai Zhu. Fast randomized point location without preprocessing in two- and three-dimensional Delaunay triangulations. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 274–283, 1996. [msz-frplw-96] *Cites:* aeiim-pubtc-85, bp-adtaa-91, bd-irgo-95, bey-eedt-91a, b-cdt-81, b-rgsdd-93, dl-pmtds-89, dl-msp-76, dmz-npldt-98, d-hdvdl-91, gh-dmcpd-92, gs-cdtp-78, gs-pmgsc-85, m-sitdg-93, ps-cgi-85, ZZZ.

E. P. Mücke. See also [4060, 4690, 4726–4730].

9922 D. J. Muder. How big is an N-sided Voronoi polygon. *Proceedings Of The London Mathematical Society*, 61:91–108, July 1990. [m-hbins-90] *Annote:* If a_n is area of the smallest VP defined by a point set with closest distance 2 then a_n/n tends to $1/\pi$.

S. P. Mudur. See also [5887–5889, 10622].

9923 H. Mueller. Sorting numbers using limited systolic coprocessors. *IPL*, ??:351–354, 1987. [m-snuls-87]

C. Mugnai. See also [8889, 8945].

H. Mühlig. See also [2488].

V. S. Mukhanov. See also [9055].

M. Mukherjee. See also [9490].

R. Mukherjee. See also [10035].

R. N. Mukherjee. See also [2271].

9924 S. Mukherjee, J. D. Foley, and S. E. Hudson. Visualizing complex hypermedia networks through multiple hierarchical views. Technical report, Graphics and Visualization Center, GeorgiaTech, 1995. [sfh-vchnt-95] *Keywords:* graph drawing.

9925 A. Mukhopadhyay, A. Agrawal, and R. M. Hosabettu. On the ordinary line problem in computational geometry. *Nordic J. Comput.*, 4:330–341, 1997. [mah-olpcg-97]

9926 A. Mukhopadhyay, C. Kumar, and B. Bhattacharya. Computing an area-optimal convex polygonal stabber of a set of parallel line segments. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 169–174, 1993. [mkb-caocp-93] *Cites:* ad-ahdsp-90, aw-plts-89, bcetsu-csts-91, emprww-sls-82, gpw-gtt-91, gs-spscp-90, hdk-cgp-64, jmb-oairs-92, o-olafs-81, ol-mcp-81, e-ftssg-85, lmr-mpsil-, sm-ssps-92, ZZZ.

Asish Mukhopadhyay. See also [366, 1946, 1959–1961, 4045, 4046, 7457–7460, 8864, 11030, 12442–12444].

S. Mukhopadhyay. See also [9043].

K. Mukhopadhyaya. See also [10038].

9927 C. Müller. Equidecomposability of polyhedra with reference to crystallographic groups. *Discrete Comput. Geom.*, 3:383–389, 1988. [m-eprcg-88]

D. Muller. See also [8803].

9928 D. E. Muller and F. P. Preparata. Finding the intersection of two convex polyhedra. *Theoret. Comput. Sci.*, 7:217–236, 1978. [mp-fitcp-78]

D. E. Muller. See also [10886].

9929 Heinrich Müller. Bestimmung von Nullstellen von Polynomgleichungssystemen durch Basistransformation. In *Abstracts 6th Intern. Workshop Comput. Geom.*, pages 18–19. Universität Siegen, 1990. [m-bnpdb-90]

9930 Heinrich Müller. Contour triangulation. In *Abstracts 8th European Workshop Comput. Geom.*, pages 93–96. Utrecht University, 1992. [m-ct-92]

9931 H. Müller. Rasterized point location. In *Proc. Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 281–293. Trauner Verlag, Linz, Austria, 1985. [m-rpl-85]

9932 H. Müller. Raytracing complex scenes by grids. Report ??, Inst. Inform., Univ. Karlsruhe, Karlsruhe, West Germany, 1985. [m-rcsg-85]

9933 Heinrich Müller. Surface reconstruction by spatial neighborhood graphs. In *Abstracts 17th European Workshop Comput. Geom.*, pages 7–10. Freie Universität Berlin, 2001. [m-srsng-01]

9934 H. Müller. Time coherence in computer animation by ray tracing. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 187–201. Springer-Verlag, 1988. [m-tccar-88] *Keywords:* design of algorithms, computer graphics, rays, interval trees. *Annote:* 4th Intern. Workshop Comput. Geom.

9935 Heinrich Müller and Matthias Otte. Solving algebraic systems in Bernstein-Bézier representation. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 161–169. Springer-Verlag, 1991. [mo-sasbb-91] *Annote:* 7th Intern. Workshop Comput. Geom.

9936 H. Müller and M. Stark. Implementierung eines Bildinterpolationsverfahrens. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [ms-ib-89]

H. Müller. See also [71–75, 6554, 6929, 11742, 11743].

9937 Matthias Müller-Hannemann. Improving the surface cycle structure for hexahedral mesh generation. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 19–28, 2000. [m-iscsh-00]

9938 M. Müller-Hannemann and K. Weihe. Minimum strictly convex quadrangulations of convex polygons. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 193–202, 1997. [mw-mscqc-97] *Cites:* be-mgot-92i, elosu-scqp-92, gj-cigtn-79, h-femgm-88, j-qmgpr-95, l-dprcq-85, mmw-unfsm-95, nc-pgta-88, s-oadrp-82, st-ltadr-81, ta-femci-93, t-qps-95, ZZZ.

9939 Matthias Müller-Hannemann and Karsten Weihe. On the generation of finite element meshes with graph theoretical methods. In *Proc. 3rd Twente Workshop on Graphs and Combinatorial Optimization*, page ??, June 1993. [mw-gfemg-93]

Matthias Müller-Hannemann. See also [9801–9803].

9940 J.-D. Müller. Proven angular bounds and stretched triangulations with the frontal Delaunay method. In *Proc. 11th AIAA Comput. Fluid Dynamics Conf.*, 1993. [m-pabst-93]

Jean-Michel Muller. See also [8665].

9941 M. Müller and J. Ziegler. An implementation of a convex hull algorithm. Report MPI-I-94-105, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [mz-icha-94]

M. Müller. See also [9453, 9454].

R. Müller. See also [5206].

9942 S. Müller, K. Kells, and W. Fichtner. Automatic rectangle-based adaptive mesh generation without obtuse angles. *IEEE Trans. Comput.-Aided Design*, 10:855–863, 1992. [mkf-arbam-92]

9943 J. K. Mullin. Spiral storage: Efficient dynamic hashing with constant-performance. *Comput. J.*, 28:330–334, 1985. [m-ssedh-85]

9944 R. Mullin and R. Stanton. A map-theoretic approach to Davenport–Schinzel sequences. *Pacific J. Math.*, 40:167–172, 1972. [ms-madss-72]

9945 D. Mullis. Reporting overlaps in a dynamic interval set by filtering search. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 160–169, 1992. [m-rodis-92] *Cites:* bl-oavdr-89, c-fsnaq-86, m-mdscg-84, ps-cgi-85, p-slpab-90, p-slc-89, ZZZ.

9946 K. Mulmuley. A fast planar partition algorithm, I. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 580–589, 1988. [m-fppa1-88] *Comments:* To appear in J. Symbolic Logic. *Succeeds:* m-fppap-88.

9947 K. Mulmuley. A fast planar partition algorithm, I. *J. Symbolic Comput.*, 10(3-4):253–280, 1990. [m-fppa-90]

9948 K. Mulmuley. A fast planar partition algorithm, II. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 33–43, 1989. [m-fppa2-89] *Precedes:* m-fppa2-91. *Cites:* c-crmp-87, ce-oails-88, c-arscg-88, eka-nplai-84, egs-oplms-86, gs-ccrs-87, k-osps-83, lt-apst-77, m-fppa1-88, m-fppa2-91, m-eahsr-89, m-lavd-88, ps-cgi-85, st-pplup-86, sss-cthsa-74, ZZZ.

9949 K. Mulmuley. A fast planar partition algorithm, II. *J. ACM*, 38:74–103, 1991. [m-fppa2-91] *Succeeds:* m-fppa2-89.

9950 K. Mulmuley. A fast planar partition algorithm: part I. Technical Report 88-007, Dept. Comput. Sci., Univ. Chicago, Chicago, IL, 1988. [m-fppap-88] *Precedes:* m-fppa1-88.

9951 K. Mulmuley. A generalization of Dehn-Sommerville relations to simple stratified spaces. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 115–120, 1991. [m-gdsrs-91] *Keywords:* polytopes. *Precedes:* m-gdsrs-93. *Cites:* b-lfitm-62, gg-smts-73, gm-smt-87, g-cp-67, l-at-42, ms-cpubc-71, s-nfscp-80, ZZZ.

9952 Ketan Mulmuley. A generalization of Dehn-Sommerville relations to simple stratified spaces. *??*, 9:47–55, 1993. [m-gdsrs-93] *Keywords:* polytopes.

9953 K. Mulmuley. An efficient algorithm for hidden surface removal. *Comput. Graph.*, 23(3):379–388, 1989 1989. [m-eahsr-89]

9954 K. Mulmuley. An efficient algorithm for hidden surface removal, II. *J. Algorithms*, ??, 1990. To appear in special issue on FOCS 1990. [m-eahsr-90]

9955 K. Mulmuley. *Computational Geometry: An Introduction Through Randomized Algorithms*. Prentice Hall, Englewood Cliffs, NJ, 1993. [m-cgitr-93] *Annote:* Graduate text.

9956 K. Mulmuley. Dehn-sommerville relations, upper bound theorem, and levels in arrangements. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 240–246, 1993. [m-dsrub-93] *Cites:* ag-nssfs-86, acegsw-ptphp-91, bfl-nhp-89, cp-hrsaa-86, c-blmat-92, cs-arscg-89, csy-khrp-87, es-vda-86, ew-nlsfs-85, elss-dgpps-73, gp-nkssn-84, l-knnvd-82, m-mnfcp-70, mw-glbcs-71, m-osclv-90, m-lavd-91, pss-ubnpk-92, w-mksfs-86, ZZZ.

9957 K. Mulmuley. Hidden surface removal with respect to a moving point. In *Proc. 23rd Annu. ACM Sympos. Theory Comput.*, pages 512–522, 1991. [m-hsrrm-91] *Keywords:* hidden line/surface elimination, probabilistic analysis.

9958 Ketan Mulmuley. On a geometric approach in finite-precision complexity: a lower bound for linear programming. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, 1994. [m-gafpc-94]

9959 K. Mulmuley. On levels in arrangements and Voronoi diagrams. Technical Report TR 88-21, University of Chicago, December 1988. [m-lavd-88]

9960 K. Mulmuley. On levels in arrangements and Voronoi diagrams. *Discrete Comput. Geom.*, 6:307–338, 1991. [m-lavd-91] *Succeeds:* m-orfv-89.

9961 K. Mulmuley. On obstructions in relation to a fixed viewpoint. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 592–597, 1989. [m-orfv-89] *Precedes:* m-lavd-91.

9962 K. Mulmuley. Output sensitive construction of levels and Voronoi diagrams in $\Re^d$ of order 1 to k. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, pages 322–330, 1990. [m-osclv-90]

9963 Ketan Mulmuley. Randomized algorithms in computational geometry. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 703–724. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [m-racg-00] *Annote:* Chapter 16 of su-hcg-00.

9964 K. Mulmuley. Randomized geometric algorithms and pseudo-random generators. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 90–100, 1992. [m-rgapr-92]

9965 K. Mulmuley. Randomized geometric algorithms and pseudorandom generators. *Algorithmica*, 16:450–463, 1996. [m-rgapg-96]

9966 K. Mulmuley. Randomized multidimensional search trees: Dynamic sampling. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 121–131, 1991. [m-rmstd-91] *Keywords:* random sampling, dynamizing data structures. *Cites:* agss-ltacv-87, as-rst-89, bt-rcdt-89, c-narsc-87, cs-arscg-89, cj-nrdpl-90, dmt-fddtl-91, fmn-dgds-85, gks-ricdv-89, hw-ensrq-87, m-fppa1-88, m-fppa2-89, m-eahsr-89, m-eahsr-90, m-lavd-91, ms-dplah-91, o-ddds-83, pt-fdplm-89, p-slpab-90, s-mapl-, ZZZ.

9967 K. Mulmuley. Randomized multidimensional search trees: Further results in dynamic sampling. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 216–227, 1991. [m-rmstf-91]

9968 K. Mulmuley. Randomized multidimensional search trees: Lazy balancing and dynamic shuffling. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 180–196, 1991. [m-rmstl-91]

9969 K. Mulmuley and O. Schwarzkopf. Randomized algorithms. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 34, pages 633–652. CRC Press LLC, Boca Raton, FL, 1997. [ms-ra-97]

9970 K. Mulmuley and S. Sen. Dynamic point location in arrangements of hyperplanes. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 132–141, 1991. [ms-dplah-91] *Keywords:* arrangements, hyperplane, point location, dynamizing data structures. *Cites:* as-rst-89, c-maeth-52, cf-dvrsi-88, c-narsc-87, cs-arscg-89, cj-nrdpl-90, dk-ladsc-85, eos-calha-86, fmn-dgds-85, hw-ensrq-87, m-rmstd-91, o-ddds-83, pt-fdplm-89, p-slpab-90, rs-orpac-87, st-pplup-86, ZZZ.

9971 K. Mulmuley and S. Sen. Dynamic point location in arrangements of hyperplanes. *Discrete Comput. Geom.*, 8:335–360, 1992. [ms-dplah-92]

W. Mumbeck. See also [10868].

9972 D. Mumford. The problem of robust shape descriptors. In *Proc. 1st. Internat. Conf. Comput. Vision*, pages 602–606, 1987. [m-prsd-87]

M. Mundhenk. See also [895].

J. L. Mundy. See also [7787].

9973 J. R. Munkers. *Elements of algebraic topology*. Addison-Wesley, Redwood City, California, 1984. [m-eat-84]

9974 J. R. Munkres. *Topology: A first course*. Prentice Hall, Englewood Cliffs, NJ, 1975. [m-tfc-75]

9975 J. I. Munro. A multikey search problem. In *Proc. 17th Allerton Conf. Commun. Control Comput.*, pages 241–244, 1979. [m-msp-79]

9976 J. I. Munro, M. H. Overmars, and D. Wood. Variations on visibility. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 291–299, 1987. [mow-vv-87] *Precedes:* ow-rv-88. *Cites:* afk-sppsb-85, bw-owcar-80, e-ndrs-81, gjs-agcpc-76, k-mchco-86, m-mdscg-84, ps-cgi-85, rw-roc-86, wl-arrcd-85, w-ivcg-85, ZZZ.

9977 J. I. Munro and H. Suwanda. Implicit data structure for fast search and update. *J. Comput. Syst. Sci.*, ??:236–250, 1980. [ms-idsfs-80]

J. I. Munro. See also [594, 595, 2326, 4305, 4306, 6075, 7822, 7823].

9978 J. H. Munson. Efficient calculations on points and lines in the Euclidean plane. Technical report, October 1971. [m-ecple-71]

T. Munzner. See also [648].

T. Murali. See also [214, 215].

9979 T. M. Murali and Thomas A. Funkhouser. Consistent solid and boundary representations from arbitrary polygonal data. In *Proc. 1997 Sympos. Interactive 3D Graphics*, 1997. [mf-csbra-97]

T. M. Murali. See also [133, 176, 177, 181, 6330, 6331].

D. J. Murdoch. See also [2269].

9980 P. Murdoch, S. Benzley, T. D. Blacker, and S. A. Mitchell. A connectivity based method for representing and constructing all-hexahedral finite element meshes, Part I: The spatial twist continuum. *Internat. J. Numer. Methods Eng.*, ??, ?? Submitted. [mbbm-cbmrc-]

9981 Pete Murdoch and Steven E. Benzley. The spatial twist continuum. In *Proc. 4th International Meshing Roundtable*, pages 243–252, Albuquerque, NM, 1995. Sandia National Laboratories. [mb-stc-95]

Peter Murdoch. See also [1661].

9982 F. Murgola. Probabilistic point matching in the plane. Report ??, Dept. Math. Comput. Sci., Univ. California Riverside, Riverside, CA, 1985. [m-ppmp-85]

K. Murota. See also [944, 7360, 7396–7399, 10252–10255].

9983 G. M. Murphy. *Ordinary Differential Equations and Their Solutions*. D. van Nostrand, Princeton, 1960. [m-odes-60]

9984 Michael Murphy, David M. Mount, and Carl W. Gable. A point-placement strategy for conforming Delaunay tetrahedralization. In *Proc. 11th ACM-SIAM Sympos. Discrete Algorithms*, pages 67–74, 2000. [mmg-ppscd-00]

9985 M. Murphy and Steven S. Skiena. Ranger: A tool for nearest neighbor search in high dimensions. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 403–404, 1993. [ms-rtnns-93] *Keywords:* video review. *Cites:* b-mbstu-75, b-kdtsp-90, fbf-afbml-77, s-rnns-91, y-dsann-93, ZZZ.

9986 O. J. Murphy and S. M. Selkow. Finding nearest neighbors with Voronoi tessellations. *Inform. Process. Lett.*, 34(1):37–41, February 1990. [ms-fnnvt-90] *Keywords:* nearest neighbors, Voronoi tessellations, multi key searching. *Annote:* Use buckets containing a list of points whose VPs intersect the bucket. *Abstract:* J. L. Bentley et al. have shown that, subject to certain assumptions, nearest neighbors in k-dimensional space can be computed in O(3**k) expected time. This paper presents a new method for finding nearest neighbors in any bounded region. The algorithm employs the Voronoi tessellation to allow nearest neighbor retrievals to be performed in expected constant time which is independent of the dimension. Under the assumption that the points in the file are uniformly distributed, it is shown that as the amount of storage is increased, the expected number of records examined will approach 1. (Author abstract) 7 Refs.

R. R. Murphy. See also [804].

R. Murray. See also [1228].

9987 Richard M. Murray, Zexiang Li, and S. Shankar Sastry. *A Mathematical Introduction to Robotic Manipulation*. CRC Press, 1994. [mls-mirm-94] *Location:* Boca Raton.

R. M. Murray. See also [8519].

W. Murray. See also [5960].

9988 Murtagh. Expected-time complexity results for hierarchic clustering algorithms which use cluster centers. *Inform. Process. Lett.*, 16, 1983. [m-etcrh-83]

9989 F. Murtagh. A survey of recent advances in hierarchical clustering algorithms. Manuscript, Dept. Comput. Sci., Univ. College Dublin, Dublin, Ireland, ?? [m-srahc-??]

T. P. Murtagh. See also [6356].

9990 S. K. Murthy, S. Kasif, and S. Salzberg. A system for induction of oblique decision trees. *Journal of Artificial Intelligence Research*, 2:1–33, 1994. [mks-siodt-94]

V. Murthy. See also [10039].

9991 K. Murty. *Linear and Combinatorial Programming*. John Wiley & Sons, New York, 1976. [m-lcp-76]

9992 K. Murty. The graph of an abstract polytope. *Math. Program.*, 4:336–346, 1973. [m-gap-73]

K. Murty. See also [95].

9993 Katta G. Murty. Computational complexity of parametric linear programming. *Math. Program.*, 19:213–219, 1980. [m-ccplp-80]

M. Murty. See also [3261].

U. S. R. Murty. See also [2252].

9994 O. Musin. Properties of the Delaunay triangulation. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 424–426, 1997. [m-pdt-97] *Cites:* ds-oiti-89, d-otmgc-91, b-kuk-16, j-ctddt-91, l-scsi-77, l-pndt-86, m-dto-93, m-ihdt-95, m-fvtp-97, r-odtr-91, r-mrpdt-90, s-let-78, v-nadpc-08, ZZZ.

9995 O. R. Musin. Construction of the Voronoi diagram and secondary polytope. In P. Engel and H. Syta, editors, *Voronoi's Impact on Modern Science, Book 2*, pages 105–114. Institute of Mathematics of the National Academy of Sciences of Ukraine, Kyiv, 1998. [m-cvdsp-98]

9996 O. R. Musin. Delaunay triangulation and optimality. In *ARO Workshop Comp. Geom.*, pages 37–38, 1993. [m-dto-93]

9997 O. R. Musin. Efficient algorithms for testing membership of a point in polygons and polyhedra. *Programming and computer software*, 17(4):228–235, 1992. [m-eatmp-92] *Keywords:* design of algorithms, detecting, point location, polygons, polyhedra, two-dimensional, three-dimensional. *Comments:* translation from Russian: Programmirovanie, 1991, No. 4, pp. 72–81.

9998 O. R. Musin. Four-vertex theorem for polygon. *Kvant*, ??, 1997. In Russian. [m-fvtp-97]

9999 O. R. Musin. Index of harmony and Delaunay triangulation. *Symmetry: Culture and Science*, 6(3):389–392, 1995. [m-ihdt-95]

10000 O. R. Musin. On some problems of computational geometry and topology. In *??*, volume 1520 of *Lecture Notes Math.*, pages 58–80. Springer-Verlag, 1992. [m-spcgt-92] *Keywords:* computational topology, geometric modelling, partition of unity, manifold embedding, curve fitting, surface fitting, terrain fitting, vector field, piecewise-linear vector field, singular point, separatrix, talweg, watershed, index of vector field, piecewise-linear manifold, distance, distance function, shortest path. *Annote:* Exposition of author's research in CGeo & CTop in three directions: geometric modelling algorithms via partition of unity; discrete analogue of the index of vector field rotation for singular point and separatrix search; distance functions and shortest paths on metric spaces.

G. Musiol. See also [2488].

P. Mussi. See also [5149].

S. Muthukrishnan. See also [8025].

10001 Petra Mutzel. An alternative method to crossing minimization on hierarchical graphs. In Stephen North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 318–333. Springer-Verlag, 1997. [m-amcmh-97]

10002 P. Mutzel and R. Weiskircher. Two-layer planarization in graph drawing. In K.-Y. Chwa and O. H. Ibarra, editors, *Algorithms and Computation*, volume 1533 of *Lecture Notes Comput. Sci.*, pages 69–78. Springer-Verlag, 1998. [mw-tlpgd-98]

Petra Mutzel. See also [462, 4139, 4140, 7206, 7638–7643, 8110–8112].

M. J. Muuss. See also [4564].

Sung-Hyun Myaeng. See also [6631].

10003 B. Myers. A complete and efficient implementation of covered windows. *Computer*, 19:57–69, September 1986. [m-ceicw-86]

10004 Brad Myers, Jim Hollan, Isabel Cruz, et al. Strategic directions in human computer interaction. *ACM Comput. Surv.*, 28(4), 1996. http://www.cs.cmu.edu/\~{}bam/nsfworkshop/hcireport.html. [mhc-sdhci-96] *URL:* http://www.cs.cmu.edu/~bam/nsfworkshop/hcireport.html.

10005 E. W. Myers. An $O(E \log E + I)$ expected time algorithm for the planar segment intersection problem. *SIAM J. Comput.*, 14:625–637, 1985. [m-oetap-85]

Eugene W. Myers. See also [7733].

J. Mylopoulos. See also [12968, 12969].

10006 K. Myszkowski, O. G. Okunev, and T. L. Kunii. Fast collision detection between complex solids using rasterizing graphics hardware. *Visual Comput.*, 11(9):497–511, 1995. [mok-fcdbc-95]

Hyeon-Suk Na. See also [6060].

10007 A. Naamad, W.-L. Hsu, and D. T. Lee. On the maximum empty rectangle problem. *Discrete Appl. Math.*, 8:267–277, 1984. [nhl-merp-84]

A. Naamad. See also [6216, 8616].

10008 L. R. Nackman. Curvature relations in three-dimensional symmetric axes. *Comput. Graph. Image Process.*, 20:43–57, 1982. [n-crtds-82]

10009 L. R. Nackman. Two-dimensional critical point configuration graphs. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-1:442–450, 1984. [n-tdcpc-84]

10010 L. R. Nackman and S. M. Pizer. Three-dimensional shape description using the symmetric axis transform I: Theory. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-7:187–202, 1985. [np-tdsdu-85] *Keywords:* symmetric.

10011 L. R. Nackman and V. Srinivasan. Bisectors of linearly separable sets. *Discrete Comput. Geom.*, 6:263–275, 1991. [ns-blss-91]

10012 L. R. Nackman and V. Srinivasan. Point placement for Delaunay triangulation of polygonal domains. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 37–40, 1991. [ns-ppdtp-91] *Cites:* beg-pgmg-90, bfl-rsddt-88i, b-srpcs-88, b-ls-79, c-cdt-89, dfp-dbrsd-85, gs-pmgsc-85, ll-gdtpg-86, sp-dtasp-91, ZZZ.

L. R. Nackman. See also [4194, 7792–7794, 9591, 9592, 12433–12438].

D. Naddor. See also [10395].

M. Nagao. See also [9317].

10013 S. Nagashima and F. Kimura. An inside test for polyhedron by spherical projection and its application. Report ??, Dept. Graph., College Arts Sci., Univ. Tokyo, Tokyo, Japan, 1985. [nk-itpsp-85]

10014 S. Nagashima et al. Inclusion tests for polygons and polyhedra. In S. M. Slaby and H. Stachel, editors, *Proc. 3rd Internat. Conf. Engineering Graphics and Descriptive Geometry*, pages II:60–63, July 1988. [no-itpp-88]

S. Nagata. See also [7338].

10015 L. W. Nagel. Advice for circuit simulation. In *Proc. ISCAS*, 1980. [n-acs-80]

P. Naggar. See also [1508].

10016 M. Nagl and H. Zischler. A dialog system for the graphical representation of graphs. In *Proc. Workshop WG '78 on Graph Theoretic Concepts in Computer Science*, volume 13 of *Applied Computer Science*, pages 325–339, 1979. [nz-dsgrg-79] *Keywords:* graph drawing.

10017 B. de Sz. Nagy. Solution to problem 3763. *Amer. Math. Monthly*, 46:176–177, 1939. [sn-sp3763-39] *Comments:* See e-p3763-35. *Annote:* Flipping polygon pockets.

10018 G. Nagy. Advances in computational geometry. In *Proc. 21st Midwest Sympos. Circuits Systems*, pages 598–603, 1978. [n-acg-78]

10019 G. Nagy. State of the art in pattern recognition. *Proc. IEEE*, 56:836–860, 1968. [n-sapr-68]

10020 G. Nagy. Terrain visibility. Technical Report, Rensselaer Polytech. Inst., Troy, NY, 1982. [n-tv-82] *Keywords:* Digital elevation models, geometric visibility, hidden-surface algorithms, topography.

G. Nagy. See also [3837–3839, 3843, 3847–3850, 5342, 5344, 9490, 12095].

10021 S. Nahar and Sahni. Fast algorithm for polygon decomposition. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, ??:473–483, 1988. [ns-fapd-88]

10022 S. Näher and K. Mehlhorn. LEDA: A library of efficient data types and algorithms. In *Proc. Internat. Colloq. Automata Lang. Program.*, pages 1–5, 1990. [nm-lledt-90]

10023 S. Näher and C. Uhrig. *The LEDA Manual User Manual*, 1995. [nu-lmum-95]

Stefan Näher. See also [462, 576, 577, 605, 1470, 2614, 5615, 5616, 9453–9473].

10024 D. Naiman and H. Wynn. On intersecting a point set with Euclidean balls. *Comput. Geom. Theory Appl.*, 7:237–244, 1997. [nw-ipseb-97]

10025 D. Q. Naiman and H. P. Wynn. Inclusion-exclusion Bonferroni identities and inequalities for discrete tubelike problems via Euler characteristics. *Ann. Statist.*, 20:43–76, 1992. [nw-iebii-92]

D. Q. Naiman. See also [855].

H. Nair. See also [3850].

K. P. K. Nair. See also [7650].

10026 S. Naito. Applications of visual sensors to industrial robots. *Sensor Technology*, 7:90–93, 1987. [n-avsir-87]

10027 I. Najfeld. *Analytic design of compensators and computational geometry*. Ph.D. thesis, Brown Univ., Providence, RI, 1978. [n-adccg-78] *Keywords:* doctoral thesis.

10028 M. A. Najork and M. H. Brown. Obliq-3D: A high-level, fast-turnaround 3d animation system. *IEEE Trans. Visualizat. Comput. Graph.*, 1(2):175–192, 1995. [nb-o3dhl-95]

M. A. Najork. See also [2519, 2520].

M. Nakade. See also [7376, 10285].

J. Nakagawa. See also [13741].

K. Nakagawa. See also [5655].

10029 M. Nakajima and K. Hayashi. Automated parts layout planning in garment industry by using group technology. In *Computers in the World of Textiles*, pages 297–310, 1984. Textile Institute Annual World Conference. [nh-aplpg-84]

10030 N. Nakajima, Y. Ohta, S. Shinotuka, and S. Tokumasu. Direct generation of solid model from wire-frame model. Manuscript, ??, 1985. [nost-dgsmw-85]

A. Nakamoto. See also [3555].

10031 A. Nakamura and K. Aizawa. Digital circles. *Comput. Vision Graph. Image Process.*, 26:42–255, 1984. [na-dc-84]

10032 A. Nakamura and K. Aizawa. Digital images of geometric pictures. *Comput. Vision Graph. Image Process.*, 30:107–120, 1985. [na-digp-85]

10033 A. Nakamura and K. Aizawa. Digital squares. *Comput. Vision Graph. Image Process.*, 49:357–368, 1990. [na-ds-90]

10034 K. Nakamura, H. Fujimoto, T. Suzuki, Y. Tarui, and Y. Kiyokane. Visual programming environment in communications software. In *Proc. 5th IEEE Global Telecom Conference*, pages 435–439, 1986. [nfstk-vpecs-86] *Keywords:* graph drawing.

10035 Y. Nakamura and R. Mukherjee. Nonholonomic path planning and automation. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1050–1055, 1989. [nm-nppa-89]

Y. Nakanishi. See also [4615, 4616].

H. Nakano. See also [4615, 4616].

J. Nakano. See also [6706, 12936].

Shin ichi Nakano. See also [3278–3280, 10961].

Shin-ichi Nakano. See also [10962].

10036 Tran Quoc Nam. A hybrid symbolic-numerical method for tracing curves and surface intersections. In *Abstracts 11th European Workshop Comput. Geom.*, pages 79–82. Universität Linz, 1995. [n-hsnmt-95]

10037 M. Namiki and K. Fukuda. Unfolding 3-dimensional convex polytopes: A package for Mathematica 1.2 or 2.0. Mathematica Notebook, Univ. of Tokyo, 1993. [nf-u3dcp-93]

I. Namioka. See also [7986, 7987].

10038 S. C. Nandy, K. Mukhopadhyaya, and Bhargab B. Bhattacharya. Shooter location problem. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 93–98, 1996. [nmb-slp-96]

S. C. Nandy. See also [2876, 6837, 9776, 9777].

U. Nanni. See also [1119].

10039 P. Nanua, K. J. Waldron, and V. Murthy. Direct kinematic solution of a stewart platform. *IEEE Trans. Robot. Autom.*, 6(4):438–444, 1990. [nwm-dkssp-90]

D. Naor. See also [6492].

J. Naor. See also [9878].

M. Naor. See also [7731, 9878].

10040 N. Naor and M. Sharir. Computing a point in the center of a point set in three dimensions. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 10–13, 1990. [ns-cpcps-90] *Cites:* aks-osn-83, c-pms-86, c-sdsno-87, csy-khrp-87, eos-calha-86, m-apcad-83, ns-fpcng-, ZZZ.

10041 N. Naor and M. Sharir. On finding a point in the center of n given points in three dimensional space. Technical report, ??, ?? In preparation. [ns-fpcng-]

N. Naor. See also [773–775].

M. Naranjo. See also [11225].

10042 G. Narasimhan. On Hamiltonian triangulations in simple polygons. In *Proc. 5th Workshop Algorithms Data Struct.*, volume 1272 of *Lecture Notes Comput. Sci.*, pages 321–330. Springer-Verlag, 1997. [n-ohtsp-97]

10043 G. Narasimhan. On Hamiltonian triangulations in simple polygons. *Internat. J. Comput. Geom. Appl.*, 9(3):261–275, June 1999. [n-htsp-99]

10044 G. Narasimhan and M. Smid. Approximating the stretch factor of Euclidean graphs. Report 16, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1999. [ns-asfeg-99]

10045 G. Narasimhan and M. Smid. Approximating the stretch factor of Euclidean graphs. *SIAM J. Comput.*, 30:978–989, 2000. [ns-asfeg-00]

10046 G. Narasimhan and M. Smid. Approximating the stretch factor of Euclidean paths, cycles and trees. Report 9, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1999. [ns-asfep-99]

10047 G. Narasimhan and M. Smid. Approximation algorithms for the bottleneck stretch factor problem. Report 13, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 2000. [ns-aabsf-00]

10048 G. Narasimhan and M. Smid. Approximation algorithms for the bottleneck stretch factor problem. In *Proc. 18th Sympos. Theoret. Aspects Comput. Sci.*, volume 2010 of *Lecture Notes Comput. Sci.*, pages 502–513. Springer-Verlag, 2001. [ns-aabsf-01]

10049 G. Narasimhan, J. Zhu, and M. Zachariasen. Experiments with computing geometric minimum spanning trees. In *Proc. 2nd Workshop Algorithm Eng. Exper.*, pages 183–196, 2000. [nzz-ecgms-00]

G. Narasimhan. See also [797, 2823, 2824, 3751–3754, 3757, 3765–3770, 6363–6365, 8757–8760].

10050 L. S. Narasimhan. *Recognition of Polyhedral Objects: Concepts and Algorithms*. PhD thesis, The University of Texas, Dallas, Texas, 1988. [n-rpoca-88] *Keywords:* doctoral thesis.

O. Narayan. See also [904, 909, 910].

10051 H. Narayanan, H. Saran, and V. V. Vazirani. Randomized parallel algorithms for matroid union and intersection, with applications to arborescences, and edge-disjoint spanning trees. In *Proc. 3rd ACM Sympos. Discr. Alg.*, 1992. [nsv-rpamu-92]

10052 C. Narayanaswami. A parallel polygon-clipping algorithm. *Visual Comput.*, 12(3):147–158, 1996. [n-ppca-96]

10053 Chandrasekhar Narayanaswami. *Parallel Processing for Geometric Applications*. PhD thesis, Electrical, Computer, and Systems Engineering Dept., Rensselaer Polytechnic Institute, 1991. UMI no. 92-02201. [n-ppga-91] *Keywords:* doctoral thesis, area, parallel computation, grids.

10054 C. Narayanaswami and W. R. Franklin. Determination of mass properties of polygonal CSG objects in parallel. *Internat. J. Comput. Geom. Appl.*, 1(4):381–403, 1991. [nf-dmppc-91a] *Keywords:* parallel computation, intersection, constructive solid geometry, area, grids. *Succeeds:* nf-dmppc-91i.

10055 Chandrasekhar Narayanaswami and Wm. Randolph Franklin. Boolean combinations of polygons in parallel. In *Proc. 1992 Internat. Conf. Parallel Process.*, August 1992. [nf-bcpp-92] *Keywords:* parallel computation, grids, intersection, CAD.

10056 Chandrasekhar Narayanaswami and Wm. Randolph Franklin. Determination of mass properties of polygonal CSG objects in parallel. In Joshua Turner, editor, *Proc. Symposium on Solid Modeling Foundations and CAD/CAM Applications*, pages 279–? ACM/SIGGRAPH, June 1991. [nf-dmppc-91i] *Keywords:* parallel computation, intersection, grids, constructive solid geometry, area. *Precedes:* nf-dmppc-91a.

10057 Chandrasekhar Narayanaswami and Wm. Randolph Franklin. Edge intersection on the Hypercube computer. *Inform. Process. Lett.*, 41(5):257–262, April 1992. [nf-eihc-92] *Keywords:* parallel algorithms, performance evaluation, intersection, grids.

Chandrasekhar Narayanaswami. See also [445, 5501, 5504, 5508].

10058 E. Nardelli and M. Talamo. A fast algorithm for planarization of sparse diagrams. Technical Report R.105, IASI-CNR, Rome, 1984. [nt-fapsd-84] *Keywords:* graph drawing.

E. Nardelli. See also [1508, 1511–1514, 4141, 4142].

P. M. Narendra. See also [5668, 8255].

10059 A. Narkhede and D. Manocha. Fast polygon triangulation based on seidel's algorithm. In A. W. Paeth, editor, *Graphics Gems V*, pages 394–397. Academic Press, 1995. ISBN 0-12-543455-3. [nm-fptbs-95]

Atul Narkhede. See also [8360, 8361].

10060 W. Narkiewicz. *Number Theory*. World Scientific, 2nd edition, 1983. [n-nt-83]

Sara do Nascimento. See also [10267].

C. Nash. See also [345].

10061 J. M. Nash, P. M. Dew, M. E. Dyer, and J. R. Davy. Parallel algorithm design on the WPRAM model. Technical Report 94.24, School of Computer Science, Univeristy of Leeds, 1994. [nddd-padwm-94]

10062 C. St. J. A. Nash-Williams. Edge-disjoint spanning trees of finite graphs. *J. London Math. Soc.*, 36:445–450, 1961. [n-edstf-61]

D. Nashtir. See also [7874].

10063 A. H. Nasri. Polyhedral subdivision methods for free-form surfaces. *ACM Trans. Graph.*, 6:29–73, 1985. [n-psmff-85]

M. Nassar. See also [3891].

M. Nasser. See also [3892].

10064 D. Nassimi and S. Sahni. Data broadcasting in simd computers. *IEEE Trans. on Compu.*, c-30(2):101–106, 1981. [ns-dbsc-81]

10065 D. Nassimi and S. Sahni. Finding connected components and connected ones on a mesh-connected parallel computer. *SIAM J. Comput.*, 9:744–757, 1980. [ns-fccco-80]

10066 D. Nassimi and S. Sahni. Parallel permutation and sorting algorithms and a new generalized connection network. *J. ACM*, 29(3):642–667, 1982. [ns-ppsan-82]

10067 B. K. Natarajan. An algorithmic approach to the automated design of parts orienters. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 132–142. IEEE Computer Society, 1986. [n-aaadp-86]

10068 B. K. Natarajan. An analysis of assembly. *Visual Comput.*, 5(5):316–323, October 1989. [n-aa-89] *Keywords:* assembly of composite subjects, classes, sequence of motions.

10069 B. K. Natarajan. On comparing and compressing piece-wise linear curves. Technical report, Hewlett Packard, 1991. [n-ccpwl-91]

10070 B. K. Natarajan. On computing the intersection of B-splines. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 157–167, 1990. [n-cibs-90] *Cites:* bhlh-tsi-88, bfjp-ssi-87, bbb-isucg-87, b-pgs-78, clr-dbsst-80, d-fibsr-85, fmm-saubd-86, ks-gictr-??, lr-bp-81, s-sfbt-81, w-smfib-84, ZZZ.

10071 B. K. Natarajan. On detecting the orientation of polygons and polyhedra. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 146–152, 1987. [n-dopp-87] *Cites:* b-dscns-84, cy-sp-83, dey-pcp-86, em-esm-86, n-aaadp-86, ZZZ.

10072 B. K. Natarajan. *On Moving and Orienting Objects*. Technical Report, Dept. Computer Science, Cornell University, 1986. 86-775. [n-moo-86] *Keywords:* doctoral thesis.

10073 B. K. Natarajan. On piece-wise linear approximations to curves. Technical Report HPL-91-36, Hewlett Packard Labs, Palo Alto, CA, 1991. [n-pwlac-91]

10074 B. K. Natarajan. On piecewise linear approximations to curves. In *SIAM Conference on Geometric Design*, 1991. [n-oplac-91]

10075 B. K. Natarajan. On planning assemblies. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 299–308, 1988. [n-pa-88] *Cites:* c-crsdr-85, d-rbwdo-84, gy-tsr-80, hss-cmpmi-84, lw-aapsc-77, o-ar-85, r-ra-85, r-cmpg-79, te-stmpl-84, ts-snrmp-83, ZZZ.

10076 B. K. Natarajan. Some paradigms for the automated design of parts feeders. *Internat. J. Robot. Res.*, 8(6):98–109, December 1989. [n-spadp-89]

10077 B. K. Natarajan and J. Ruppert. On sparse approximations of curves and functions. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 250–256, 1992. [nr-sacf-92] *Cites:* abgw-acp-90, ag-mrpc-92, ii-oaapl-86a, ii-cgmpa-86, g-nmccd-91, ghms-apsml-91, mo-pca-88, ms-saps-92, t-capcp-85, in-pladc-91, ii-cgmpa-86, ishs-spadc-83, lm-krpbc-87, n-pwlac-91, n-oplac-91, nh-dp-88, n-asf-89, r-iaf-69, r-licab-90, s-ldpsp-88, ZZZ.

B. K. Natarajan. See also [1927].

10078 D. Nath, S. N. Maheshwari, and P. C. P. Bhatt. Parallel algorithms for the convex hull in two dimensions. Technical Report EE 8005, Indian Inst. Technology, New Delhi, India, 1981. [nmb-pacht-81]

10079 D. Nath, S. N. Maheshwari, and P. C. P. Bhatt. Parallel algorithms for the convex hull problem in two dimensions. Report EE 8005, Indian Inst. Tech., New Delhi, India, 1980. [nmb-pachp-80]

Dana S. Nau. See also [6483].

10080 J. I. Naus. Clustering of random points in 2 dimensions. *Biometrika*, 52:263–267, 1966. [n-crp2d-66]

S. B. Navathe. See also [1509].

I. Navazo. See also [1200, 2543, 11643, 13250].

J. Nave. See also [3530].

10081 B. Naylor. Constructing good partitioning trees. In *Proc. Graphics Interface '93*, pages 181–191, 1993. [n-cgpt-93]

10082 B. Naylor, J. A. Amanatides, and W. Thibault. Merging BSP trees yields polyhedral set operations. *Comput. Graph.*, 24(4):115–124, August 1990. Proc. SIGGRAPH '90. [nat-mbtyp-90]

10083 Bruce Naylor and William Thibault. Application of BSP trees to ray-tracing and CSG evaluation. Technical Report GIT-ICS 86/03, Georgia Institute of Tech., School of Information and Computer Science, February 1986. [nt-abtrt-86] *Keywords:* hierarchies.

B. Naylor. See also [5635, 7336].

10084 Bruce F. Naylor. Constructing good partitioning trees. Manuscript, ?? [n-cgpt-]

10085 Bruce F. Naylor. Interactive solid geometry via partitioning trees. In *Proc. Graphics Interface '92*, pages 11–18, 1992. [n-isgpt-92]

10086 Bruce F. Naylor. Partitioning tree image representation and generation from 3d geometric models. Manuscript, ?? [n-ptirg-]

10087 B. F. Naylor. Sculpt: an interactive solid modeling tool. In *Proc. Graphics Interface '90*, pages 138–148, 1990. [n-sismt-90]

B. F. Naylor. See also [12880].

10088 Manuela Neagu. Arrangements of curves in the plane: What does "equivalence" mean? In *Abstracts 15th European Workshop Comput. Geom.*, pages 181–183. INRIA Sophia-Antipolis, 1999. [n-acpwd-99]

10089 Manuela Neagu and Bernard Lacolle. Computing the combinatorial structure of arrangements of curves using polygonal approximations. In *Abstracts 14th European Workshop Comput. Geom.*, pages 121–123. Universitat Polytènica de Catalunya, Barcelona, 1998. [nl-ccsac-98]

Oren Nechushtan. See also [5326].

J. Nedoma. See also [9154].

A. Y. C. Nee. See also [3124].

10090 W. Nef. *Beiträge zur Theorie der Polyeder*. Herbert Lang, Bern, 1978. [n-bztdp-78]

10091 W. Nef and H. Bieri, editors. *Abstracts 2nd Intern. Workshop Comput. Geom.* Universität Bern, 1984. [nb-iwcg-84]

W. Nef. See also [2007–2011].

10092 C. A. Neff. Finding the distance between two circles in three-dimensional space. *IBM J. Res. Develop.*, 34:770–775, 1990. [n-fdbtc-90]

C. A. Neff. See also [5143].

10093 S. Negami. Diagonal flips of triangulations on surfaces. In *Proc. 5th Franco-Japanese Days on Combinatorics and Optimization*, page ??, 1992. [n-dfts-92]

Viorel Negru. See also [3637–3639].

Thomas W. Nehl. See also [5240].

Dmitry Nekhayev. See also [4081].

10094 G. Nelson. Juno, a constraint-based graphics system. *Comput. Graph.*, 19(3):235–243, 1985. Proc. SIGGRAPH '85. [n-jcbgs-85]

Greg Nelson. See also [5969].

10095 J. M. Nelson. A triangulation algorithm for arbitrary planar domains. *Appl. Math. Modelling*, 2:151–159, 1978. [n-taapd-78]

10096 R. C. Nelson and H. Samet. A consistent hierarchical representation for vector data. *Comput. Graph.*, 20(4):197–206, August 1986. Proc. SIGGRAPH '86. [ns-chrvd-86]

10097 R. C. Nelson and H. Samet. A population analysis for hierarchical data structures. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 270–277, May 1987. [ns-pahds-87]

10098 R. C. Nelson and H. Samet. A population analysis of quadtrees with variable node size. Computer Science TR–1740, University of Maryland, College Park, MD, December 1986. [ns-paqvn-86]

R. C. Nelson. See also [11590, 11591, 11596, 11597, 12008].

10099 G. L. Nemhauser and L. E. Trotter, Jr. Vertex packing: structural properties and algorithms. *Math. Prog.*, 8:232–248, 1975. [nt-vpspa-75]

G. L. Nemhauser. See also [3550, 7155].

10100 A. S. Nemirovsky and D. B. Yudin. *Problem Complexity and Method Efficiency in Optimization*. John Wiley & Sons, New York, 1983. [ny-pcmeo-83]

10101 J. Nešetřil and P. Valtr. A Ramsey property of order types. *J. Combin. Theory Ser. A*, 81:88–107, 1998. [nv-rpot-98]

10102 J. Nešetřil and P. Valtr. A Ramsey-type theorem in the plane. *Combinatorics, Probability and Computing*, 3:127–135, 1994. [nv-rttp-94]

10103 J. Nešetřil, P. Valtr, and J. Solymosi. Induced monochromatic configurations. In *Contemporary trends in Discrete Math.*, DIMACS Series 49, pages 219–228, 1999. [nvs-imc-99]

J. Nešetřil. See also [8314, 8317].

N. Netanyahu. See also [9903].

10104 N. S. Netanyahu. *Computationally efficient algorithms for robust estimation*. PhD thesis, Department of Computer Science, University of Maryland, 1991. [n-ceare-91] *Keywords:* doctoral thesis. *Precedes:* n-ceare-92.

10105 N. S. Netanyahu. Computationally efficient algorithms for robust estimation. Technical Report cs-tr-2898, University of Maryland, May 1992. [n-ceare-92] *Succeeds:* n-ceare-91.

N. S. Netanyahu. See also [911, 912, 4226–4228, 7759, 9297, 9298, 9904–9912, 11438].

10106 A. N. Netravali and B. G. Haskell. *Digital Pictures — Representation and Compression*. Plenum Press, New York, NY, 1988. [nh-dp-88]

A. N. Netravali. See also [2532].

10107 Friedhelm Neugebauer and Ralf Dickmann. Improved mesh generation: not simple but good. In *Proc. 5th International Meshing Roundtable*, pages 257–270, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [nd-imgns-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

A. Neumaier. See also [2502].

S. Neuman. See also [5028].

10108 A. Neumann. The new ASME Y14.5M standard. *Manufacturing Review*, 7(4):9–15, 1994. [n-tnas-94]

10109 C. Neumann-Lara and J. Urrutia. A combinatorial result on points and circles in the plane. *Discrete Math.*, 69:173–178, 1988. [nu-crpcp-88]

V. Neumann-Lara. See also [34–37].

10110 O. Nevalainen and J. Ernvall. A note on a minimal spanning tree algorithm for Euclidean space. Report 25, Dept. Comput. Sci., Univ. Turku, Turku, Finland, 1980. [ne-nmsta-80]

10111 O. Nevalainen, J. Ernvall, and J. Katajainen. Finding minimal spanning trees in a Euclidean coordinate space. *BIT*, 21:46–54, 1981. [nek-fmste-81]

O. Nevalainen. See also [5029, 5030, 7864, 8682].

L. A. Newberg. See also [507].

10112 F. Newbery. An interface description language for graph editors. In *Proc. IEEE Workshop on Visual Languages*, 1988. [n-idlge-88] *Keywords:* graph drawing.

10113 F. J. Newbery. Edge concentration: A method for clustering directed graphs. In *Proc. 2nd Internat. Workshop on Software Configuration Management*, pages 76–85, 1989. [n-ecmcd-89] *Keywords:* graph drawing.

F. J. Newbery. See also [12912].

10114 F. Newbery Paulisch and W. F. Tichy. EDGE: An extendible graph editor. *Softw. – Pract. Exp.*, 20(S1):63–88, 1990. also as Technical Report 8/88, Fakultat fur Informatik, Univ. of Karlsruhe, 1988. [nt-eege-90] *Keywords:* graph drawing.

F. Newbery Paulisch. See also [2139].

10115 M. Newborn and W. O. J. Moser. Optimal crossing-free Hamiltonian circuit drawings of K_n. *J. Combin. Theory Ser. B*, 29:13–26, 1980. [nm-ocfhc-80]

M. Newborn. See also [388].

10116 M. Newell, R. Newell, and T. Sancha. A new solution to the hidden surface problem. In *Proc. ACM Annu. Conf.*, pages 443–448, 1972. [nns-nshsp-72]

10117 M. E. Newell and C. H. Sequin. The inside story on self-intersecting polygons. *Lambda*, 1:20–21, 1980. [ns-issip-80]

R. Newell. See also [10116].

10118 D. J. Newman. *A problem seminar*. Springer-Verlag, Berlin, Germany, 1982. [n-ps-82]

10119 W. M. Newman and R. F. Sproull. *Principles of Interactive Computer Graphics*. McGraw-Hill, New York, NY, 1979. [ns-picg-79]

P. E. Ney. See also [1056].

10120 R. T. Ng and J. Han. Efficient and effective clustering methods for spatial data mining. In *Proceedings of the Twentieth International Conference on Very Large Databases*, pages 144–155, 1994. [nh-eecms-94]

T. Nguyen. See also [4968, 4969, 8202].

10121 V. Nguyen, T. Roos, and P. Widmayer. Balanced cuts of a set of hyperrectangles. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 121–126, 1993. [nrw-bcsh-93] *Cites:* df-ssh-93, df-obpps-92p, b-mbstu-75, g-rtdis-84, py-bpahs-89, s-dasds-90, nhs-gfasm-84, py-obspo-90, ZZZ.

10122 Van-Duc Nguyen. The find-path problem in the plane. A.I. Memo 760, MIT, AI Laboratory, 1984. [n-fppp-84]

10123 V.-D. Nguyen. The synthesis of stable force-closure grasps. Technical Report MIT AI-TR-905, Artif. Intell. Lab., Massachusetts Inst. Tech., Cambridge, MA, 1986. [n-ssfcg-86]

10124 Viet Hai Nguyen, Peter Widmayer, and Thomas Roos. Best cuts of a set of hyperrectangles. In *Abstracts 9th European Workshop Comput. Geom.*, pages 1–5. FernUniversität Hagen, 1993. [nwr-bcsh-93]

10125 V. Ph. Nguyen. Automatic mesh generation with tetrahedron elements. *Internat. J. Numer. Methods Eng.*, 18:273–289, 1982. [n-amgte-82]

L. Ni. See also [9200, 9201].

W.-C. Ni. See also [9251].

W. Niblack. See also [5336].

10126 T. M. Nicholl, D. T. Lee, Y. Z. Liao, and C. K. Wong. On the $X-Y$ convex hull of a set of $X-Y$ polygons. *BIT*, 23(4):456–471, 1983. [nllw-xchsx-83]

T. M. Nicholl. See also [5671, 5672].

Margaret Nichols. See also [5505, 5510, 5511].

10127 S. Nickel, J. Puerto, A. Rodriguez-Chia, and A. Weißler. General continuous multicriteria location problems. Report in Wirtschaftsmathematik 28, University of Kaiserslautern, Department of Mathematics, 1997. [nprw-gcmlp-97]

10128 Stefan Nickel, Justo Puerto, and Ansgar Weißler. Geometric solution comcepts for planar ordered Weber problems. In *Abstracts 15th European Workshop Comput. Geom.*, pages 43–46. INRIA Sophia-Antipolis, 1999. [npw-gscpo-99]

S. Nickel. See also [7315–7317, 11320].

Bradford G. Nickerson. See also [8462].

A. Nicolau. See also [2019, 2020].

10129 H. Niederreiter. Methods for estimating discrepancy. In S. K. Zaremba, editor, *Applications of Number Theory to Numerical Analysis*, pages 203–236. Academic Press, 1971. [n-med-71]

10130 W. P. Niedringhaus. Scheduling with queueing: The space factory problem. Technical report, Princeton University, 1979. [n-sqsfp-79]

10131 F. Nielsen. *Algorithmes géométriques adaptatifs*. Thèse de doctorat en sciences, université de Nice-Sophia Antipolis, France, 1996. [n-aga-96] *Keywords:* doctoral thesis.

10132 Frank Nielsen. Constrained approximate pattern matching and its applications. In *Abstracts 15th European Workshop Comput. Geom.*, pages 191–193. INRIA Sophia-Antipolis, 1999. [n-capma-99]

10133 F. Nielsen. Fast stabbing of boxes in high dimensions. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 87–92, 1996. [n-fsbhd-96]

10134 Franck Nielsen. Fast stabbing of boxes in high dimensions. In *Abstracts 12th European Workshop Comput. Geom.*, page 121. Universität Münster, 1996. [n-fsbhd-96c] *Cites:* ZZZ.

10135 F. Nielsen. Output-sensitive Peeling of Convex and Maximal Layers. *Inform. Process. Lett.*, 59:255–259, 1996. [n-ospcm-96]

10136 F. Nielsen and M. Yvinec. Output-sensitive convex hull algorithms of planar convex objects. Research Report 2575, INRIA, BP93, 06902 Sophia-Antipolis, France, 1994. [ny-oscha-94] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=2575. *Precedes:* ny-oscha-98. *Abstract:* A set of planar objects is said to be of type m if the convex hull of any two objects has its size bounded by $2m$. In this paper, we present an algorithm based on the marriage-before-conquest paradigm to compute the convex hull of a set of n planar convex objects of fixed type m. The algorithm is output-sensitive, i.e. its time complexity depends on the size h of the computed convex hull. The main ingredient of this algorithm is a linear method to find a *bridge*, i.e. a facet of the convex hull intersected by a given line. We obtain an $O(n\beta(h,m)\log h)$-time convex hull algorithm for planar objects. Here $\beta(h,2)=O(1)$ and $\beta(h,m)$ is an extremely slowly growing function. As a direct consequence, we can compute in optimal $\Theta(n \log h)$ time the convex hull of disks, convex homothets, non-overlapping objects. The method described in this paper also applies to compute lower envelopes of functions. In particular, we obtain an optimal $\Theta(n \log h)$-time algorithm to compute the upper envelope of line segments.

10137 F. Nielsen and M. Yvinec. Output-sensitive convex hull algorithms of planar convex objects. *Internat. J. Comput. Geom. Appl.*, 8(1):39–66, 1998. [ny-oscha-98] *URL:* http://www.inria.fr/RRRT/RR-2575. *Succeeds:* ny-oscha-94. *Abstract:* A set of planar objects is said to be of type m if the convex hull of any two objects has its size bounded by $2m$. In this paper, we present an algorithm based on the marriage-before-conquest paradigm to compute the convex hull of a set of n planar convex objects of fixed type m. The algorithm is output-sensitive, i.e. its time complexity depends on the size h of the computed convex hull. The main ingredient of this algorithm is a linear method to find a *bridge*, i.e. a facet of the convex hull intersected by a given line. We obtain an $O(n\beta(h,m)\log h)$-time convex hull algorithm for planar objects. Here $\beta(h,2)=O(1)$ and $\beta(h,m)$ is an extremely slowly growing function. As a direct consequence, we can compute in optimal $\Theta(n \log h)$ time the convex hull of disks, convex homothets, non-overlapping objects. The method described in this paper also applies to compute lower envelopes of functions. In particular, we obtain an optimal $\Theta(n \log h)$-time algorithm to compute the upper envelope of line segments.

Frank Nielsen. See also [4809, 4810, 7885, 7895, 7896].

G. Nielson. See also [5461].

10138 G. M. Nielson and R. Franke. Surface construction based upon triangulations. In R. Barnhill and W. Boehm, editors, *Surfaces in Computer-Aided Geometric Design*, pages 163–177. North-Holland, 1983. [nf-scbut-83] *Annote:* Two different triangulations considered for surface generation. DT and “min-max” triangulation which minimizes maximum triangle angles.

G. M. Nielson. See also [6554, 10976].

D. R. Niemeyer. See also [4398].

10139 J. Nievergelt, editor. *Abstracts 1st Intern. Workshop Comput. Geom.* ETH Zürich, 1983. [n-iwcg-83]

10140 J. Nievergelt. Konsistenzprobleme beim geometrischen Rechner. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [n-kbgr-89]

10141 J. Nievergelt and K. H. Hinrichs. *Algorithms and Data Structures: With Applications to Graphics and Geometry.* Prentice Hall, Englewood Cliffs, NJ, 1993. [nh-adsag-93] *Keywords:* book. *Comments:* Computing Reviews 9401-0020.

10142 J. Nievergelt, H. Hinterberger, and K. C. Sevcik. The grid file: An adaptable, symmetric multi-key file structure. Report 46, Inst. Inform., Eidgenössische Tech. Hochschule Zürich, Zürich, Switzerland, 1981. [nhs-gfasm-81]

10143 J. Nievergelt, H. Hinterberger, and K. C. Sevcik. The grid file: An adaptable, symmetric multi-key file structure. *ACM Trans. Database Syst.*, 9(1):38–71, 1984. [nhs-gfasm-84]

10144 J. Nievergelt and F. P. Preparata. Plane-sweep algorithms for intersecting geometric figures. *Commun. ACM*, 25:739–747, 1982. [np-psaig-82] *Keywords:* polygons, intersection, two-dimensional.

10145 J. Nievergelt and E. M. Reingold. Binary search trees of bounded balance. *SIAM J. Comput.*, 2:33–43, 1973. [nr-bstbb-73]

10146 Jürg Nievergelt, Peter Schorn, Michele de Lorenzi, Christoph Ammann, and Adrian Brüngger. XYZ: A project in experimental geometric computation. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 171–186. Springer-Verlag, 1991. [nslab-xpegc-91] *Annote:* 7th Intern. Workshop Comput. Geom.

10147 J. Nievergelt, P. Schorn, M. de Lorenzi, C. Ammann, and A. Brüngger. XYZ: Software for geometric computation. Report 163, Institut für Theorische Informatik, ETH, Zürich, Switzerland, July 1991. [nslab-xsgc-91]

10148 J. Nievergelt and P. Widmayer. Guard files: Stabbing and intersection queries on fat spatial objects. *Comput. J.*, 36:107–116, 1993. [nw-gfsiq-93]

10149 J. Nievergelt and P. Widmayer. Spatial data structures: Concepts and design choices. unpublished manuscript, 1996. [nw-sdscd-96]

10150 Jürg Nievergelt and Peter Widmayer. Spatial data structures: Concepts and design choices. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 725–764. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [nw-sdscd-00] *Annote:* Chapter 17 of su-hcg-00.

J. Nievergelt. See also [2544, 6894, 6931–6936, 9224, 11144].

Niinimaa. See also [10258].

10151 Masatoshi Niizeki and Fujio Yamaguchi. Projectively invariant intersection detection for solid modelling. *ACM Trans. Graph.*, 13(3):277–299, 1994. [ny-piids-94] *Keywords:* intersection, homogeneous coordinates, solid modeling. *Comments:* Correction to mst-ialc-89.

M. Niizeki. See also [13739].

10152 V. V. Nikulin and I. R. Shafarevich. *Geometrics and Groups.* Springer-Verlag, 1987. [ns-gg-87]

Nilsson. See also [668].

10153 Bengt J. Nilsson. *Guarding Art Galleries — Methods for Mobile Guards.* PhD thesis, Lund University, 1995. [n-gagmm-95] *Keywords:* doctoral thesis.

10154 Bengt J. Nilsson, Thomas Ottmann, Sven Schuierer, and Christian Icking. Restricted orientation computational geometry. In Burkhard Monien and Thomas Ottmann, editors, *Data Structures and Efficient Algorithms*, volume 594 of *Lecture Notes Comput. Sci.*, pages 148–185. Springer-Verlag, 1992. [nosi-rocg-92]

10155 Bengt J. Nilsson and S. Schuierer. An optimal algorithm for the rectilinear link center of a rectilinear polygon. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 249–260. Springer-Verlag, 1991. [ns-oarlc-91] *Keywords:* link distance, link center, orthohedral, visibility, polygon. *Precedes:* ns-oarlc-96.

10156 Bengt J. Nilsson and S. Schuierer. An optimal algorithm for the rectilinear link center of a rectilinear polygon. *Comput. Geom. Theory Appl.*, 6:169–194, 1996. [ns-oarlc-96] *Keywords:* link distance, link center, orthohedral, visibility, polygon. *Succeeds:* ns-oarlc-91.

10157 Bengt J. Nilsson and Sven Schuierer. Computing the rectilinear link diameter of a polygon. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 203–215. Springer-Verlag, 1991. [ns-crldp-91] *Annote:* 7th Intern. Workshop Comput. Geom. *Abstract:* The problem of finding the diameter of a simple polygon has been studied extensively in recent years. $O(n \log n)$ time upper bounds have been given for computing the geodesic diameter and the link diameter for a polygon. We consider the rectilinear case of this problem and give a linear time algorithm to compute the rectilinear link diameter of a simple rectilinear polygon. To our knowledge this is the first optimal algorithm for the diameter problem of non-trivial classes of polygons.

10158 Bengt J. Nilsson and D. Wood. Optimum watchmen routes in spiral polygons, August 1989. Manuscript, University of Waterloo, Ontario, Canada. [nw-owrsp-90m] *Precedes:* nw-owrsp-90i.

10159 B. J. Nilsson and D. Wood. Optimum watchmen routes in spiral polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 269–272, 1990. [nw-owrsp-90i] *Succeeds:* nw-owrsp-90m. *Cites:* c-ctpg-75, cn-owr-86, cn-wrsp-87, cn-owr-88, f-spcwt-78, o-agta-87, ZZZ.

Bengt J. Nilsson. See also [1720–1723, 2730–2734, 6623–6625, 8387].

L. Nilsson. See also [5315].

10160 N. Nilsson. A mobile automaton: An application of artificial intelligence techniques. In *Proc. IJCAI*, pages 509–520, 1969. [n-maaai-69]

N. J. Nilsson. See also [6698].

I. Nisbigaki. See also [3190].

H. K. Nishihara. See also [9206].

10161 N. Nishimura. Asynchronous shared memory parallel computation. In *Proc. 2nd ACM Sympos. Parallel Algorithms Architect.*, pages 76–84, 1990. [n-asmpc-90]

I. Nishioka. See also [3191].

10162 T. Nishizeki. Lower bounds on cardinality of the maximum matchings of planar graphs. Technical Report, Carnegie-Mellon Univ., Phildelphia, PA, 1977. [n-lbcmm-77]

10163 T. Nishizeki and N. Chiba. *Planar Graphs: Theory and Algorithms*, volume 32 of *Ann. Discrete Math.* North-Holland, Amsterdam, The Netherlands, 1988. [nc-pgta-88] *Keywords:* graph drawing.

T. Nishizeki. See also [411, 3192–3197, 7419, 7420, 7711, 7712, 8425, 12680, 12711].

Takao Nishizeki. See also [8424, 8426, 10961, 10962, 12710].

A. Nissenzweig. See also [4959].

M. Nivat. See also [1545, 1546, 5964].

Y. Nobert. See also [8490].

10164 H. Noborio. Construction of the octree approximating three-dimensional objects by using multiple views. *IEEE Trans. Pattern Anal. Mach. Intell.*, 10:769–782, 1988. [n-coatd-88]

10165 H. Noborio, S. Fukuda, and S. Arimoto. Fast interference check method using octree representation. *Advanced robotics*, 3(3):193–212, 1989. [nfa-ficmu-89]

10166 Hiroshi Noborio, Takahashi Yoshioka, and Shoji Tominaga. An universal sensor-based navigation algorithm. In *Abstracts 13th European Workshop Comput. Geom.*, page 23. Universität Würzburg, 1997. [nyt-usbna-97] *Cites:* ZZZ.

10167 M. H. Nodine, M. T. Goodrich, and J. S. Vitter. Blocking for external graph searching. In *Proc. 12th Annu. ACM Sympos. Principles Database Syst.*, pages 222–232, 1993. [ngv-begs-93]

10168 M. H. Nodine, M. T. Goodrich, and J. S. Vitter. Blocking for external graph searching. *Algorithmica*, 16(2):181–214, August 1996. [ngv-begs-96]

10169 M. H. Nodine and J. S. Vitter. Deterministic distribution sort in shared and distributed memory multiprocessors. In *Proc. 5th ACM Sympos. Parallel Algorithms Architect.*, pages 120–129, 1993. [nv-ddssd-93]

10170 M. H. Nodine and J. S. Vitter. Greed sort: An optimal sorting algorithm for multiple disks. *J. ACM*, 42(4):919–933, July 1995. [nv-gsosa-95]

10171 M. H. Nodine and J. S. Vitter. Large-scale sorting in parallel memories. In *Proc. 3rd ACM Sympos. Parallel Algorithms Architect.*, pages 29–39, 1991. [nv-lsspm-91]

M. H. Nodine. See also [13269].

M. T. Noga. See also [517–519].

10172 E. G. Noik. A space of presentation emphasis techniques for visualizing graphs. In *GI '94: Graphics Interface 1994*, May 1994. [n-spetv-94] *URL:* ftp://db.toronto.edu/pub/papers/gi94.ps.Z.

10173 E. G. Noik. Encoding presentation emphasis algorithms for graphs. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 428–435. Springer-Verlag, 1995. [n-epeag-95] *Keywords:* graph drawing, fisheye view, system.

10174 E. G. Noik. Exploring large hyperdocuments: Fisheye views of nested networks. In *Hypertext '93: ACM Conf. on Hypertext*, pages 192–205, November 1993. [n-elhfv-93]

10175 E. G. Noik. Graphite: A suite of hygraph visualization utilities. In A. O. Mendelzon, editor, *Declarative database visualization: Recent papers from the Hy+/GraphLog project*. Technical report CSRI-285, University of Toronto, July 1993. [n-gshvu-93] *Annote:* Graphite is a set of Unix programs that support general and directed graphs and hygraphs (a nested graph formalism) and perform the following functions: -draw graphs using combinations of 10 basic graph layout algorithms -generate several types of fisheye views -perform simple graph manipulations including: conversion of arc (1-to-1) relations to nested (1-to-many) relations and vice versa, automatic showing and hiding of the contents of selected nodes, link inheritance, convert graphs between several external formats including encapsulated PostScript.

10176 E. G. Noik. Layout-independent fisheye views of nested graphs. In *VL '93: IEEE Symposium on Visual Languages*, pages 336–341, August 1993. [n-lifvn-93]

E. G. Noik. See also [3510].

10177 Hartmut Noltemeier. A new efficient method to represent and process proximity and similarity in sets of complex objects. In *Abstracts 10th European Workshop Comput. Geom.*, page 77. Universidad de Cantabria, Santander, 1994. [n-nemrp-94] *Cites:* ZZZ.

10178 H. Noltemeier, editor. *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1988. [n-cgia-88] *Annote:* 4th Intern. Workshop Comput. Geom.

10179 Hartmut Noltemeier. Layout of flexible manufacturing systems: selected problems. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 217–226. Springer-Verlag, 1991. [n-lfmss-91] *Annote:* 7th Intern. Workshop Comput. Geom.

10180 H. Noltemeier. Voronoi trees and applications. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 69–74, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [n-vta-89]

10181 H. Noltemeier, K. Verbarg, and C. Zirkelbach. Monotonous bisector trees: A tool for efficient partitioning of complex scenes of geometric objects. In *Data Structures and Efficient Algorithms: Final Report on the DFG Special Joint Initiative*, volume 594 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1992. [nvz-mbtte-92] *Succeeds:* z-mbtcp-90.

H. Noltemeier. See also [2012, 3918–3921, 6906, 6907, 7804, 7805, 11370, 11371].

10182 A. K. Noor. Survey of computer programs for solutions of nonlinear structural and solid mechanics problems. *Comput. Struct.*, 13:424–465, 1981. [n-scpsn-81]

J. P. Norback. See also [9862].

S. Norbeck. See also [1613].

10183 S. Nordbeck and B. Rystedt. Computer cartography point-in-polygon programs. *BIT*, 7:39–64, 1967. [nr-ccppp-67]

10184 A. C. Norman. Computing in transcendental extensions. In B. Buchberger, G. E. Collins, R. Loos, and R. Albrecht, editors, *Computer Algebra: Symbolic and Algebraic Computation*, pages 169–172. Springer-Verlag, 1983. [n-cte-83]

10185 S. North. 5114 directed graphs, 1995. Manuscript. ftp.research.bell-labs.com/dist/drawdag/. [n-5dg-95] *Keywords:* graph drawing, experiments.

10186 S. North. Incremental layout in DynaDAG. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 409–418. Springer-Verlag, 1996. [n-ild-96]

10187 S. North and E. Koutsofios. Applications of graph visualization. Technical report, AT&T Bell Laboratories, Murray Hill, NJ., 1995. Available from http://www.research.bell-labs.com/dist/drawdag. [nk-agv-95] *Keywords:* graph drawing.

S. North. See also [4268, 4269, 4592, 8291, 8292].

10188 S. C. North, editor. *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1997. [n-gd-97]

S. C. North. See also [4289, 5738–5740, 8897, 8898].

10189 C. H. Norton, S. A. Plotkin, and É. Tardos. Using separation algorithms in fixed dimension. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 377–387, 1990. [npt-usafd-90] *Precedes:* npt-usafd-92.

10190 C. H. Norton, S. A. Plotkin, and É. Tardos. Using separation algorithms in fixed dimensions. *J. Algorithms*, 13:79–98, 1992. [npt-usafd-92] *Succeeds:* npt-usafd-90.

V. A. Norton. See also [3743].

10191 R. Norwood, G. Poole, and M. Laidacker. The worm problem of Leo Moser. *Discrete Comput. Geom.*, 7:153–162, 1992. [npl-wplm-92]

10192 M. Nosarzewska. Evaluation de la différence entre l'aire d'une région plane convexe et le nombre des points aux coordonnées entières couverts par elle. *Colloq. Math.*, 1, 1948. [n-edlde-48]

M. Nose. See also [6947].

10193 L. V. Nosov and N. M. Korneenko. Special dissection of polygonal regions in LSI mask pattern design. In *GEOBILD'89, Proc. 4th Workshop on Geometrical Problems of Image Processing, Georgenthal, March 13–17, 1989*, volume 51 of *Math. Res.*, pages 53–57, Berlin, GDR, 1989. Akademie-Verlag. [nk-sdprl-89] *Keywords:* isothetic domain, dissection, decomposition, VLSI layout design.

S. Novikov. See also [4467].

S. P. Novikov. See also [4468].

H. Nowacki. See also [13826].

10194 R. Nowakowski and A. Parker. Ordered sets, pagenumbers and planarity. *Order*, 6:209–218, 1989. [np-ospp-89]

10195 R. Nowakowski and I. Rival. Bending and stretching orders into three channels. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 15–18, 1991. [nr-bsotc-91] *Cites:* bk-btg-79, cm-ecgt-78, d-dtpos-50, f-slrpg-48, f-ioig-85, k-fpos-87, m-ctcos-89, np-ospp-89, nru-lcpop-88, t-eggmn-87, w-bzv-36, ZZZ.

10196 R. Nowakowski, I. Rival, and J. Urrutia. Lattices contained in planar orders are planar. University of Ottawa TR-88-12, to appear in Algebra Universalis. [nru-lcpop-88]

R. Nowakowski. See also [7519].

10197 R. J. Nowakowski, I. Rival, and J. Urrutia. Representing orders on the plane by translating points and lines. *Discrete Appl. Math.*, ??:147–156, 1990. [nru-roptp-90]

M. Noy. See also [575, 1520, 5078–5080, 5748–5750, 6840, 6841, 7222–7233, 7235, 8312].

M. Nozik. See also [9572].

10198 Simeon Ntafos. On gallery watchmen in grids. *Inform. Process. Lett.*, 23(2):99–102, August 1986. [n-gwg-86]

10199 S. Ntafos. The robber route problem. Report ??, Dept. Comput. Sci., Univ. Texas, Dallas, TX, 1988. [n-rrp-88] *Keywords:* visibility. *Precedes:* n-rrp-90.

10200 Simeon Ntafos. The robber route problem. *Inform. Process. Lett.*, 34(2):59–63, March 1990. [n-rrp-90] *Keywords:* watchman route, visibility, concealment, TSP. *Succeeds:* n-rrp-88.

10201 S. Ntafos. Watchman routes under limited visibility. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 89–92, 1990. [n-wrlv-90] *Precedes:* n-wrlv-92. *Cites:* cn-owr-88, cn-wrsp-91, cn-ozr-87, hch-rfomr-86, ips-hpgg-82, j-nccog-82, o-agta-87, p-etspi-77, r-pc-64, ZZZ.

10202 S. Ntafos. Watchman routes under limited visibility. *Comput. Geom. Theory Appl.*, 1(3):149–170, 1992. [n-wrlv-92] *Succeeds:* n-wrlv-90.

10203 S. Ntafos and L. Gewali. External watchman routes. Technical Report, Computer Science, University of Texas at Dallas, 1989. [ng-ewr-89]

10204 S. Ntafos and L. Gewali. External watchman routes. *Visual Comput.*, 10:474–483, 1994. [ng-ewr-94]

10205 S. Ntafos and M. Tsoukalas. Optimum placement of guards. to appear in Information Science. [nt-opg] *Succeeds:* nt-opg-91.

10206 S. Ntafos and M. Tsoukalas. Optimum placement of guards. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 122–125, 1991. [nt-opg-91] *Precedes:* nt-opg. *Cites:* a-agpiv-84, c-tsplt-90i, ea-lacvp-81, ll-ccagp-86, gj-cigtn-79, o-agta-87, ZZZ.

S. Ntafos. See also [1225, 2733, 2734, 3212–3218, 5870–5873, 5876–5878, 8918, 8919].

A. A. Nudel'man. See also [8320].

10207 Stéphane Nullans. *Reconstruction tridimensionnelle de structures géologiques à partir de données hétérogènes.* Thèse de doctorat en sciences, Université de Nice-Sophia Antipolis, France, 1998. TU-0606. [n-rtsgp-98] *URL:* http://www.inria.fr/RRRT/TU-0606. *Keywords:* doctoral thesis.

Stéphane Nullans. See also [2159].

10208 K. Numata and T. Tokuyama. Splitting a configuration in a simplex. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 429–438. Springer-Verlag, 1990. [nt-scs-90]

10209 J. Nummenmaa and J. Tuomi. Constructing layouts for ER-diagrams from visibility representations. In *Proc. 9th Internat. Conf. on Entity-Relationship Approach*, pages 303–317, 1990. [nt-cledv-90] *Keywords:* graph drawing.

10210 O. Nurmi. A fast line-sweep algorithm for hidden line elimination. *BIT*, 25:466–472, 1985. [n-flsah-85]

10211 O. Nurmi. On translating a set of objects in two- and three-dimensional spaces. Report Bericht 141, Inst. Angew., Univ. Karlsruhe, Karlsruhe, West Germany, 1984. [n-tsott-84] *Precedes:* n-tsott-86.

10212 O. Nurmi. On translating a set of objects in two- and three-dimensional spaces. *Comput. Vision Graph. Image Process.*, 36:42–52, 1986. [n-tsott-86] *Succeeds:* n-tsott-84.

10213 O. Nurmi and J.-R. Sack. Separating a polyhedron by one translation from a set of obstacles. In *Proc. 14th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 344 of *Lecture Notes Comput. Sci.*, pages 202–212. Springer-Verlag, 1989. [ns-spots-89] *Keywords:* separation.

Otto Nurmi. See also [6511, 6512, 8176–8178].

10214 G. Nurnberger. *Approximation by sine functions.* Springer-Verlag, New York, 1989. [n-asf-89]

10215 D. Nussbaum. Directional separability in two and three dimensional space. M.Sc. thesis, School Comput. Sci., Carleton Univ., Ottawa, ON, 1988. [n-dsttd-88] *Keywords:* master thesis, separation.

10216 D. Nussbaum. Rectilinear p-piercing problems. In *Proceedings of the Annual International Symposium on Symbolic and Algebraic Computation*, pages 316–323, 1997. [n-rppp-97]

10217 D. Nussbaum and J.-R. Sack. Disassembling two-dimensional composite parts via translations. In *Proc. Optimal Algorithms*, volume 401 of *Lecture Notes Comput. Sci.*, pages 153–167. Springer-Verlag, 1989. [ns-dtdcp-89] *Precedes:* ns-dtdcp-93.

10218 D. Nussbaum and J.-R. Sack. Disassembling two-dimensional composite parts via translations. *Internat. J. Comput. Geom. Appl.*, 3:71–84, 1993. [ns-dtdcp-93] *Keywords:* computational geometry, translation motion, upper-bounds, lower-bounds. *Succeeds:* ns-dtdcp-89.

10219 D. Nussbaum and J.-R. Sack. Translation separability of polyhedra. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 34, 1989. [ns-tsp-89]

D. Nussbaum. See also [7166, 7237–7239].

10220 R. Nussinov and H. J. Wolfson. Efficient detection of motifs in biological macromolecules by computer vision techniques. Technical Report 166/90, 1990. [nw-edmbm-90]

Ruth Nussinov. See also [11051].

W. R. Oakes. See also [2061].

10221 L. O'Brian. *Introducing Quantitative Geography: measurement, methods and generalised linear models.* Routledge, London, 1992. [o-iqgmm-92]

J. F. O'Brien. See also [6989].

10222 J. F. O'Callaghan. An alternative definition for near-neighbourhood of a point. *IEEE Trans. Comput.*, C-24:1121–1125, 1975. [o-adnnp-75]

10223 J. F. O'Callaghan. Computing the perceptual boundaries of dot patterns. *Comput. Graph. Image Process.*, 3:141–162, 1974. [o-cpbdp-74]

10224 J. F. O'Callaghan. Human perception of homogeneous dot patterns. *Perception*, 3:33–45, 1974. [o-hphdp-74]

10225 E. Ochoa, L. Hesselink, and J. Goodman. Real-time intensity inversion using two-wave and four-wave mixing in photorefractive $Bi_{12}SiO_{20}$. *Applied Optics*, 24(12):1826–1832, 1985. [ohg-riitf-85]

10226 S. Ocken, J. T. Schwartz, and Micha Sharir. Precise implementation of CAD primitives using rational parameterization of standard surfaces. In J. Hopcroft, J. Schwartz, and Micha Sharir, editors, *Planning, Geometry, and Complexity of Robot Motion*, pages 245–266. Ablex Publishing, Norwood, NJ, 1987. [oss-picpu-87] *Keywords:* CAD, rational parameterization, quadric surfaces, intersection.

M. O'Connor. See also [11403].

10227 M. A. O'Connor and G. Gentili. Simple unit vectors orthogonal to a given vector. Report RC 12263, Manufacturing Res. Dept., IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1986. [og-suvog-86]

10228 M. A. O'Connor and J. R. Rossignac. Scg: A dimension independent model for pointsets with internal structures and incomplete boundaries. Technical Report RC14340, IBM, 1989. [or-sdimp-89t]

M. A. O'Connor. See also [7918–7920, 12439].

10229 J. T. Oden and J. N. Reddy. *An Introduction to the Mathematical Theory of Finite Elements.* John Wiley & Sons, 1976. [or-imtfe-76]

Thomas Odenthal. See also [7638].

C. L. Odet. See also [4623].

10230 P. O'Donnel and M. Perles. Every geometric graph with n vertices and $3.6n + 3.4$ edges contains 3 pairwise disjoint edges. Manuscript, Rutgers Univ., New Brunswick, NJ, 1991. [op-eggnv-91]

M. J. O'Donnell. See also [3489, 4247].

10231 C. Ó'Dúnlaing. A tight lower bound for the complexity of path-planning for a disc. *Inform. Process. Lett.*, 28:165–170, 1988. [o-tlbcp-88]

10232 C. Ó'Dúnlaing. Motion planning with inertial constraints. Technical Report TR 230, Robotics Lab., New York Univ., New York, NY, 1986. [o-mpic-86]

10233 C. Ó'Dúnlaing. Motion-planning with inertial constraints. *Algorithmica*, 2:431–475, 1987. [o-mpic-87]

10234 C. Ó'Dúnlaing, Micha Sharir, and C. K. Yap. Generalized Voronoi diagrams for a ladder: I. Topological analysis. *Commun. Pure Appl. Math.*, 39:423–483, 1986. [osy-gvdl-86] *Keywords:* Voronoi diagrams, motion planning.

10235 C. Ó'Dúnlaing, Micha Sharir, and C. K. Yap. Generalized Voronoi diagrams for a ladder: I. Topological considerations. Technical Report, Dept. Comput. Sci., Courant Inst., New York, NY, 1984. [osy-gvdl1-84]

10236 C. Ó'Dúnlaing, Micha Sharir, and C. K. Yap. Generalized Voronoi diagrams for a ladder: II. Efficient construction of the diagram. Technical Report, Dept. Comput. Sci., Courant Inst., New York, NY, October 1984. [osy-gvdl2-84]

10237 C. Ó'Dúnlaing, Micha Sharir, and C. K. Yap. Generalized Voronoi diagrams for a ladder: II. Efficient construction of the diagram. *Algorithmica*, 2:27–59, 1987. [osy-gvdl-87] *Keywords:* Voronoi diagrams, Davenport-Schinzel sequences, motion planning.

10238 C. Ó'Dúnlaing, Micha Sharir, and C. K. Yap. Retraction: A new approach to motion-planning. In *Proc. 15th Annu. ACM Sympos. Theory Comput.*, pages 207–220, 1983. [osy-rnamp-83] *Comments:* Split into three journal papers: [10241], [10237], and [10234]. *Precedes:* oy-rmpmd-85.

10239 Colm Ó'Dúnlaing and Colum Watt. Miscellaneous topological algorithms. In *Abstracts 8th European Workshop Comput. Geom.*, pages 65–66. Utrecht University, 1992. [ow-mta-92]

10240 C. Ó'Dúnlaing, C. Watt, and D. Wilkins. Homeomorphism of 2-complexes is equivalent to grap isomorphism. *Internat. J. Comput. Geom. Appl.*, 10:453–476, 2000. [oww-h2ceg-00]

10241 C. Ó'Dúnlaing and C. K. Yap. A "retraction" method for planning the motion of a disk. *J. Algorithms*, 6:104–111, 1985. [oy-rmpmd-85] *Succeeds:* osy-rnamp-83.

10242 C. Ó'Dúnlaing and C. K. Yap. The Voronoi method for motion-planning: I. the case of a disc. Report 53, Courant Inst. Math. Sci., New York Univ., New York, NY, 1983. [oy-vmmp1-83]

C. Ó'Dúnlaing. See also [282, 283, 856, 3451, 3452, 5022, 6180–6182, 9449–9451].

P. Oelhafen. See also [11230, 11231].

O. R. Oellermann. See also [2865].

T. Ogawa. See also [12796].

10243 C. Stanley Ogilvy. *Excursions in Geometry*. Dover Publications, 1969. [o-eig-69] *Location:* New York.

W. Ogita. See also [12796].

10244 L. O'Gorman and A. C. Sanderson. The wedge filter technique for convex boundary estimation. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-7:326–332, 1985. [os-wftcb-85]

L. O'Gorman. See also [2531].

T. Ohashi. See also [13093].

10245 Yoshikazu Ohashi. Fast linear approximations of Euclidean distance in higher dimensions. In Paul Heckbert, editor, *Graphics Gems IV*, pages 120–124. Academic Press, Boston, MA, 1994. [o-flaed-94] *Keywords:* integer arithmetic, square root. *Annote:* Provides optimized formulas for approximating Euclidean distance in two or more dimensions without square roots. Contains C code.

T. Ohler. See also [1555–1559].

Y. Ohsuga. See also [962].

10246 M. Ohta. An optimal-time ray tracing algorithm based on direction index. Report ??, Dept. Inform. Sci., Univ. Tokyo, Tokyo, Japan, 1985. [o-otrta-85]

Y. Ohta. See also [10030].

10247 T. Ohtsuki. Minimum dissection of rectilinear polygons. In *Proc. IEEE Symp. on Circuits and Systems*, pages 1210–1213, 1982. [o-mdrp-82]

10248 T. Ohtsuki. Minimum dissection of rectilinear regions. *Trans. Inform. Processing Soc. Japan*, ??:1210–1213, 1983. [o-mdrr-83]

10249 T. Ohtsuki, M. Sato, and I. Kojima. Computational geometry approach to wire routing design. Manuscript, School Sci. Engrg., Waseda Univ., Tokyo, Japan, ?? [osk-cgawr-??]

10250 T. Ohtsuki, M. Sato, M. Tachibana, and S. Torii. Minimum partitioning of rectilinear regions. *Trans. Inform. Processing Soc. Japan*, ??:??, 1983. [ostt-mprr-83]

T. Ohtsuki. See also [946].

10251 T. Ohya. Robustness of the fast Voronoi algorithm against nonuniform distribution of points. In *Proc. Spring Conf. Oper. Res. Soc. Japan*, volume C-1, pages 90–91, 1983. [o-rfvaa-83]

10252 T. Ohya, M. Iri, and K. Murota. A fast Voronoi-diagram algorithm with quaternary tree bucketing. *Inform. Process. Lett.*, 18:227–231, 1984. [oim-fvdaq-84]

10253 T. Ohya, M. Iri, and K. Murota. An improved algorithm for constructing the Voronoi diagram. In *Proc. Fall Conf. Oper. Res. Soc. Japan*, volume E-8, pages 152–153, 1982. [oim-iacvd-82]

10254 T. Ohya, M. Iri, and K. Murota. Improvements of the incremental method for the Voronoi diagram with computational comparison of various algorithms. *J. Oper. Res. Soc. Japan*, 27(4):306–336, 1984. [oim-iimvd-84]

10255 T. Ohya and K. Murota. Algorithms and data structures for constructing the Voronoi diagram. In *Proc. Spring Conf. Oper. Res. Soc. Japan*, volume 2C-3, pages 185–186, 1982. [om-adscv-82]

T. Ohya. See also [7398, 7399].

10256 Y. Oishi and K. Sugihara. Numerically robust divide-and-conquer algorithm for constructing Voronoi diagrams. in Japanese, Transactions of the Information Processing Society of Japan, to appear. [os-nrdca]

10257 Y. Oishi and K. Sugihara. Topology oriented divide and conquer algorithm for Voronoi diagrams. *Graphical Models and Image Processing*, 57(4):303–314, 1995. [os-todqa-95] *Keywords:* robustness, numerical precision.

10258 H. Oja and Niinimaa. On robust estimation of regression coefficients. Research report, Department of Applied Mathematics and Statistics, University of Oulu, Finland, 1984. [on-rerc-84]

10259 Atsuyuki Okabe, Barry Boots, and Kokichi Sugihara. *Spatial Tessellations: Concepts and Applications of Voronoi Diagrams*. John Wiley & Sons, Chichester, UK, 1992. [obs-stcav-92] *ISBN:* 0-471-93430-5. *Keywords:* book, Voronoi diagrams, three-dimensional. *Comments:* 532 pages.

10260 A. Okabe and A. Suzuki. Locational optimization problems solved through Voronoi diagrams. *European J. Oper. Res.*, 98(3):445–456, May 1997. [os-lopst-97]

C. J. O'Keefe. See also [466].

O. G. Okunev. See also [10006].

M. Olano. See also [3412, 3413].

10261 Stephan Olariu. On the unimodality of convex polygons. *Inform. Process. Lett.*, 29(6):289–292, December 1988. [o-ucp-88] *Abstract:* An open problem proposed by G. T. Toussaint is to find the smallest value of n such that a convex polygon with n vertices is not guaranteed to have any unimodal vertices. Toussaint conjectured that this value is 6. The purpose of this article is to prove Toussaint's conjecture.

10262 S. Olariu, J. L. Schwing, and J. Zhang. Time-optimal sorting and applications on nxn enhanced meshes. In *Proc. 6th Annu. European Comp. Conf.*, May 1982. [osz-tosam-92]

10263 S. Olariu, I. Stojmenovic, and A. Y. Zomaya. Time-optimal proximity graph computations on enhanced meshes. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 119–124, 1996. [osz-topgc-96]

10264 S. Olariu, S. Toida, and M. Zubaer. On a conjecture by Plaisted and Hong. *J. Algorithms*, 9(4):597–598, 1988. [otz-cph-88] *Annote:* Shows that [10780] produces triangulations $\Omega(\log n)$ from MLT.

S. Olariu. See also [1919–1923, 8826].

O. A. Oleĭnik. See also [10746].

10265 Vladimir Oliker. Electromagnetic scattering, 1D/2D obstacle problem, and discrete geodesics. In *Abstracts 16th European Workshop Comput. Geom.*, pages 66–69. Ben-Gurion University of the Negev, 2000. [o-es12o-00]

10266 J. M. Oliva, M. Perrin, and S. Coquillart. 3d reconstruction of complex polyhedral shapes from contours using a simplified generalized Voronoi diagram. *Comput. Graph. Forum*, 15(3):397–408, 1996. [opc-3drcp-96]

10267 Antonio Oliveira, Sara do Nascimento, and Sonja A. L. Meerbaum. Morphing fields of directions defined on triangulations to morph simple polygons. In *Abstracts 12th European Workshop Comput. Geom.*, pages 117–119. Universität Münster, 1996. [onm-mfddt-96]

10268 J. H. Oliver and E. D. Goodman. Color graphic verification of N/C milling programs for sculptured surfaces. In *10th Annual Automotive Computer Graphics Conference and Exposition*. Engineering Soceitey of Detroit, December 1985. [og-cgvnc-85]

James H. Oliver. See also [11180].

10269 M. A. Oliver and N. E. Wiseman. Operations on quadtree encoded images. *Comput. J.*, 26:83–91, 1983. [ow-oqei-83]

10270 M. A. Oliver and N. E. Wiseman. Operations on quadtree leaves and related image areas. *Comput. J.*, 26:375–380, 1983. [ow-oqlri-83]

10271 H. J. Olivie. A new class of balanced binary search trees: half-balanced binary search trees. *RAIRO Informatique Theoretique*, 16:51–71, 1982. [o-ncbbs-82]

Carl Ollivier-Gooch. See also [5592].

10272 A. A. Oloufa. Triangulation applications in volume calculation. *J. Comput. Civil Engrg.*, 5:103–119, 1991. [o-tavc-91]

R. Olshen. See also [2418].

Arthur J. Olson. See also [4484, 11624].

E. Olson. See also [1667].

T. Olson. See also [10395].

10273 E. A. Olszewski and W. J. Thompson. A program for perceptive views of three-dimensional surfaces. *Comput. Phys. Comm.*, 21:185–191, 1980. [ot-ppvtd-80]

F. W. J. Olver. See also [3376].

Elsa Omaña-Pulido. See also [2317].

E. Omanña. See also [2318].

10274 S. M. Omohundro. Fundamentals of geometric learning. Report UIUCDCS-R-88-1408, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1988. [o-fgl-88] *Keywords:* geometric learning, robotics, computer vision, intersection.

10275 Stephen M. Omohundro. The Delaunay triangulation and function learning. Technical Report TR-90-001, International Computer Science Institute, Berkeley, CA, 1990. [o-dtfl-90]

10276 Patrick E. O'Neil. Hyperplane cuts of an n-cube. *Discrete Math.*, 1:193–195, 1971. [o-hcnc-71]

10277 K. Onishi. Voronoi diagram in the d-dimensional hyperbolic space. In *Proc. Internat. Sympos. on Combinatorics and Applications*, pages 314–324. Nankai Univ., 1996. [o-vdddh-96]

10278 K. Onishi and H. Imai. Voronoi diagram in statistical parametric space by kullback-leibler divergence. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 463–465, 1997. [oi-vdsps-97] *Cites:* a-dgms-85, cd-vdbcd-85, ct-eit-91, e-acg-87, hk-mic-94, ot-cvduh-96, o-vdddh-96, ps-cgi-85, ZZZ.

10279 K. Onishi and N. Takayama. Construction of Voronoi diagrams on the upper half-plane. *IEICE Trans. Fundamentals*, E79-A(4):533–539, 1996. [ot-cvduh-96]

10280 S. Onn. On the geometry and computational complexity of Radon partitions in the integer lattice. *SIAM J. Discrete Math.*, 4:436–447, 1991. [o-gccrp-91] *Keywords:* abstract convexity, convexity spaces, geometry of numbers, Radon number, Radon partition, lattice polytopes, integer programming, integer lattice. *Succeeds:* o-rnil-90.

10281 S. Onn. On the Radon number of the integer lattice. In Ravi Kannan and W. R. Pulleyblank, editors, *Integer Programmming and Combinatorial Optimization*, pages 385–396, Waterloo, ON, 1990. Univ. Waterloo Press. [o-rnil-90] *Keywords:* abstract convexity, convexity spaces, geometry of numbers, Radon number, Radon partition, lattice polytopes, integer programming, integer lattice. *Precedes:* o-gccrp-91.

10282 S. Onn and B. Sturmfels. A quantitative Steinitz' theorem. *Beiträge zur Algebra und Geometrie / Contributions to Algebra and Geometry*, 35:125–129, 1994. [os-qst-94] *Keywords:* graph drawing, 3D, grid, convex.

N. Ono. See also [12714].

10283 T. Ono. A Markov chain approach to random generation of triangulation. Master's thesis, Dept. Inform. Sci., Univ. Tokyo, Tokyo, Japan, 1996. [o-mcarg-96] *Keywords:* master thesis.

10284 T. Ono. An eight-way perturbation technique for the three-dimensional convex hull. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 159–164, 1994. [o-ewptt-94] *Cites:* d-iafch-90, d-i2dch-90, em-sstcd-88, ph-chfsp-77, y-gctsp-88, y-stgd-, ZZZ.

10285 T. Ono, Y. Kyoda, T. Masada, K. Hayase, T. Shibuya, M. Nakade, M. Inaba, H. Imai, K. Imai, and D. Avis. A package for triangulations. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages V17–V18, 1996. [okmhsniiia-pt-96] *Cites:* almp-gsgv-95, af-pachv-92, k-sgmwt-96, mii-ert-96, o-mcarg-96, ZZZ.

Y. Ono. See also [7408].

K. Onoguchi. See also [3196].

10286 Y. Ooishi. Numerically robust implementation of the divide-and-conquer algorithm for constructing Voronoi diagrams. Master's thesis, Department of Mathematical Engineering and Information Physics, Faculty of Engineering, University of Tokyo, Tokyo, Japan, 1990. Bachelor's Thesis in Japanese. [o-nridc-90] *Keywords:* master thesis.

Y. Ooishi. See also [12630].

10287 B. J. Oommen. A learning automation solution to the stochastic minimum spanning circle problem. Report SCS-TR-81, School Comput. Sci., Carleton Univ., Ottawa, ON, 1985. [o-lassm-85]

10288 B. J. Oommen, S. S. Iyengar, S. V. Rao, and R. L. Kashyap. Robot navigation in unknown terrains using learned visibility graphs. part I: The disjoint convex obstacle case. Technical Report SCS-TR-86, School of Computer Science, Carleton University, February 1986. [oirk-rnutu-86]

10289 B. J. Oommen and I. Reichstein. On the problem of translating an elliptic object through a workspace of elliptic obstacles. Report SCS-TR-79, School Comput. Sci., Carleton Univ., Ottawa, ON, 1985. [or-pteot-85]

B. J. Oommen. See also [7855, 11025].

10290 P. van Oosterom. An R-tree based map-overlay algorithm. In *Proc. EGIS '94*, pages 318–327, 1994. [o-rtbmo-94]

R. van Oostrum. See also [1724, 1740, 3127, 8339, 8340].

T. J. Opar. See also [13338].

S. Openshaw. See also [8796].

J. Ophir. See also [3516].

10291 K. Opitz and H. Pottmann. Computing shortest paths on polyhedra: applications in geometric modeling and scientific visualization. *Internat. J. Comput. Geom. Appl.*, 4:165–178, 1994. [op-csppa-94] *Keywords:* shortest paths, scattered data, interpolation, surface approximation, exponential map.

A. Orden. See also [3738].

10292 J. Orenstein. A comparison of spatial query processing techniques for native and parameter spaces. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 343–352, 1990. [o-csqpt-90]

10293 J. Orenstein and T. H. Merrett. A class of data structures for associative searching. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 181–190, 1984. [om-cdsas-84]

10294 J. A. Orenstein. Multidimensional tries used for associative searching. *Inform. Process. Lett.*, 13:150–157, 1982. [o-mtuas-82]

M. Orletsky. See also [6177, 6183].

M. W. Orletsky. See also [6178, 6179].

10295 P. Orlik. Arrangements in topology. In J. E. Goodman, R. Pollack, and W. Steiger, editors, *Discrete and Computational Geometry: Papers from the DIMACS Special Year*, pages 263–272. American Mathematical Society, Association for Computing Machinery, Providence, RI, 1991. [o-at-91]

10296 Peter Orlik. *Introduction to Arrangements*. American Mathematical Society, Providence, RI, 1989. [o-ia-89] *ISBN:* 0-8218-0723-4. *Annote:* 13.00.

10297 Peter Orlik and L. Solomon. Combinatorics and topology of complements of hyperplanes. *Invent. Math.*, 59:77–94, 1980. [os-ctch-80]

10298 Peter Orlik and Hiroaki Terao. *Arrangements of Hyperplanes*. Springer-Verlag, Berlin, 1991. [ot-ah-91]

J. B. Orlin. See also [354, 355, 9650].

A. Orlitsky. See also [2531].

10299 M. Orlowski. A convex hull algorithm for planar simple polygons. *Pattern Recogn.*, 18:361–366, 1985. [o-chaps-85]

10300 M. Orlowski. A new algorithm for the largest empty rectangle problem. *Algorithmica*, 5:65–73, 1990. [o-naler-90] *Keywords:* area. *Annote:* $O(n \log n)$ expected time, $O(n)$ space.

10301 M. Orlowski. On the conditions for success of Sklansky's convex hull algorithm. *Pattern Recogn.*, 16:579–586, 1983. [o-cssch-83]

10302 J. O'Rourke. A lower bound on moving a ladder. Report JHU/EECS-85/20, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1985. [o-lbml-85] *Keywords:* motion planning, lower bounds, ladder.

10303 J. O'Rourke. A note on fully-turned vertex π-lights. Technical Report 056, Dept. Comput. Sci., Smith College, October 1997. [o-nftvpl-97] *Keywords:* art gallery theorems, floodlights.

10304 J. O'Rourke. A note on minimum convex covers for polygons. Report JHU-EECS 82-3, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1982. [o-nmccp-82]

10305 Joseph O'Rourke. Advanced problem 6369. *Amer. Math. Monthly*, 88(10):769, 1981. [o-6369-81] *Comments:* The sum of square roots problem.

10306 J. O'Rourke. An alternative proof of the rectilinear art gallery theorem. *J. Geom.*, 21:118–130, 1983. [o-aprag-83] *Keywords:* covering, star-shaped.

10307 Joseph O'Rourke. An extension of Cauchy's arm lemma with application to curve development. In *Discrete Comput. Geom.*, volume 2098 of *Lecture Notes Comput. Sci.*, pages 280–291. Springer-Verlag, 2001. Papers from the Japan Conf. Discrete Comput. Geom., Tokyo, Nov. 2000. [o-ecala-01]

10308 J. O'Rourke. An on-line algorithm for fitting straight lines between data ranges. *Commun. ACM*, 24:574–578, 1981. [o-olafs-81] *Keywords:* stabbing.

10309 J. O'Rourke. *Art Gallery Theorems and Algorithms*. The International Series of Monographs on Computer Science. Oxford University Press, New York, NY, 1987. [o-agta-87] *Keywords:* visibility, decomposition, covering, partition, geometric graphs.

10310 J. O'Rourke. Automatic visual focusing via a dynamic data structure. In *Proc. 1981 Conf. Info. Sciences and Systems*, pages 301–106, March 1981. [o-avfdd-81] *Keywords:* k-d trees, computer vision.

10311 J. O'Rourke. Computational geometry. *Annu. Rev. Comput. Sci.*, 3:389–411, 1988. [o-cg-88] *Keywords:* survey paper, convex hull, Voronoi diagrams, Delaunay triangulations, arrangements, polygons, triangulation, range search, point location, motion planning, Davenport-Schinzel sequences, parallel computation.

10312 J. O'Rourke. Computational geometry column 1. *SIGACT News*, 18(1):17–19, 1986. Also in Computer Graphics 20(1986), 232. [o-cgc1-86] *Annote:* Report on the 2nd ACM Sympos. Comput. Geom.

10313 J. O'Rourke. Computational geometry column 2. *SIGACT News*, 18(2):10–12, 1987. Also in Computer Graphics 21(1987), 155–157. [o-cgc2-87] *Annote:* Old and new problems.

10314 J. O'Rourke. Computational geometry column 3. *SIGACT News*, 18(4):13–15, 1987. Also in Computer Graphics 21(1987), 314–315. [o-cgc3-87] *Annote:* Old and new problems.

10315 J. O'Rourke. Computational geometry column 4. *SIGACT News*, 19(2):22–24, 1988. Also in Computer Graphics 22(1988), 111–112. [o-cgc4-88] *Keywords:* hidden line elimination, Delaunay triangulations, link distance, stabbing. *Annote:* Old and new problems.

10316 J. O'Rourke. Computational geometry column 5. *SIGACT News*, 19(3–4):21–26, 1988. [o-cgc5-88] *Annote:* Open problems from the 4th ACM Sympos. Comput. Geom.

10317 J. O'Rourke. Computational geometry column 6. *SIGACT News*, 20(2):10–12, 1989. [o-cgc6-89] *Annote:* Old and new problems.

10318 J. O'Rourke. Computational geometry column 7. *SIGACT News*, 20(3):25–26, 1989. [o-cgc7-89] *Annote:* Open problems from the 5th ACM Sympos. Comput. Geom.

10319 J. O'Rourke. Computational geometry column 8. *SIGACT News*, 20(4):30, 1989. [o-cgc8-89] *Keywords:* distance. *Annote:* Error corrections.

10320 J. O'Rourke. Computational geometry column 9. *SIGACT News*, 21(1):18–20, 1990. [o-cgc9-90] *Keywords:* hidden surface elimination, visibility, triangulations, robotics, stabbing, shape. *Annote:* Old and new problems.

10321 J. O'Rourke. Computational geometry column 10. *SIGACT News*, 21(3):22–25, 1990. [o-cgc10-90] *Annote:* Open problems from the 6th ACM Sympos. Comput. Geom.

10322 J. O'Rourke. Computational geometry column 11. *Internat. J. Comput. Geom. Appl.*, 1(1):93–98, 1991. Also in SIGACT News 21:4 (1990), 22–25. [o-cgc11-91] *Keywords:* shape, robotics, motion planning, arrangements, partition. *Annote:* Problems, old and new.

10323 J. O'Rourke. Computational geometry column 12. *Internat. J. Comput. Geom. Appl.*, 1(2):197–200, 1991. Also in SIGACT News 22:2 (1991), 26–29. [o-cgc12-91] *Keywords:* Voronoi diagrams, arrangements, visibility, Delaunay triangulations, path planning, shortest paths, separation. *Annote:* Seven open problems from various sources.

10324 J. O'Rourke. Computational geometry column 12. *SIGACT News*, 22(2):26–29, 1991. [o-cgc12-91a]

10325 J. O'Rourke. Computational geometry column 13. *Internat. J. Comput. Geom. Appl.*, 1(3):341–343, 1991. Also in SIGACT News 22:3 (1991), 13–15. [o-cgc13-91] *Annote:* Open problems from the 7th ACM Sympos. Comput. Geom.

10326 J. O'Rourke. Computational geometry column 14. *Internat. J. Comput. Geom. Appl.*, 1(4):517–522, 1991. Also in SIGACT News 23:1 (1992), 5–9. [o-cgc14-91] *Annote:* Abstracts of papers from the 3rd Canad. Conf. Comput. Geom.

10327 J. O'Rourke. Computational geometry column 15. *Internat. J. Comput. Geom. Appl.*, 2(2):215–217, 1992. Also in SIGACT News 23:2 (1992). [o-cgc15-92] *Keywords:* visibility. *Annote:* Art gallery theorems.

10328 J. O'Rourke. Computational geometry column 16. *Internat. J. Comput. Geom. Appl.*, 2(3):335–339, 1992. Also in SIGACT News 23:3 (1992). [o-cgc16-92] *Annote:* Summary of 8th ACM Sympos. Comput. Geom.

10329 J. O'Rourke. Computational geometry column 17. *Internat. J. Comput. Geom. Appl.*, 2:443–447, 1992. Also in SIGACT News 23:4 (1992), 2–4. [o-cgc17-92] *Annote:* Summary of 4th Canad. Conf. Comput. Geom.

10330 J. O'Rourke. Computational geometry column 18. *Internat. J. Comput. Geom. Appl.*, 3(1):107–113, 1993. Also in SIGACT News 24:1 (1993), 20–25. [o-cgc18-93] *Annote:* Visibility graphs.

10331 J. O'Rourke. Computational geometry column 18. *SIGACT News 24*, 24(1):20–25, 1993. [o-cgc18-93a]

10332 J. O'Rourke. Computational geometry column 19. *Internat. J. Comput. Geom. Appl.*, 3(1):221–224, 1993. Also in SIGACT News 24:2 (1993), 15–17. [o-cgc19-93] *Annote:* Description of computational geometry bibliography.

10333 J. O'Rourke. Computational geometry column 20. *Internat. J. Comput. Geom. Appl.*, 3:347–349, 1993. Also in SIGACT News 24:3 (1993), 21–22. [o-cgc20-93] *Annote:* Open problems from the 9th Annu. ACM Sympos. Comput. Geom.

10334 J. O'Rourke. Computational geometry column 21. *Internat. J. Comput. Geom. Appl.*, 3:463–465, 1993. Also in SIGACT News 24:4 (1993), 14–15. [o-cgc21-93] *Annote:* Open problems from the 5th Canad. Conf. Comput. Geom.

10335 J. O'Rourke. Computational geometry column 22. *Internat. J. Comput. Geom. Appl.*, 4:119–122, 1994. Also in SIGACT News 25:1 (1994), 31–33. [o-cgc22-94] *Annote:* n^2-hard problems.

10336 J. O'Rourke. Computational geometry column 23. *Internat. J. Comput. Geom. Appl.*, 4:239–242, 1994. Also in SIGACT News 25:3 (1994), 24–27. [o-cgc23-94] *Annote:* Open problems on tetrahedralization.

10337 J. O'Rourke. Computational geometry column 24. *Internat. J. Comput. Geom. Appl.*, 4:363–366, 1994. Also in SIGACT News 25:4 (1994), 12–14. [o-cgc24-94] *Annote:* Open problems from 10th SoCG and 6th CCCG.

10338 J. O'Rourke. Computational geometry column 25. *Internat. J. Comput. Geom. Appl.*, 5:215–218, 1995. Also in SIGACT News 26:1 (1995), 14–16. [o-cgc25-95] *Annote:* Lower envelope of surfaces: new complexity bounds.

10339 J. O'Rourke. Computational geometry column 26. *Internat. J. Comput. Geom. Appl.*, 5:339–341, 1995. Also in SIGACT News 26:2 (1995), 15–17. [o-cgc26-95] *Annote:* An advance on Conway's Thrackle conjecture.

10340 J. O'Rourke. Computational geometry column 27. *Internat. J. Comput. Geom. Appl.*, 6:123–125, 1996. Also in SIGACT News 26:4 (1995), 19–21. [o-cgc27-96] *Annote:* Perfect matching between edges of triangulations.

10341 J. O'Rourke. Computational geometry column 28. *Internat. J. Comput. Geom. Appl.*, 6:243–244, 1996. Also in SIGACT News 27:2 (1996) 18–19. [o-cgc28-96] *Annote:* Web directory of Computational Geometry Software.

10342 J. O'Rourke. Computational geometry column 29. *Internat. J. Comput. Geom. Appl.*, 6:507–511, 1996. Also in SIGACT News, 27(3):55–59 (1996), Issue 100. [o-cgc29-96] *Annote:* Past accomplishments of Computational Geometry are reviewed and future directions adumbrated.

10343 J. O'Rourke. Computational geometry column 30. *Internat. J. Comput. Geom. Appl.*, 7:165–166, 1997. Also in SIGACT News, 28(1):7–8 (1997), Issue 102. [o-cgc30-97] *Annote:* Several results from *Combinatorial Geometry* (J. Pach and P.K. Agarwal) are detailed.

10344 J. O'Rourke. Computational geometry column 31. *Internat. J. Comput. Geom. Appl.*, 7:379–382, 1997. Also in SIGACT News, 28(2):20–23 (1997), Issue 103. [o-cgc31-97] *Keywords:* packing, spheres. *Annote:* Sphere packing work of Neil Sloane et al.

10345 J. O'Rourke. Computational geometry column 32. *Internat. J. Comput. Geom. Appl.*, 7:509–513, 1997. Also in SIGACT News, 28(3):12–17 (1997), Issue 104. [o-cgc32-97] *Keywords:* k-sets, arrangements. *Annote:* Dey's new k-set bound is illustrated.

10346 J. O'Rourke. Computational geometry column 33. *Internat. J. Comput. Geom. Appl.*, 8:381–384, 1999. Also in SIGACT News, 29(2):12-16 (1998), Issue 107. [o-cgc33-98] *Annote:* Two results in "computational origami" are illustrated.

10347 J. O'Rourke. Computational geometry column 34. *Internat. J. Comput. Geom. Appl.*, ??:??–??, 1999. Also in SIGACT News, 29(3):27–32 (1998), Issue 108. [ao-cgc34-98] *Annote:* Problems presented at the open-problem session of the 14th Annual ACM Symposium on Computational Geometry are listed.

10348 J. O'Rourke. Computational geometry column 35. *Internat. J. Comput. Geom. Appl.*, ??:??–??, 1999. Also in SIGACT News, 30(2):31-32 (1999), Issue 111. [o-cgc35-99] *Keywords:* shortest paths. *Annote:* The subquadratic algorithm of Kapoor for finding shortest paths on a polyhedron is described.

10349 J. O'Rourke. Computational geometry column 36. *Internat. J. Comput. Geom. Appl.*, 9(6):615–618, 1999. Also in SIGACT News, 30(3):35–38 (1999), Issue 112. [o-cgc36-99] *Annote:* Two results in "computational origami" are illustrated.

10350 J. O'Rourke. Computational geometry column 38. *Internat. J. Comput. Geom. Appl.*, 10(2):221–223, 2000. Also in SIGACT News, 31(1):28–30 (2000), Issue 114. [o-cgc38-00] *Annote:* Recent results on curve reconstruction are described.

10351 J. O'Rourke. Computational geometry column 39. *Internat. J. Comput. Geom. Appl.*, 10(4):441–444, 2000. Also in SIGACT News, 31(3):47–49 (2000), Issue 116. [o-cgc39-00] *Annote:* The resolution of a decades-old open problem is described: polygonal chains cannot lock in the plane.

10352 J. O'Rourke. Computational geometry column 40. *Internat. J. Comput. Geom. Appl.*, 10(6):649–651, 2000. Also in SIGACT News, 31(4):62–64 (2000), Issue 117. [o-cgc40-00] *Annote:* It has recently been established by Below, De Loera, and Richter-Gebert that finding a minimum size (or even just a small) triangulation of a convex polyhedron is NP-complete. Their 3SAT-reduction proof is discussed.

10353 J. O'Rourke. Computational geometry column 41. *Internat. J. Comput. Geom. Appl.*, ??(??):??–??, 2001. Also in SIGACT News, 32(1):53-55 (2001), Issue 118. [o-cgc41-01] *Annote:* The recent result that n congruent balls in R^d have at most 4 distinct geometric permutations is described.

10354 J. O'Rourke. *Computational Geometry in C*. Cambridge University Press, 1st edition, 1994. [o-cgc-94] *Comments:* ISBN 0-521-44592-2/Pb $24.95, ISBN 0-521-44034-3/Hc $49.95. Cambridge University Press, 40 West 20th Street, New York, NY 10011-4211, 1-800-872-7423. 346+xi pages, 228 exercises, 200 figures, 219 references. C code and errata available by anonymous ftp from grendel.csc.smith.edu (131.229.222.23), in the directory /pub/compgeom. Third Printing: Dec. 1995. Chapter titles: 1. Polygon triangulation 2. Polygon partitioning 3. Convex hulls in two dimensions 4. Convex hulls in three dimensions 5. Voronoi diagrams 6. Arrangements 7. Search and intersection 8. Motion planning 9. Additional topics. *Annote:* Textbook.

10355 J. O'Rourke. *Computational Geometry in C*. Cambridge University Press, 2nd edition, 1998. [o-cgc-98] *URL:* http://cs.smith.edu/~orourke/books/compgeom.html. *Comments:* Printed 28 Sep 1998. *Annote:* Textbook.

10356 J. O'Rourke. Computing the relative neighborhood graph in the L_1 and L_∞ metrics. *Pattern Recogn.*, 15:189–192, 1982. [o-crngl-82] *Keywords:* geometric graphs.

10357 J. O'Rourke. Convex hulls, Voronoi diagrams, and terrain navigation. In *Proc. 9th Pecora Sympos. Spatial Inform. Tech.*, pages 358–361, 1984. [o-chvdt-84] *Keywords:* shortest paths.

10358 J. O'Rourke. Counterexamples to a minimal circumscription algorithm. *Comput. Vision Graph. Image Process.*, 30:364–366, June 1985. [o-cmca-85] *Keywords:* triangles, area, approximation.

10359 J. O'Rourke. Dynamically quantized spaces applied to motion analysis. Technical Report JHU-EE 81-1, Johns Hopkins Univ., Baltimore, MD, January 1981. [o-dqsam-81] *Keywords:* k-d trees, computer vision.

10360 J. O'Rourke. Dynamically quantized spaces for focusing the Hough transform. In *Proc. 7th Internat. Joint Conf. Artif. Intell.*, pages 737–739, 1981. [o-dqsfh-81] *Keywords:* cluster analysis.

10361 J. O'Rourke. Feature Review: The complexity of arrangements. *ACM Comput. Rev.*, 31(12):654–657, December 1990. [o-frca-90] *Keywords:* arrangements, combinatorial complexity, zones.

10362 J. O'Rourke. Finding a shortest ladder path: a special case. IMA Preprint Series 353, Inst. Math. Appl., Univ. Minnesota, Minneapolis, MN, 1987. [o-fslps-87] *Keywords:* motion planning, ladder.

10363 J. O'Rourke. Finding minimal enclosing boxes. Technical Report, Johns Hopkins Univ., Baltimore, MD, 1984. [o-fmeb-84]

10364 J. O'Rourke. Finding minimal enclosing boxes. *Internat. J. Comput. Inform. Sci.*, 14:183–199, June 1985. [o-fmeb-85] *Keywords:* approximation, volume.

10365 Joseph O'Rourke. Finding minimal enclosing boxes. *Internat. J. Comput. Info. Sci.*, 14(3):183–199, February 1986. [o-fmeb-86]

10366 J. O'Rourke. Folding and unfolding in computational geometry. In *Proc. Japan Conf. Discrete Comput. Geom. '98*, pages 142–147, December 1998. Revised version to appear in LNCS. [o-fucg-98]

10367 Joseph O'Rourke. Folding and unfolding in computational geometry. In *Discrete Comput. Geom.*, volume 1763 of *Lecture Notes Comput. Sci.*, pages 258–266. Springer-Verlag, 2000. Papers from the Japan Conf. Discrete Comput. Geom., Tokyo, Dec. 1998. [o-fucg-00] *Succeeds:* o-fucg-98.

10368 J. O'Rourke. Galleries need fewer mobile guards: a variation on Chvátal's theorem. *Geom. Dedicata*, 14:273–283, 1983. [o-gnfmg-83] *Keywords:* covering, star-shaped.

10369 J. O'Rourke. Guarding corpulent stars. In *Snapshots of Computational and Discrete Geometry*, volume 3, pages 63–71. School Comput. Sci., McGill Univ., Montreal, PQ, July 1994. Technical Report SOCS-94.50. [o-gcs-94] *Keywords:* visibility, art gallery theorems. *Comments:* Also Technical Report 032, Dept. Comput. Sci., Smith College. *Annote:* I've been informed of an error by H. Meijer, but haven't worked on it.

10370 J. O'Rourke. Minimum convex cover for polygons: some counterexamples. Report JHU-EE 82-1, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1982. [o-mccps-82]

10371 J. O'Rourke. Motion detection using Hough techniques. In *Proc. IEEE Internat. Conf. Pattern Recogn. Image Process.*, pages 82–87, 1981. [o-mduht-81] *Keywords:* computer vision, cluster analysis.

10372 J. O'Rourke. On the development of the intersection of a plane with a polytope. Technical Report 068, Dept. Comput. Sci., Smith College, Northampton, MA, June 2000. LANL arXiv cs.CG/0006035 v3, http://cs.smith.edu/~orourke/papers.html. [o-dipp-00] *URL:* http://cs.smith.edu/~orourke/papers.html. *Keywords:* polygonal chains, polytopes, polyhedra. *Cites:* c-cses-89, s-usedkkk-21.

10373 J. O'Rourke. On the scaling heuristic for reconstruction from slices. Technical Report 029, Dept. Comput. Sci., Smith College, Northampton, MA, June 1993. [o-shrs-93] *Keywords:* triangulations, polyhedra, surface reconstruction.

10374 J. O'Rourke. On the scaling heuristic for reconstruction from slices. *CVGIP: Graph. Models Image Process.*, 56:420–423, September 1994. [o-shrs-94] *Keywords:* triangulations, polyhedra, surface reconstruction. *Succeeds:* o-shrs-93.

10375 J. O'Rourke. Open problems in the combinatorics of visibility and illumination. In B. Chazelle, J. E. Goodman, and R. Pollack, editors, *Advances in Discrete and Computational Geometry*, volume 223 of *Contemporary Mathematics*, pages 237–243. American Mathematical Society, Providence, 1999. [o-opcvi-99]

10376 J. O'Rourke. Polygon decomposition and switching function minimization. *Comput. Graph. Image Process.*, 18:382–391, 1982. [o-pdsfm-82] *Keywords:* decomposition.

10377 J. O'Rourke. Polyhedra of minimal area as 3-d object models. In Patrick J. Hayes, editor, *Proc. 7th Internat. Joint Conf. Artif. Intell.*, pages 664–666. William Kaufmann, 1981. [o-pma3d-81] *Keywords:* polyhedra, area.

10378 J. O'Rourke. Polyhedral object models from 3-d points. Technical Report IFI-HH-M-77/80, Universität Hamburg, Hamburg, Germany, July 1980. [o-pom3d-80]

10379 J. O'Rourke. Reconstruction of orthogonal polygons from vertices. Report JHU-EECS 85-13, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1985. [o-ropv-85]

10380 J. O'Rourke. Recovery of convexity from visibility graphs. Technical Report 90.4.6, Dept. Comput. Sci., Smith College, Northampton, MA, April 1990. [o-rcvg-90] *Keywords:* visibility graphs, convexity.

10381 J. O'Rourke. The complexity of computing minimum convex covers for polygons. In *Proc. 20th Allerton Conf. Commun. Control Comput.*, pages 75–84, 1982. [o-ccmcc-82] *Keywords:* decomposition, covering.

10382 J. O'Rourke. The decidability of covering by convex polygons. Report JHU-EECS 82-4, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1982. [o-dccp-82]

10383 J. O'Rourke. The first ten computational geometry columns. Technical Report 4, Dept. Comput. Sci., Smith College, Northampton, MA, 1990. [o-ftcgc-90] *Annote:* Unedited copies of the first ten columns.

10384 J. O'Rourke. The signature of a plane curve. *SIAM J. Comput.*, 15:34–51, 1986. [o-spc-86] *Keywords:* length, pattern recognition.

10385 J. O'Rourke. Uniqueness of orthogonal connect-the-dots. In G. T. Toussaint, editor, *Computational Morphology*, pages 97–104. North-Holland, Amsterdam, Netherlands, 1988. [o-uocd-88] *Keywords:* pattern recognition.

10386 J. O'Rourke. Uniqueness of orthogonal connected-the-dots. Technical report, Johns Hokins Univ., Baltimore, MD, 1986. [o-uocd-86]

10387 Joseph O'Rourke. Vertex π-lights for monotone mountains. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 1–5, 1997. [o-vplmm-97] *Keywords:* art gallery theorems, floodlights, monotone polygons.

10388 J. O'Rourke. Visibility. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 25, pages 467–480. CRC Press LLC, Boca Raton, FL, 1997. [o-v-97]

10389 J. O'Rourke, A. Aggarwal, S. Maddila, and M. Baldwin. An optimal algorithm for finding minimal enclosing triangles. Technical Report JHU/EECS-84/08, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1984. [oamb-oafme-84]

10390 J. O'Rourke, A. Aggarwal, S. Maddila, and M. Baldwin. An optimal algorithm for finding minimal enclosing triangles. *J. Algorithms*, 7:258–269, 1986. [oamb-oafme-86] *Keywords:* triangles, area, approximation.

10391 J. O'Rourke and N. I. Badler. Decomposition of three-dimensional objects into spheres. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-1:295–305, 1979. [ob-dtdos-79] *Keywords:* decomposition, spheres.

10392 J. O'Rourke and N. I. Badler. Model-based image analysis of human motion using constraint propagation. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-2:522–536, 1980. [ob-mbiah-80] *Keywords:* computer vision.

10393 J. O'Rourke, H. Booth, and R. Washington. Connect-the-dots: A new heuristic. *Comput. Vision Graph. Image Process.*, 39:258–266, 1987. [obw-cdnh-87] *Keywords:* pattern recognition, Delaunay triangulations, Hamiltonian cycles.

10394 J. O'Rourke, H. Booth, and R. Washington. Connected-the-dots: A new heuristic. Technical Report JHU/EECS-84/11, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1984. [obw-cdnh-84]

10395 J. O'Rourke, C.-B. Chien, T. Olson, and D. Naddor. A new linear algorithm for intersecting convex polygons. *Comput. Graph. Image Process.*, 19:384–391, 1982. [ocon-nlaic-82] *Keywords:* intersection, polygons.

10396 J. O'Rourke and the Smith Problem Solving Group. PushPush is NP-hard in 3D. Technical Report 064, Smith College, Northampton, MA, November 1999. LANL XXX archive cs.CG/9911013. [os-ppnph3d-99] *Cites:* do-mpams-92.

10397 J. O'Rourke, S. R. Kosaraju, and N. Megiddo. Computing circular separability. *Discrete Comput. Geom.*, 1:105–113, 1986. [okm-ccs-86] *Keywords:* circles, separation, design of algorithms, prune-and-search.

10398 J. O'Rourke and I. Pashchenko. Zero-parity stabbing information. In *Proc. Japan Conf. Discrete Comput. Geom. '98*, pages 93–97, December 1998. To appear. [op-zps-98] *Keywords:* visibility graphs.

10399 Joseph O'Rourke, Irena Pashchenko, and Geetika Tewari. Partitioning orthogonal polygons into fat rectangles. In *Proc. 13th Canad. Conf. Comput. Geom.*, pages ??–??, 2001. [opt-nlrm-01]

10400 Joseph O'Rourke and Octavia Petrovici. Narrowing light rays with mirrors. In *Proc. 13th Canad. Conf. Comput. Geom.*, pages 137–140, 2001. [op-nlrm-01]

10401 J. O'Rourke and J. Rippel. A class of segments whose visibility graphs are Hamiltonian. Technical Report 12, Dept. Comput. Sci., Smith College, 1991. [or-cswvg-91] *Keywords:* visibility graphs, Hamiltonian cycles.

10402 J. O'Rourke and J. Rippel. Segment visibility graphs: several results. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 35–38, 1992. [or-svgsr-92] *Keywords:* visibility graphs, Hamiltonian cycles. *Cites:* aek-rvgsp-91, a-srvg-89, lmw-nvg-87, m-htcpd-92, o-agta-87, or-cswvg-91, tt-uavrp-86, ZZZ.

10403 J. O'Rourke and J. Rippel. Two segment classes with Hamiltonian visibility graphs. *Comput. Geom. Theory Appl.*, 4:209–218, 1994. [or-tschv-94] *Keywords:* visibility graphs, Hamiltonian cycles.

10404 J. O'Rourke and C. Schevon. A theorem on the development of closed convex curves. Report JHU-87/16, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1987. [os-tdccc-87] *Precedes:* os-odcc3p-89.

10405 J. O'Rourke and C. Schevon. Computing the geodesic diameter of a 3-polytope. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 370–379, 1989. [os-cgd3p-89] *Keywords:* polytopes, shortest paths, diameter. *Cites:* afw-fsgvd-88, cs-adpch-88, e-acg-87, egppss-acptc-88, es-vda-86, mmp-dgp-87, mo-al3sd-88, m-fspcp-85, m-nspsp-86, p-gcc-70, s-spacp-87, so-nmesc-88, so-afesp-89, ss-spps-86, s-agfnp-87, ZZZ.

10406 J. O'Rourke and C. Schevon. On the development of closed convex curves on 3-polytopes. *J. Geom.*, 13:152–157, 1989. [os-odcc3p-89] *Succeeds:* os-tdccc-87.

10407 J. O'Rourke, T. Shermer, and I. Streinu. Illuminating convex polygons with vertex floodlights. Technical Report 039, Dept. Comput. Sci., Smith College, April 1995. [oss-icpvf-95t] *Keywords:* visibility, floodlights.

10408 Joseph O'Rourke, Thomas Shermer, and Ileana Streinu. Illuminating convex polygons with vertex floodlights. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 151–156, 1995. [oss-icpvf-95i] *Keywords:* visibility, floodlights.

10409 J. O'Rourke and K. R. Sloan, Jr. Dynamic quantization: two adaptive data structures for multidimensional spaces. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-6(3):266–280, May 1984. [os-dqtad-84] *Keywords:* cluster analysis.

10410 J. O'Rourke and I. Streinu. Pseudo-visibility graphs in pseudo-polygons: Part I. Technical Report 041, Dept. Comput. Sci., Smith College, Northampton, MA, January 1996. Slightly revised Apr. 1996. [os-pvgpp1-96]

10411 J. O'Rourke and I. Streinu. Pseudo-visibility graphs in pseudo-polygons: Part II. Technical Report 042, Dept. Comput. Sci., Smith College, Northampton, MA, April 1996. [os-pvgpp2-96]

10412 J. O'Rourke and I. Streinu. The vertex-edge visibility graph of a polygon. Technical Report 047, Dept. Comput. Sci., Smith College, Northampton, MA, June 1996. Revised Feb. 1997. [os-vevgp-96]

10413 J. O'Rourke and I. Streinu. The vertex-edge visibility graph of a polygon. *Comput. Geom. Theory Appl.*, 8:1–17, 1997. [os-vevgp-97] *Keywords:* visibility, geometric graphs. *Succeeds:* os-pvgpp1-96. *Annote:* A new polygon visibility graph is introduced. It is demonstrated that it encodes more geometric information about the polygon than does the vertex visibility graph. For example, it determines the shortest path tree for each vertex.

10414 Joseph O'Rourke and Ileana Streinu. The vertex–edge visibility graph of a polygon. *Comput. Geom. Theory Appl.*, 10:105–120, 1998. [os-vevgp-98]

10415 J. O'Rourke and I. Streinu. Vertex-edge pseudo-visibility graphs: Characterization and recognition. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 119–128, 1997. [os-vepvgcr-97] *Keywords:* visibility, geometric graphs, arrangements. *Succeeds:* os-pvgpp2-96. *Cites:* ak-vgom-95, blwsz-om-93, e-vgr-90, g-rcvgs-88, g-rcvgs-97, gp-sccca-84, k-ah-92, m-utoms-91, o-cgc18-93, os-pvgpp1-96, os-vevgp-97, s-spinh-91, s-cs-96, s-nspvg-96, ZZZ. *Annote:* Vertex-edge visibility graphs of pseudo-polygons are characterized combinatorially, showing that the decision problem for them is in P. This also establishes that the decision problem for vertex-vertex visibility graphs of pseudo-polygons is in NP.

10416 J. O'Rourke and V. Subramanian. On reconstructing polyhedra from parallel slices. Technical Report 008, Dept. Comput. Sci., Smith College, Northampton, MA, June 1991. [os-rpps-91] *Keywords:* triangulations, polyhedra, surface reconstruction.

10417 J. O'Rourke and K. J. Supowit. Some NP-hard polygon decomposition problems. *IEEE Trans. Inform. Theory*, IT-30:181–190, 1983. [os-snhpd-83] *Keywords:* decomposition, NP-completeness.

10418 J. O'Rourke, Subhash Suri, and H. Booth. Shortest paths on polyhedral surfaces. Manuscript, Johns Hopkins Univ., Baltimore, MD, 1984. [osb-spps-84]

10419 J. O'Rourke, Subhash Suri, and H. Booth. Shortest paths on polyhedral surfaces. In *Proc. 2nd Sympos. Theoret. Aspects Comput. Sci.*, volume 182 of *Lecture Notes Comput. Sci.*, pages 243–254. Springer-Verlag, 1985. [osb-spps-85] *Keywords:* shortest paths.

10420 J. O'Rourke and G. T. Toussaint. Pattern recognition. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 43, pages 797–814. CRC Press LLC, Boca Raton, FL, 1997. [ot-pr-97]

10421 J. O'Rourke and M. Virmani. Generating random polygons. Technical Report 11, Dept. Comput. Sci., Smith College, 1991. [ov-grp-91] *Keywords:* polygons, randomness.

10422 J. O'Rourke and R. Washington. Curve similarity via signatures. In G. T. Toussaint, editor, *Computational Geometry*, pages 295–317. North-Holland, Amsterdam, Netherlands, 1985. [ow-css-85] *Keywords:* length, pattern recognition.

10423 J. O'Rourke and C. Xiao. Some polyhedra are irreducible. Technical Report 49, Dept. Comput. Sci., Smith College, June 1996. [ox-spi-96] *Keywords:* morphing. *Annote:* Proves that Guibas-Hershberger polygon morphing cannot extend to an analogous morphing of polyhedra.

10424 J. O'Rourke and D. Xu. Illumination of polygons with 90° vertex lights. In *Snapshots of Computational and Discrete Geometry*, volume 3, pages 108–117. School Comput. Sci., McGill Univ., Montreal, PQ, July 1994. Technical Report SOCS-94.50. [ox-ip90v-94] *Keywords:* visibility, floodlights. *Annote:* Also Technical Report 034, Dept. Comput. Sci., Smith College.

J. O'Rourke. See also [138–140, 275, 276, 464, 465, 857–859, 1079, 1979–1982, 2319, 2423, 3386–3388, 3492–3494, 3948–3952, 3956–3959, 3961–3964, 3983, 4115, 4168–4174, 4380, 4731–4734, 5038, 5039, 5083, 5084, 5098, 5965, 5966, 6101, 7606, 7615, 7718, 7936–7944, 8290, 9009, 9371, 9372, 9522, 9733, 11701–11703, 12669–12672, 12742].

10425 D. J. Orser. An algebraic representation for the topology of polytope complexes. Report ??, Center Manufacturing Engrg., National Bureau Standards, 1985. [o-artpc-85]

S. A. Orszag. See also [1606].

Lidia Ortega. See also [6284, 6285].

R. Orti. See also [4498, 4499, 11282].

V. T. S ós. See also [8298].

D. O'Shea. See also [3572].

S. Osher. See also [13876].

G. A. Ososkov. See also [3135].

H. G. Osthof. See also [1562, 1563].

R. Ostrovsky. See also [2277, 2278, 8427].

others. See also [2719, 3009, 3010, 4403, 6807, 7128, 8532, 8979, 10004, 10014, 10843, 12426, 12429, 12746, 12779, 13096, 13370].

Matthias Otte. See also [9935].

10426 R. H. J. Otten. Efficient floorplan optimization. In *IEEE Int. Conf. Computer Design inVLSI in Computers*, pages 499–522, 1983. [o-efo-83]

10427 R. H. J. M. Otten and J. G. van Wijk. Graph representations in interactive layout design. In *Proc. IEEE Internat. Sympos. on Circuits and Systems*, pages 914–918, 1978. [ow-grild-78] *Keywords:* graph drawing.

10428 Thomas Ottmann, editor. *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [o-iwcg-89]

10429 Thomas Ottmann, Sven Schuierer, and Christoph A. Hipke. Kompetitive Analyse für Online-Algorithmen: Eine kommentierte Bibliographie. Technical Report 61, Institut für Informatik, Universität Freiburg, Germany, 1994. [osh-kaoa-94]

10430 T. Ottmann, S. Schuierer, and S. Soundaralakshmi. Enumerating extreme points in higher dimensions. In *Proc. 12th Sympos. Theoret. Aspects Comput. Sci.*, volume 900 of *Lecture Notes Comput. Sci.*, pages 562–570. Springer-Verlag, 1995. [oss-eephd-95]

10431 T. Ottmann, E. Soisalon-Soininen, and D. Wood. On the definition and computation of rectilinear convex hulls. Technical Report CS-83-07, Univ. Waterloo, 1983. [osw-dcrch-83]

10432 T. Ottmann, E. Soisalon-Soininen, and D. Wood. On the definition and computation of rectilinear convex hulls. *Inform. Sci.*, 33:157–171, 1985. [osw-dcrch-85]

10433 T. Ottmann, E. Soisalon-Soininen, and D. Wood. Rectilinear convex hull partitioning of sets of rectilinear polygons. Report CS-83-19, Dept. Comput. Sci., Univ. Waterloo, Waterloo, ON, 1983. [osw-rchps-83]

10434 T. Ottmann, G. Thiemt, and C. Ullrich. Numerical stability of geometric algorithms. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 119–125, 1987. [otu-nsga-87] *Comments:* parts of the results appeared in: Th. Ottmann, G. Thiemt, C. Ullrich, On Arithmetical Problems of geometric Algorithms in the plane, Computing supplement 6 (1988), 13-136. *Cites:* a-spapo-85, b-ipsap-84, bo-arcgi-79, bruw-pcmls-86, f-cgset-87, gs-pmgsc-85, km-catp-81, km-nasc-83, lp-cgs-84, -mrm-83, m-mdscg-84, ps-cgi-85, r-cnebf-82, r-snsls-82, rb-lsbea-83, t-dnsga-86, t-cg-85, ZZZ.

10435 Thomas Ottmann and Peter Widmayer. *Algorithmen und Datenstrukturen*. BI-Wissenschaftsverlag, Mannheim, 1990. [ow-ad-90]

10436 T. Ottmann and P. Widmayer. On the placement of line segments into a skeleton structure. Report 117, Inst. Angew. Inform. Formale Beschreibungsverfahren, Univ. Karlsruhe, Karlsruhe, West Germany, 1982. [ow-plsss-82]

10437 T. Ottmann and P. Widmayer. On translating a set of line segments. *Comput. Vision Graph. Image Process.*, 24:382–389, 1983. [ow-tsls-83]

10438 T. Ottmann and P. Widmayer. Reasonable encodings make rectangle problems hard. Report ??, Inst. Angew. Inform. Formale Beschreibungsverfahren, Univ. Karlsruhe, Karlsruhe, West Germany, 1981. [ow-remrp-81]

10439 T. Ottmann and P. Widmayer. Solving visibility problems by using skeleton structures. Report 133, Inst. Angew. Inform. Formale Beschreibungsverfahren, Univ. Karlsruhe, Karlsruhe, West Germany, 1984. [ow-svpus-84]

10440 T. Ottmann, P. Widmayer, and D. Wood. A fast algorithm for Boolean mask operations. Report 112, Inst. Angew. Inform. Formale Beschreibungsverfahren, Univ. Karlsruhe, Karlsruhe, West Germany, 1982. [oww-fabmo-82] *Precedes:* oww-fabmo-85.

10441 T. Ottmann, P. Widmayer, and D. Wood. A fast algorithm for Boolean mask operations. *Comput. Vision Graph. Image Process.*, 30:249–268, 1985. [oww-fabmo-85] *Succeeds:* oww-fabmo-82.

10442 T. Ottmann, P. Widmayer, and D. Wood. A worst-case efficient algorithm for hidden line elimination. *Internat. J. Comput. Math.*, 18:93–119, 1985. [oww-wceah-85]

10443 T. Ottmann and D. Wood. Dynamical sets of points. Technical Report, Dept. Comput. Sci., Univ. Waterloo, 1984. [ow-dsp-84t]

10444 T. Ottmann and D. Wood. Dynamical sets of points. *Comput. Vision Graph. Image Process.*, 27:157–166, 1984. [ow-dsp-84]

10445 T. Ottmann and D. Wood. Space-economical plane-sweep algorithms. Report CS-84-32, Dept. Comput. Sci., Univ. Waterloo, Waterloo, ON, 1984. [ow-sepsa-84] *Precedes:* ow-sepsa-86.

10446 T. Ottmann and D. Wood. Space-economical plane-sweep algorithms. *Comput. Vision Graph. Image Process.*, 34:35–51, 1986. [ow-sepsa-86] *Succeeds:* ow-sepsa-84.

10447 T. Ottmann and D. Wood. The contour problem for polygons. Report CS-84-33, Dept. Comput. Sci., Univ. Waterloo, Waterloo, ON, 1984. [ow-cpp-84]

Thomas Ottmann. See also [670, 1648, 3011, 3792, 4720, 6511–6515, 6638, 7318, 8176–8178, 10154].

10448 T. A. Ottmann. Geometrische Probleme beim VLSI-Design. Report 138, Inst. Angew. Inform. Formale Beschreibungsverfahren, Univ. Karlsruhe, Karlsruhe, West Germany, 1984. [o-gpbvd-84]

10449 T. A. Ottmann. Special cases of the hidden-line elimination problem. *Bull. EATCS*, 26:163–164, 1985. [o-schle-85]

T. A. Ottmann. See also [1649, 1650, 9325, 9326].

10450 Th. Ottmann, E. Soisalon-Soininen, and D. Wood. Partitioning and separating sets of orthogonal polygons. *Inform. Sci.*, 42:31–49, 1987. [osw-pssop-87]

10451 Th. Ottmann and P. Widmayer. *Algorithmen und Datenstrukturen*, volume 70 of *Reihe Informatik*. BI Wissenschaftsverlag, Mannheim, 1993. [ow-ad-93]

10452 Th. Ottmann and D. Wood. Updating binary trees with constant linkage cost. Research Report CS-89-45, Data Structuring Group, University of Waterloo, 1989. [ow-ubtcl-89]

H. S. Ou. See also [1438].

10453 M. Ouksel. The interpolation-based grid file. In *Proc. Annu. ACM Sympos. Principles Database Syst.*, pages 20–27, 1985. [o-ibgf-85]

10454 M. Ouksel and P. Scheuermann. Multidimensional *B*-trees: analysis of dynamic behavior. *BIT*, 21:401–418, 1981. [os-mbtad-81]

M. Ouksel. See also [11699].

10455 J. K. Ousterhout. Corner Stitching: a data structuring technique for VLSI design tools. Manuscript, ??, ?? [o-csdst-??]

10456 J. K. Ousterhout. *Tcl and the Tk toolkit*. Addison-Wesley, 1994. [o-ttt-94]

10457 M. Overmars. Connectability problems. In *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 105–112. Springer-Verlag, 1988. [o-cp-88]

10458 Mark Overmars. Fixture design. In *Abstracts 12th European Workshop Comput. Geom.*, page 49. Universität Münster, 1996. [o-fd-96] *Cites:* ZZZ.

10459 M. Overmars. Teaching computational geometry. Technical Report RUU-CS-93-34, Utrecht University, Utrecht, Netherlands, 1993. [o-tcg-93]

10460 Mark Overmars, Anil Rao, Otfried Schwarzkopf, and Chantal Wentink. Immobilizing polygons against a wall. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 29–38, 1995. [orsw-ipaw-95] *Keywords:* grasping, form-closure, clamping, fixtures. *Cites:* amrsps-93, ab-kawff-85, by-kmafr-90, b-hjfd-89, bgcasmf-94, ccb-maacm-89, b-rsdoh-93, gt-admff-86, h-mf-87, l-matps-82, mnp-gg-90, m-wap-91, mss-esmpg-87, ps-cgi-85, r-km-76, wc-pmhf-94, zgw-emf-94, ZZZ.

10461 M. Overmars, H. Schipper, and Micha Sharir. Storing line segments in partition trees. *BIT*, 30:385–403, 1990. [oss-slspt-90] *Succeeds:* oss-slspt-89.

10462 M. Overmars and Micha Sharir. Output-sensitive hidden surface removal. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 598–603, 1989. [os-oshsr-89] *Comments:* To appear as two papers in ACM Trans. Graphics and Algorithmica.

M. Overmars. See also [91, 195–197, 379, 380, 983, 984, 1688, 1701–1706, 1709–1714, 1724–1727, 1738–1746, 1848, 1850, 1851, 1979–1982, 2313, 2314, 5700, 6547, 8338, 8341–8343, 11067, 12076, 13274, 13275, 13485].

10463 M. H. Overmars. A random approach to motion planning. Report RUU-CS-92-32, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, October 1992. [o-ramp-92]

10464 M. H. Overmars. Computational geometry on a grid: an overview. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 167–184. Springer-Verlag, 1988. [o-cggo-88]

10465 Mark H. Overmars. Designing the Computational Geometry Algorithms Library CGAL. In *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, volume 1148 of *Lecture Notes Comput. Sci.*, pages 53–58. Springer-Verlag, May 1996. [o-dcgal-96] *URL:* http://www.cs.ruu.nl/CGAL/Papers/panel.ps.gz.

10466 M. H. Overmars. Dynamische zoekstructuren die hun geschiedenis onthouden. In P. M. B. Vitanyi, J. van Leeuwen, and P. van Emde Boas, editors, *Colloquium Complexiteit en Algorithmen*, pages 109–136. Mathematisch Centrum, Amsterdam, 1982. [o-dzdhg-82]

10467 M. H. Overmars. Dynamization of order decomposable set problems. *J. Algorithms*, 2:245–260, 1981. Corrigendum in 4(1983), 301. [o-dodsp-81]

10468 M. H. Overmars. Efficient data structures for range searching on a grid. Report RUU-CS-87-2, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1987. [o-edsrs-87] *Precedes:* o-edsrs-88.

10469 M. H. Overmars. Efficient data structures for range searching on a grid. *J. Algorithms*, 9:254–275, 1988. [o-edsrs-88] *Succeeds:* o-edsrs-87.

10470 M. H. Overmars. General methods for "all elements" and "all pairs" problems. *Inform. Process. Lett.*, 12:99–102, 1981. [o-gmaea-81]

10471 M. H. Overmars. Geometric data structures for computer graphics. Report RUU-CS-85-13, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1985. [o-gdscg-85t] *Precedes:* o-gdscg-85i.

10472 M. H. Overmars. Geometric data structures for computer graphics. In R. A. Earnshaw, editor, *Fundamental Algorithms for Computer Graphics*, volume 17 of *NATO ASI Series F*, pages 919–931. Springer-Verlag, 1985. [o-gdscg-85i] *Succeeds:* o-gdscg-85t. *Precedes:* o-gdscg-88.

10473 M. H. Overmars. Geometric data structures for computer graphics: an overview. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 21–49. Springer-Verlag, 1988. [o-gdscg-88] *Keywords:* survey paper, quad trees, range trees, segment trees, dynamizing data structures. *Succeeds:* o-gdscg-85i.

10474 Mark H. Overmars. New methods for hidden surface removal. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 20. Universität Siegen, 1990. [o-nmhsr-90]

10475 M. H. Overmars. Point location in fat subdivisions. Technical Report RUU-CS-91-40, Univ. of Utrecht, Utrecht, Netherlands, November 1991. [o-plfs-91]

10476 M. H. Overmars. Point location in fat subdivisions. *Inform. Process. Lett.*, 44:261–265, 1992. [o-plfs-92] *Succeeds:* o-plfs-91.

10477 M. H. Overmars. Range searching in a set of line segments. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 177–185, 1985. [o-rssls-85] *Cites:* e-ndrs-81, em-ioo-81, em-sosgr-81, eos-smcga-84a, k-osps-83, l-tarrc-79, m-pst-81, o-ddds-83, ol-wcoid-81, l-gcg-82, w-sbta-79, ZZZ.

10478 M. H. Overmars. Range searching on a grid. Report RUU-CS-85-17a, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1985. [o-rsg-85t] *Precedes:* o-rsg-85i.

10479 M. H. Overmars. Range searching on a grid. In *Proc. 11th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 295–305, Linz, Austria, 1985. Trauner Verlag. [o-rsg-85i] *Succeeds:* o-rsg-85t.

10480 M. H. Overmars. Reporting and counting intersections of arcs on a circle. *Bull. EATCS*, 14:7–15, 1981. [o-rciac-81]

10481 M. H. Overmars. Searching in the past I. Report RUU-CS-81-7, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1981. [o-sp1-81]

10482 M. H. Overmars. Searching in the past II: general transforms. Report RUU-CS-81-9, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1981. [o-sp2gt-81]

10483 M. H. Overmars. *The Design of Dynamic Data Structures*, volume 156 of *Lecture Notes Comput. Sci.* Springer-Verlag, Heidelberg, West Germany, 1983. [o-ddds-83] *Keywords:* book.

10484 M. H. Overmars. The locus approach. In *Proc. 9th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 263–273, Linz, Austria, 1983. Trauner Verlag. [o-la-83]

10485 M. H. Overmars. Transforming semi-dynamic data structures into dynamic structures. In *Proc. 7th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 173–182. Carl Hanser Verlag, 1982. [o-tsdds-82]

10486 M. H. Overmars and M. J. van Kreveld. Concatenable structures for decomposable problems. Technical Report RUU-CS-89-16, Univ. of Utrecht, Utrecht, Netherlands, August 1989. [ok-csdp-89]

10487 M. H. Overmars and J. van Leeuwen. Dynamic multi-dimensional data structures based on quad- and k-d trees. *Acta Inform.*, 17:267–285, 1982. [ol-dmdds-82]

10488 M. H. Overmars and J. van Leeuwen. Dynamically maintaining configurations in the plane. In *Proc. 12th Annu. ACM Sympos. Theory Comput.*, pages 135–145, 1980. [ol-dmcp-80] *Succeeds:* ol-nmcp-80. *Precedes:* ol-mcp-81.

10489 M. H. Overmars and J. van Leeuwen. Dynamization of decomposable searching problems yielding good worst-case bounds. In *Proc. 5th GI Conf. Theoret. Comput. Sci.*, volume 104 of *Lecture Notes Comput. Sci.*, pages 224–233. Springer-Verlag, 1981. [ol-ddspy-81]

10490 M. H. Overmars and J. van Leeuwen. Further comments on Bykat's convex hull algorithm. *Inform. Process. Lett.*, 10:209–212, 1980. [ol-fcbch-80]

10491 M. H. Overmars and J. van Leeuwen. Maintenance of configurations in the plane. *J. Comput. Syst. Sci.*, 23:166–204, 1981. [ol-mcp-81] *Succeeds:* ol-dmcp-80.

10492 M. H. Overmars and J. van Leeuwen. Notes on maintenance of configurations in the plane. Report RUU-CS-80-5, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1980. [ol-nmcp-80] *Precedes:* ol-dmcp-80.

10493 M. H. Overmars and J. van Leeuwen. Some principles for dynamizing decomposable searching problems. *Inform. Process. Lett.*, 12:49–54, 1981. [ol-spdds-81]

10494 M. H. Overmars and J. van Leeuwen. Two general methods for dynamizing decomposable searching problems. *Computing*, 26:155–166, 1981. [ol-tgmdd-81]

10495 M. H. Overmars and J. van Leeuwen. Worst-case optimal insertion and deletion methods for decomposable searching problems. *Inform. Process. Lett.*, 12:168–173, 1981. [ol-wcoid-81]

10496 M. H. Overmars, H. Schipper, and Micha Sharir. Storing line segments in partition trees. Report RUU-CS-89-17, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1989. [oss-slspt-89] *Precedes:* oss-slspt-90.

10497 M. H. Overmars, B. Scholten, and I. Vincent. Sets without empty convex 6-gons. Report, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1988. [osv-swec6-88]

10498 M. H. Overmars, B. Scholten, and I. Vincent. Sets without empty convex 6-gons. *Bull. EATCS*, 37:160, 1989. [osv-swec6-89]

10499 M. H. Overmars and Micha Sharir. An improved technique for output-sensitive hidden surface removal. Technical Report RUU-CS-89-32, Univ. of Utrecht, Utrecht, Netherlands, December 1989. [os-itosh-89]

10500 M. H. Overmars and Micha Sharir. Merging visibility maps. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 168–176, 1990. [os-mvm-90] *Precedes:* os-mvm-91. *Cites:* b-hsrr-90, ce-oails-88, d-qbhle-86, egs-ccmfa-90, g-pahle-87i, gao-isost-90, go-nasch-87, ms-rcibt-88, m-eahsr-89, m-wcohs-87, n-flsah-85, os-oshsr-89, py-bpahs-89, rs-eoshs-88i, so-sosah-92, pvy-cavsi-88, s-tsbhl-81, sss-cthsa-74, ZZZ.

10501 M. H. Overmars and Micha Sharir. Merging visibility maps. *Comput. Geom. Theory Appl.*, 1:35–49, 1991. [os-mvm-91] *Succeeds:* os-mvm-90.

10502 M. H. Overmars, M. H. M. Smid, M. T. de Berg, and M. J. van Kreveld. Maintaining range trees in secondary memory, part I: Partitions. *Acta Inform.*, 27:423–452, 1990. [osbk-mrtsm-90]

10503 M. H. Overmars and A. F. van der Stappen. Range searching and point location among fat objects. In J. van Leeuwen, editor, *Algorithms – ESA'94*, volume 855 of *Lecture Notes Comput. Sci.*, pages 240–253. Springer-Verlag, 1994. [os-rsplf-94]

10504 M. H. Overmars and A. F. van der Stappen. Range searching and point location among fat objects. *J. Algorithms*, 21:629–656, 1996. [os-rsplf-96]

10505 M. H. Overmars and P. Švestka. A probabilistic learning approach to motion planning. In *Algorithmic Foundations of Robotics*. A. K. Peters, Wellesley, MA, 1995. [os-plamp-94] *Keywords:* probabilistic, motion planning, learning.

10506 M. H. Overmars and Emo Welzl. A simple method for solving 2-dimensional static range searching. *Bull. EATCS*, 25:31–33, 1985. [ow-sms2d-85] *Keywords:* range search.

10507 M. H. Overmars and Emo Welzl. Construction of sparse visibility graphs. Technical Report RUU-CS-87-9, Department of Computer Science, University of Utrecht, 1987. [ow-csvg-87]

10508 M. H. Overmars and Emo Welzl. New methods for computing visibility graphs. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 164–171, 1988. [ow-nmcvg-88] *Cites:* aaghi-vdp-86, eg-tsa-86, gm-osacv-87, hs-ndssg-86, h-fvgsp-87, l-prp-78, lw-apcfp-79, ow-csvg-87, ss-spps-84, w-cvgnl-85, ZZZ.

10509 M. H. Overmars and Emo Welzl. The complexity of cutting paper. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 316–321, 1985. [ow-ccp-85] *Keywords:* shape, dynamic programming. *Cites:* ZZZ.

10510 M. H. Overmars and D. Wood. On rectangular visibility. *J. Algorithms*, 9:372–390, 1988. [ow-rv-88] *Keywords:* isothetic rectangles. *Succeeds:* mow-vv-87.

10511 M. H. Overmars and C.-K. Yap. New upper bounds in Klee's measure problem. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 550–556, 1988. [oy-nubkm-88] *Keywords:* d-dimensional. *Comments:* $O(n^{d/2} \log n)$ time, $O(n)$ space. *Succeeds:* k-cmbbc-77. *Precedes:* oy-nubkm-91.

10512 M. H. Overmars and C.-K. Yap. New upper bounds in Klee's measure problem. *SIAM J. Comput.*, 20:1034–1045, 1991. [oy-nubkm-91] *Succeeds:* oy-nubkm-88.

M. H. Overmars. See also [1669, 1721–1723, 1747, 1748, 1751, 1849, 4283, 4284, 4735–4741, 4966, 5082, 5222, 5245, 5701, 5702, 6166–6168, 6380, 6411–6415, 6585–6588, 7824, 7825, 7897, 7898, 7927, 8323–8326, 8347, 8520, 8661, 9474, 9976, 11715–11717, 11768, 12311, 12461–12467, 12683, 12802].

10513 J. Owen. Constraint on simple geometry in two and three dimensions. *Internat. J. Comput. Geom. Appl.*, 6:421–434, 1996. [o-csgtt-96]

J. Owen. See also [11319].

10514 S. J. Owen. An implementation of natural neighbor interpolation in three dimensions. Master's thesis, Brigham Young University, 1992. [o-innit-92] *Keywords:* master thesis.

10515 T. Owen. *Assembly with Robots*. Prentice Hall, Englewood Cliffs, NJ, 1985. [o-ar-85]

10516 A. Oxley. Surface fitting by triangulation. *Comput. J.*, 28(3):335–339, 1985. [o-sft-85] *Annote:* Almost content-free. Implementation of Lewis-Robinson algorithm. Suggests constraining of non-boundary edges. Suggests ear cutting to construct initial triangulation.

10517 T. Ozawa. Planarity testing for IC layout with constraints for pin order and congestion between pins. In *IEEE Conf. Record of the 14th Asilomar Conf. on Circuits, Systems and Computers*, pages 188–192, 1980. [o-ptilc-80] *Keywords:* graph drawing.

10518 T. Ozawa and H. Takahashi. A graph-planarization algorithm and its applications to random graphs. In *Graph Theory and Algorithms*, volume 108 of *Lecture Notes Comput. Sci.*, pages 95–107. Springer-Verlag, 1981. [ot-gpaia-81] *Keywords:* graph drawing.

T. Ozawa. See also [3194].

Z. M. Ozsoyoglu. See also [13825].

10519 János Pach. A Tverberg-type result on multicolored simplices. *Comput. Geom. Theory Appl.*, 10:71–76, 1998. [p-ttrms-98]

10520 J. Pach. Covering the plane with convex polygons. *Discrete Comput. Geom.*, 1:73–81, 1986. [p-cpcp-86]

10521 J. Pach. Finite point configurations. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 1, pages 3–18. CRC Press LLC, Boca Raton, FL, 1997. [p-fpc-97]

10522 J. Pach, editor. *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*. Springer-Verlag, 1993. [p-ntdcg-93] *Keywords:* discrete/computational geometry, book, survey papers. *Comments:* contains gs-caa-93, s-barga-93, m-encg-93, k-cpvc-93, gp-asotd-93, km-hart-93, gpw-gtt-93, b-hlcpr-93, b-gcabt-93, fk-rrtpc-93, mp-rdcg-93, and k-stces-93.

10523 János Pach. Notes on geometric graph theory. In J. E. Goodman, R. Pollack, and W. Steiger, editors, *Discrete and Computational Geometry: Papers from the DIMACS Special Year*, pages 273–285. American Mathematical Society, Association for Computing Machinery, 1991. [p-nggt-91] *Comments:* survey paper, geometric graphs.

10524 J. Pach. On an isoperimetric problem. *Studia Sci. Math. Hungar.*, 13:43–45, 1978. [p-ip-78]

10525 János Pach. Systems of segments in the plane. In *Abstracts 14th European Workshop Comput. Geom.*, pages 5–6. Universitat Polytènica de Catalunya, Barcelona, 1998. [p-ssp-98]

10526 Janos Pach and Pankaj K. Agarwal. *Combinatorial Geometry*. John Wiley & Sons, New York, NY, 1995. [pa-cg-95] *ISBN:* 0-471-58890-3.

10527 J. Pach, R. Pollack, and Emo Welzl. Weaving patterns of lines and line segments in space. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 439–446. Springer-Verlag, 1990. [ppw-wplls-90]

10528 J. Pach, R. Pollack, and Emo Welzl. Weaving patterns of lines and line segments in space. *Algorithmica*, 9:561–571, 1993. [ppw-wplls-93]

10529 János Pach and Eduardo Rivera-Campo. On circumscribing polygons for line segments. *Comput. Geom. Theory Appl.*, 10:121–124, 1998. [pr-cpls-98]

10530 Janos Pach, Ido Safruit, and Micha Sharir. The union of congruent cubes in three dimensions. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 19–28, 2001. [pss-ucc3d-01]

10531 J. Pach, F. Shahrokhi, and M. Szegedy. Applications of the crossing number. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 198–202, 1994. [pss-acn-94] *Cites:* ddsv-espgt-88, e-sdnp-46, gmpsen-90, gkk-fdsp-, hp-an1-34, k-epcg-79, l-civ-83, lt-stpg-79, m-fsscs-86, op-eggnv-91, p-nggt-91, pt-sgadt-93, s-jttm-87, sw-cplh-94, u-cav-84, ZZZ.

10532 J. Pach, F. Shahrokhi, and M. Szegedy. Applications of the crossing number. *Algorithmica*, 16:111–117, 1996. (special issue on Graph Drawing, edited by G. Di Battista and R. Tamassia). [pss-acn-96] *Keywords:* graph drawing, straight-line, geometric graph theory. *Succeeds:* pss-acn-94.

10533 J. Pach and M. Sharir. On the boundary of the union of planar convex sets. *Discrete Comput. Geom.*, 21:321–328, 1999. [ps-bupcs-99] *Succeeds:* ps-rivbu-97.

10534 J. Pach and M. Sharir. On the number of incidences between points and curves. *Combinatorics, Probability, and Computing*, 7:in press, 1998. [ps-nibpc-98]

10535 J. Pach and Micha Sharir. On vertical visibility in arrangements of segments and the queue size in the Bentley-Ottman line sweeping algorithm. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 48, 1989. [ps-vvasq-89] *Precedes:* ps-vvasq-91.

10536 J. Pach and Micha Sharir. On vertical visibility in arrangements of segments and the queue size in the Bentley-Ottmann line sweeping algorithm. *SIAM J. Comput.*, 20:460–470, 1991. [ps-vvasq-91] *Succeeds:* ps-vvasq-89.

10537 Janos Pach and Micha Sharir. Regular and irregular vertices on the boundary of the union of planar convex sets. Manuscript, Tel Aviv University, 1997. [ps-rivbu-97] *Precedes:* ps-bupcs-99.

10538 J. Pach and Micha Sharir. Repeated angles in the plane and related problems. Technical Report 90-10, DIMACS, Rutgers Univ., 1990. [ps-raprp-90]

10539 J. Pach and Micha Sharir. Repeated angles in the plane and related problems. *J. Combin. Theory Ser. A*, 59:12–22, 1992. [ps-raprp-92]

10540 J. Pach and Micha Sharir. The upper envelope of piecewise linear functions and the boundary of a region enclosed by convex plates: Combinatorial analysis. Report 279, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, 1987. [ps-ueplf-87] *Precedes:* ps-ueplf-89.

10541 J. Pach and Micha Sharir. The upper envelope of piecewise linear functions and the boundary of a region enclosed by convex plates: combinatorial analysis. *Discrete Comput. Geom.*, 4:291–309, 1989. [ps-ueplf-89] *Keywords:* upper envelope. *Succeeds:* ps-ueplf-87.

10542 J. Pach, J. Spencer, and G. Tóth. New bounds on crossing numbers. *Discrete Comput. Geom.*, 24:623–644, 2000. [pst-nbcn-00]

10543 J. Pach, W. Steiger, and E. Szemerédi. An upper bound on the number of planar k-sets. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 72–79, 1989. [pss-ubnpk-89] *Precedes:* pss-ubnpk-92.

10544 J. Pach, W. Steiger, and E. Szemeredi. An upper bound on the number of planar k-sets. Technical Report 90-12, DIMACS, Rutgers Univ., 1990. [pss-ubnpk-90]

10545 J. Pach, W. Steiger, and E. Szemerédi. An upper bound on the number of planar k-sets. *Discrete Comput. Geom.*, 7:109–123, 1992. [pss-ubnpk-92] *Succeeds:* pss-ubnpk-89. *Annote:* bound of $O(n\sqrt{k}/\log^* k)$ for any planar configuration of size n.

10546 János Pach and Gábor Tardos. Cutting glass. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 360–369, 2000. [pt-cg-00]

10547 János Pach, Torsten Thiele, and Géza Tóth. Three-dimensional grid drawings of graphs. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 47–51. Springer-Verlag, 1997. [ptt-tdgdg-97] *Keywords:* graph drawing.

10548 J. Pach and J. Törőcsik. Some geometric applications of Dilworth's theorem. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 264–279, 1993. [pt-sgadt-93] *Cites:* acns-cfs-82, ae-degg-89, ah-g-66, clr-ia-90, d-dtpos-50, dsw-bvcnh-, e-sdnp-46, es-cpg-35, gkk-fdsp-, grs-rt-90, gl-ccpri-85, hp-an1-34, k-epcg-79, lmpt-rtrpc-94, op-eggnv-91, r-pfl-30, ZZZ.

10549 J. Pach and G. Toth. Graphs drawn with few crossings per edge. Preprint, ??, 1996. [pt-gdfcp-96]

10550 Janos Pach and Rephael Wenger. Embedding planar graphs at fixed vertex locations. *Graphs Combin.*, 17:717–728, 2001. [pw-epgfv-01]

10551 J. Pach and G. Woeginger. Some new bounds for epsilon-nets. Report B-89-08 Serie B, Freie Universität Berlin, Berlin, Germany, 1989. [pw-snben-89]

10552 J. Pach and G. Woeginger. Some new bounds for epsilon-nets. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 10–15, 1990. [pw-snben-90] *Precedes:* kpw-atben-92. *Cites:* a-dapal-89, behw-clgcv-89, cf-dvrsi-88, cw-qorss-89, c-narsc-87, cegsw-ccbac-88, e-acg-87, hw-ensrq-87, m-cen-89, msw-hnlls-90, p-cpcp-86, ZZZ.

J. Pach. See also [141–143, 844, 845, 855, 968, 1154, 1155, 2475, 2713, 2714, 2717, 2718, 4082, 4693, 4694, 4697, 4698, 4742, 4997, 5524, 5525, 6102, 6103, 6304, 7832–7836, 7948, 8248, 8493, 8988, 9296, 9299, 9300, 9871].

R. Pacheco. See also [9166].

J. Paciorek. See also [2723].

10553 Eli Packer and Dan Halperin. Snap rounding revisited. In *Abstracts 17th European Workshop Comput. Geom.*, pages 82–85. Freie Universität Berlin, 2001. [ph-srr-01]

B. Paden. See also [6787, 7447, 7448].

J. Padget. See also [2526].

10554 Alan W. Paeth, editor. *Graphics Gems V*. Academic Press, Boston, MA, 1995. [p-gg5-95] *ISBN:* 0-12-543455-3.

10555 Alan W. Paeth. Ideal tiles for shading and halftoning. In Paul Heckbert, editor, *Graphics Gems IV*, pages 486–492. Academic Press, Boston, MA, 1994. [p-itsh-94] *Keywords:* bitblt, dither, stipple. *Annote:* Discusses heuristics and design techniques for top-quality dither and stipple patterns.

10556 Page. A minimum spanning tree clustering method. *Commun. ACM*, 17(6), 1974. [p-mstcm-74]

10557 B.-U. Pagel, H.-W. Six, and H. Toben. The transformation technique for spatial objects revisited. In *Proc. 3rd Intl. Symp. on Large Spatial Databases*, volume 692 of *Lecture Notes Comput. Sci.*, pages 73–88. Springer-Verlag, 1993. [pst-ttso-93]

E. Pagello. See also [9668].

L. Pagli. See also [8889, 8945, 8946, 9020].

D. K. Pai. See also [4367].

R. Paige. See also [2344].

J. Painter. See also [12271, 12272].

10558 R. Pajarola and J. Rossignac. Compressed progressive meshes. *IEEE Transactions on Visualization and Computer Graphics*, 6(1):79–93, 2000. [pr-cpm-00]

10559 S. P. Pal. *Weak Visibility and Related Problems in simple polygons*. Ph.D. thesis, Indian Inst. Science, 1990. [p-wvrp-90] *Keywords:* doctoral thesis.

10560 S. P. Pal, B. DasGupta, and C. E. Veni Madhavan. Optimal polygon placement by translation. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 164–171, 1990. [pdv-oppt-90] *Cites:* ab-scsp-87, bfm-pct-86, c-pcp-83, ce-oails-88, f-fapct-85, gjpt-tsp-78, l-spcsa-83, lw-apcfp-79, pdv-oppt-90t, ps-cgi-85, ZZZ.

10561 S. P. Pal, C. E. Dasgupta, and C. E. Veni Madhavan. Optimal polygon placement by translation. Technical Report IIsc-CSA-90-7, Department of Computer Science and Automation, Indian Institute of Science, Bangalore, India, 1990. [pdv-oppt-90t]

Sudebkumar P. Pal. See also [835–838, 2045, 4108, 5910–5915, 5919, 5920, 10858].

10562 Oscar Palacios-Velez and Baltasar Cuevas Renaud. Dynamic hierarchical subdivision algorithm for computing Delaunay triangulations and other closest-point problems. *ACM Trans. Math. Softw.*, 16(3):275–292, September 1990. [pr-dhsac-90] *Keywords:* search methods, closest point problems, computational geometry, Delaunay triangulation, hierarchical search, mathematical software. *Annote:* By keeping around all the triangles formed in the incremental algorithm, $O(\log n)$ search time is obtained, at the cost of 3 times as much space. (And worst case space is quadratic.). *Abstract:* A new, dynamic, hierarchical subdivision and recursive algorithm for computing Delaunay triangulations is presented. The algorithm has four main steps: (1) location of the already formed triangle that contains the point to be inserted, (2) identification of other adjoining triangles whose circumcircle contains the point, (3) formation of the new triangles, and (4) database update. Different search procedures are analyzed. It is shown that the 'oriented walk' search has a better performance than the asymptotically optimal 'hierarchical subdivision' search, when the total number of points is less than 417 or when the points are presorted by distance or coordinates. The algorithm has point-deletion capabilities which are discussed in detail. (Author abstract) 25 Refs.

10563 Larry Palazzi and Jack Snoeyink. Counting and reporting red/blue segment intersections. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 530–540. Springer-Verlag, 1993. [ps-crrbs-93]

10564 L. Palazzi and J. Snoeyink. Counting and reporting red/blue segment intersections. *CVGIP: Graph. Models Image Process.*, 56(4):304–311, 1994. [ps-crrbs-94]

U. S. Palekar. See also [1517].

K. V. Palem. See also [1077].

C. J. Palermo. See also [3657].

10565 Leonidas Palios. A linear-time algorithm to compute the optimal bridge connecting two disjoint convex polygons. In *Abstracts 17th European Workshop Comput. Geom.*, pages 48–52. Freie Universität Berlin, 2001. [p-ltaco-01]

10566 L. Palios. On the number of extrema of a polyhedron. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 320–325, 1994. [p-nep-94] *Cites:* bd-cdpr-92, cp-tncp-90, cp-dbnp-92, cs-bst-94, m-mdscg-84, ZZZ.

10567 L. Palios. Optimal tetrahedralization of the 3d-region 'between' a convex polyhedron and a convex polygon. Research report, The Geometry Center, University of Minnesota, 1994. [p-ot3dr-94t] *Succeeds:* p-ot3dr-94.

10568 L. Palios. Optimal tetrahedralization of the 3d region "between" a convex polyhedron and a convex polygon. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 350–356, 1994. [p-ot3dr-94] *Precedes:* p-ot3dr-96, p-ot3dr-94t. *Cites:* b-prcv-75, b-ct-93, be-mgot-92t, cs-bst-94, e-acg-87, gp-cdpb-88, p-ot3dr-94t, mp-fitcp-78, ps-cgi-85, gs-pmgsc-85, ZZZ.

10569 L. Palios. Optimal tetrahedralization of the 3d region "between" a convex polyhedron and a convex polygon. *Comput. Geom. Theory Appl.*, 6:263–276, 1996. [p-ot3dr-96] *Succeeds:* p-ot3dr-94.

L. Palios. See also [3012–3015].

K. K. Paliwal. See also [10977].

10570 I. J. Palmer and R. L. Grimsdale. Collision detection for animation using sphere-trees. *Comput. Graph. Forum*, 14(2):105–116, June 1995. [pg-cdaus-95]

R. G. Palmer. See also [6899].

10571 R. S. Palmer. *Computational Complexity of Motion and Stablility of Polygons*. PhD thesis, Cornell Univ., Ithaca, NY, January 1987. [p-ccmsp-87] *Keywords:* doctoral thesis.

Belén Palop. See also [38–40, 379].

L.-Q. Pan. See also [4457].

10572 V. Pan and J. Reif. Efficient parallel solution of linear systems. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 143–152, 1985. [pr-epsls-85]

V. Pan. See also [2477, 2478, 8818].

10573 V. Y. Pan. Parallel computation of polynomial GCD and some related parallel computations over abstract fields. *Theoret. Comput. Sci.*, 162(2):173–223, 1996. [p-pcpgs-96]

10574 V. Y. Pan, Y. Yu, and C. Steward. Algebraic and numerical techniques for the computation of matrix determinants. *Comput. Math. Appl.*, ??, 1997. To appear. [pys-antcm-97]

V. Y. Pan. See also [2033].

10575 A. Panconesi and D. Dubhashi. Near optimal distributed edge coloring. In *Proc. 3rd Annu. European Sympos. Algorithms*, volume 979 of *Lecture Notes Comput. Sci.*, pages 448–459. Springer-Verlag, 1995. [pd-nodec-95]

10576 A. Panconesi and A. Srinivasan. The local nature of δ-colorings and its algorithmic applications. *Combinatorica*, 15:255–280, 1995. [ps-lndci-95]

10577 A. T. Pang. Solid: a 3-d polygon surface program. Report ??, MPDI Medical Sci. Center, 1985. [p-s3dps-85]

L. J. H. Pannan. See also [5452].

E. Pannwitz. See also [7108].

G. E. Pantziou. See also [4260, 9547, 9548].

C.-Y. Pany. See also [3982].

10578 A. Paoluzzi, F. Bernardini, C. Cattani, and V. Ferrucci. Dimension-independent modeling with simplical complexes. *ACM Trans. Graph.*, 12(1):56–102, January 1993. [pbcf-dimsc-93]

A. Paoluzzi. See also [1842, 5223, 10637].

10579 N. Papadakis and A. Perakis. Deterministic minimal time vessel routing. *Oper. Res.*, 38(3):426–438, 1990. [pp-dmtvr-90]

10580 N. Papadakis and A. Perakis. Minimal time vessel routing in a time-dependent environment. *Transp. Sci.*, 23(4):266–276, 1989. [pp-mtvrt-89]

10581 C. Papadimitriou. Database metatheory: Asking the big queries. In *Proc. Principles of Distributed Systems*, pages 1–10, 1995. [p-dmabq-95] *Comments:* addresses relationship between theory and practice in computer science.

10582 C. Papadimitriou and J. Tsitsiklis. Intractable problems in control theory. *SIAM J. Control Optimization*, 24(4), 1986. [pt-ipct-86]

Christos Papadimitriou. See also [3975, 3976, 8187].

10583 C. H. Papadimitriou. An algorithm for shortest-path motion in three dimensions. *Inform. Process. Lett.*, 20:259–263, 1985. [p-aspmt-85] *Keywords:* motion planning, path planning, geodesic distance, shortest paths.

10584 C. H. Papadimitriou. *Computational Complexity*. Addison-Wesley, Reading, MA, 1994. [p-cc-94] *Keywords:* complexity theory.

10585 C. H. Papadimitriou. On certain problems in algorithmic vision. Technical Report, UCSD, 1991. [p-cpav-91]

10586 C. H. Papadimitriou. Shortest-path motion. In G. Goos and J. Hartmanis, editors, *Proc. Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume ?? of *Lecture Notes Comput. Sci.* Springer-Verlag, December 1986. [p-spm-86]

10587 C. H. Papadimitriou. The Euclidean traveling salesman problem is NP-complete. *Theoret. Comput. Sci.*, 4:237–244, 1977. [p-etspi-77] *Succeeds:* ps-clsts-77.

10588 C. H. Papadimitriou. The NP-completeness of the bandwidth minimization problem. *Computing*, 16:263–270, 1976. [p-ncbmp-76]

10589 C. H. Papadimitriou. The probabilistic analysis of matching heuristics. In *Proc. 15th Allerton Conf. Commun. Control Comput.*, pages 368–378, 1977. [p-pamh-77]

10590 C. H. Papadimitriou. Worst-case and probabilistic analysis of a geometric location problem. *SIAM J. Comput.*, 10:542–557, 1981. [p-wcpag-81]

10591 C. H. Papadimitriou and J. L. Bentley. A worst-case analysis of nearest neighbor searching by projection. Report CMU-CS-80-109, Carnegie-Mellon Univ., Pittsburgh, PA, 1980. [pb-wcann-80t]

10592 C. H. Papadimitriou and J. L. Bentley. A worst-case analysis of nearest neighbor searching by projection. In *Proc. 7th Internat. Colloq. Automata Lang. Program.*, volume 85 of *Lecture Notes Comput. Sci.*, pages 470–482. Springer-Verlag, 1980. [pb-wcann-80]

10593 C. H. Papadimitriou and M. Sideri. The bisection width of grid graphs. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 405–410, 1990. [ps-bwgg-90]

10594 C. H. Papadimitriou and E. B. Silverberg. Finding feasible paths for a two-point body. Technical Memo 45413-870603-01, Bell Lab., Murray Hill, NJ, 1987. [ps-ffptp-87] *Keywords:* motion planning, path planning, geodesic distance, shortest paths.

10595 C. H. Papadimitriou and E. B. Silverberg. Optimal piecewise linear motion of an object among obstacles. Technical Report, Dept. Oper. Res., Stanford Univ., Stanford, CA, 1986. [ps-oplmo-86]

10596 C. H. Papadimitriou and E. B. Silverberg. Optimal piecewise linear motion of an object among obstacles. *Algorithmica*, 2:523–539, 1987. [ps-oplmo-87] *Keywords:* motion planning, path planning, shortest paths.

10597 C. H. Papadimitriou and K. Steiglitz. *Combinatorial Optimization: Algorithms and Complexity*. Prentice Hall, Englewood Cliffs, NJ, 1982. [ps-coac-82]

10598 C. H. Papadimitriou and K. Steiglitz. Some complexity results for the traveling salesman problem. In *Proc. 8th Annu. ACM Sympos. Theory Comput.*, pages 1–9, 1976. [ps-scrts-76] *Comments:* Split into two journal papers: [10599] and [10587]. *Precedes:* ps-clsts-77, p-etspi-77.

10599 C. H. Papadimitriou and K. Steiglitz. The complexity of local search for the traveling salesman problem. *SIAM J. Comput.*, 6:76–83, 1977. [ps-clsts-77] *Succeeds:* ps-scrts-76. *Precedes:* p-etspi-77.

10600 C. H. Papadimitriou and U. V. Vazirani. On two geometric problems related to the traveling salesman problem. *J. Algorithms*, 5:231–246, 1984. [pv-tgprt-84]

10601 C. H. Papadimitriou and M. Yanakakis. The complexity of restricted spanning tree problems. *J. ACM*, 29:285–309, 1982. [py-crstp-82]

10602 C. H. Papadimitriou and M. Yannakakis. Shortest paths without a map. In *Proc. 16th Internat. Colloq. Automata Lang. Program.*, volume 372 of *Lecture Notes Comput. Sci.*, pages 610–620. Springer-Verlag, 1989. [py-spwm-89] *Keywords:* path planning. *Precedes:* py-spwm-91.

10603 C. H. Papadimitriou and M. Yannakakis. Shortest paths without a map. *Theoret. Comput. Sci.*, 84(1):127–150, 1991. [py-spwm-91] *Keywords:* path planning, competitive ratio, unknown map. *Succeeds:* py-spwm-89.

10604 C. H. Papadimitriou and M. Yannakakis. The complexity of facets (and some facets of complexity). In *Proc. 14th Annu. ACM Sympos. Theory Comput.*, pages 255–260, 1982. [py-cfsfc-82] *Precedes:* py-cfsfc-84.

10605 C. H. Papadimitriou and M. Yannakakis. The complexity of facets (and some facets of complexity). *J. Comput. Syst. Sci.*, 28:244–259, 1984. [py-cfsfc-84] *Succeeds:* py-cfsfc-82.

10606 C. H. Papadimitriou and M. Yannakakis. The complexity of facets resolved. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 74–78, 1985. [py-cfr-85] *Precedes:* py-cfr-88.

10607 C. H. Papadimitriou and M. Yannakakis. The complexity of facets resolved. *J. Comput. Syst. Sci.*, 37:2–13, 1988. [py-cfr-88] *Succeeds:* py-cfr-85.

C. H. Papadimitriou. See also [1639, 3977, 5162, 5848, 6278, 7409, 7576, 8098, 8099, 8296, 8297, 8890, 9200, 9430, 9431, 9729, 9730, 9734–9738, 13769].

Ch. H. Papadimitriou. See also [9201].

C. H. Papadimtriou. See also [6809].

10608 Apostolos Papadopoulos and Yannis Manolopoulos. Performance of nearest neighbor queries in R-trees. In *Database Theory—ICDT'97, 6th International Conference*, volume 1186 of *Lecture Notes Comput. Sci.*, pages 394–408. Springer, 1997. [pm-pnnqr-97] *ISBN:* 3-540-62222-5.

10609 Evanthia Papadopoulou and D. T. Lee. Efficient computation of the geodesic Voronoi diagram of points in a simple polygon. In *Algorithms—ESA '95, Third Annual European Symposium*, volume 979 of *Lecture Notes Comput. Sci.*, pages 238–251. Springer-Verlag, 1995. [pl-ecgvd-95]

10610 E. Papadopoulou and D. T. Lee. Shortest paths in a simple polygon in the presence of "forbidden" vertices. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 110–115, 1994. [pl-spspp-94] *Cites:* a-gvdps-89, gm-osacv-91, ghlst-ltavs-87, hs-cmlpg-91, lp-esppr-84, m-spop-93, ms-scg-, ps-cgi-85, ZZZ.

E. Papadopoulou. See also [366].

G. Papaioannou. See also [7788].

10611 A. Papakostas. *Information Visualization: Orthogonal Drawings of Graphs.* Ph.D. thesis, Department of Computer Science, University of Texas at Dallas, December 1996. [p-ivodg-96] *Keywords:* doctoral thesis, graph drawing, orthogonal, 3D.

10612 A. Papakostas. Upward planarity testing of outerplanar dags. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 298–306. Springer-Verlag, 1995. [p-uptod-95] *Keywords:* graph drawing, planar, upward.

10613 Achilleas Papakostas, Janet M. Six, and Ioannis G. Tollis. Experimental and theoretical results in interactive graph drawing. In Stephen North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 371–386. Springer-Verlag, 1997. [pst-etrio-97]

10614 A. Papakostas, J. M. Six, and I. G. Tollis. Interactive orthogonal graph drawing: An experimental study. Technical Report UTDCS-3-99, Dept. Comput. Sci., Univ. Texas Dallas, May 1999. [pst-iogde-99]

10615 Achilleas Papakostas and Ioannis G. Tollis. Algorithms for area-efficient orthogonal drawings. *Comput. Geom. Theory Appl.*, 9(1–2):83–110, 1998. Special Issue on Geometric Representations of Graphs, G. Di Battista and R. Tamassia, editors. [pt-aaeod-98] *Keywords:* graph drawing, orthogonal. *Succeeds:* pt-iabod-95.

10616 A. Papakostas and I. G. Tollis. Improved algorithms and bounds for orthogonal drawings. Manuscript, 1995. [pt-iabod-96] *Keywords:* graph drawing.

10617 A. Papakostas and I. G. Tollis. Improved algorithms and bounds for orthogonal drawings. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 40–51. Springer-Verlag, 1995. [pt-iabod-95] *Keywords:* graph drawing, orthogonal.

10618 Achilleas Papakostas and Ioannis G. Tollis. Incremental orthogonal graph drawing in three dimensions. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 52–63. Springer-Verlag, 1997. [pt-iogdt-97] *Keywords:* graph drawing, orthogonal, 3D.

10619 A. Papakostas and I. G. Tollis. Interactive orthogonal graph drawing. *IEEE Trans. Comput.*, C-47(11):1297–1309, 1998. [pt-iogd-98] *Succeeds:* pt-iiogd-96.

10620 A. Papakostas and I. G. Tollis. Issues in interactive orthogonal graph drawing. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 419–430. Springer-Verlag, 1996. [pt-iiogd-96]

A. Papakostas. See also [9145, 9146].

10621 S. Papert. *Mindstorms: Children, Computers and Powerful Ideas.* Basic Books, New York, NY, 1980. [p-mccpi-80]

L. Paquette. See also [2369].

P. M. Pardalos. See also [13728].

Luis M. Pardo. See also [9822].

D. Parente. See also [1075].

M. T. Pareschi. See also [9078].

B. Parhami. See also [7208].

10622 L. Parida and S. P. Mudur. Computational methods for evaluating swept object boundaries. *Visual Comput.*, 10(5):266–276, 1994. [pm-cmeso-94]

Paresh Parikh. See also [8954].

10623 P. Paripati. Polyhedra: Representation and recognition. Master's thesis, Dept. Comput. Sci., Virginia Poytechnic Inst. and State Univ., Blacksburg, VA, 1989. [p-prr-89] *Keywords:* master thesis.

P. Paripati. See also [11292].

P. K. Paripati. See also [6749, 6750].

10624 J. Paris and L. Harrington. A mathematical incompleteness in Peano arithmetic. In J. Barwise, editor, *Handbook of Mathematical Logic*, pages 1133–1142. North-Holland, Amsterdam, Netherlands, 1977. [ph-mipa-77]

Armando Parise. See also [4123–4125].

A. Park. See also [9207, 9208].

B. J. Park. See also [8044].

C. M. Park. See also [13506].

J. Park. See also [1575, 9171].

J. K. Park. See also [300, 303–305, 8319, 9768].

10625 K. Park and Z. Galil. Truly alphabet-independent two-dimensional pattern matching. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 247–256, 1992. [pg-taitd-92]

K. H. Park. See also [3247].

10626 Sang-Min Park, Jae-Ha Lee, and Kyung-Yong Chwa. A characterizatin of the class of polygons searchable by a 1-searcher. In *Abstracts 17th European Workshop Comput. Geom.*, pages 133–136. Freie Universität Berlin, 2001. [plc-ccps1-01]

A. Parker. See also [10194].

10627 L. E. Parker. Behavior-based cooperative robotics applied to multi-target observation. In *Proc. Dagstuhl Seminar on Modeling and Planning for Sensor-Based Intelligent Robot Systems*, September 1996. [p-bbcra-96]

S. Parker. See also [2061].

L. G. Parkomov. See also [11057, 11058].

B. O. Parks. See also [6095].

10628 P. Parodi. The complexity of understanding line drawings of origami scenes. *Internat. J. Comput. Vision*, 18(2):139–170, 1996. [p-culdo-96]

10629 P. Parodi, R. Lancewicki, A. Vijh, and J. K. Tsotsos. Empirically-derived estimates of the complexity of labelling line drawings of polyhedral scenes. Technical Report RBCV-TR-96-52, Dept. Comput. Sci., Univ. Toronto, Toronto, ON, 1996. [plvt-edecl-96]

10630 P. Parodi and G. Piccioli. 3d shape reconstruction by using vanishing points. *IEEE Trans. Pattern Anal. Mach. Intell.*, 18(2):211–217, February 1996. [pp-3dsru-96]

10631 P. Parodi and V. Torre. On the complexity of labeling perspective projections of polyhedra. *Artif. Intell.*, 70(1):1–38, 1994. [pt-clppp-94]

10632 D. Parson and C. Torras. The combinatorics of overlapping convex polygons in contact. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 83–92, 1992. [pt-cocpc-92] *Cites:* c-pcp-83, ls-ncfcc-87, pt-ccsbc-91, ss-pmp1c-83, s-pds-74, tt-mtcpc-89, ZZZ.

10633 D. Parsons and C. Torras. On the complexity of the contact space between convex polyhedra. Technical Report, Institut de Cibernètica, Universitat Politécnica de Catalunia - CSIC, Barcelona, Spain, 1991. [pt-ccsbc-91]

10634 T. D. Parsons. Pursuit-evasion in a graph. In Y. Alavi and D. Lick, editors, *Theory and Applications of Graphs*, volume 642 of *Lecture Notes Math.*, pages 426–441. Springer-Verlag, Berlin, West Germany, 1976. [p-peg-76]

10635 S. K. Parui and A. Datta. A parallel algorithm for decomposition of binary objects through skeletonization. *Pattern Recogn. Lett.*, 12:235–240, 1991. [pd-padbo-91]

10636 I. Paschinger. *Konvexe Polytope und Dirichletsche Zellenkomplexe.* Ph.D. thesis, Institut für Mathematik, Universität Salzburg, Salzburg, Austria, 1982. [p-kpudz-82] *Keywords:* doctoral thesis.

10637 V. Pascucci, V. Ferrucci, and A. Paoluzzi. Dimension-independent convex-cell based hpc: Representation scheme and implementation issues. In C. Hoffmann and J. Rossignac, editors, *Solid Modeling '95*, pages 163–174. ACM Press, 1995. [pfp-diccb-95]

V. Pascucci. See also [1291, 1292, 8339].

Irena Pashchenko. See also [3951, 10398, 10399].

A. A. Pasko. See also [12384].

Oren Patashnik. See also [6237, 6238].

H. Patel. See also [6247].

E. R. Paternoster. See also [12689].

10638 M. Paterson. Improved sorting networks with $o(\log n)$ depth. *Algorithmica*, 5(1):75–92, 1990. [p-isnod-90]

M. Paterson. See also [8025, 8115, 9811, 9812, 11779].

10639 M. S. Paterson and F. F. Yao. Binary partitions with applications to hidden surface removal and solid modelling. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 23–32, 1989. [py-bpahs-89] *Precedes:* py-ebsph-90. *Cites:* c-iies-84, cgl-pgd-83, dghs-eafcr-88, e-acg-87, fkn-vsgpt-80, g m-vlbe-59, gy-tsr-83, k-acp-73, p-hresr-84, ZZZ.

10640 M. S. Paterson and F. F. Yao. Efficient binary space partitions for hidden-surface removal and solid modeling. *Discrete Comput. Geom.*, 5:485–503, 1990. [py-ebsph-90] *Succeeds:* py-bpahs-89.

10641 M. S. Paterson and F. F. Yao. On nearest-neighbor graphs. In *Proc. 19th Internat. Colloq. Automata Lang. Program.*, volume 623 of *Lecture Notes Comput. Sci.*, pages 416–426. Springer-Verlag, 1992. [py-nng-92]

10642 M. S. Paterson and F. F. Yao. Optimal binary space partitions for orthogonal objects. Research Report 158, Univ. Warwick, 1990. [py-obspo-90t] *Succeeds:* py-obspo-90. *Precedes:* py-obspo-92.

10643 M. S. Paterson and F. F. Yao. Optimal binary space partitions for orthogonal objects. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 100–106, 1990. [py-obspo-90] *Precedes:* py-obspo-92.

10644 M. S. Paterson and F. F. Yao. Optimal binary space partitions for orthogonal objects. *J. Algorithms*, 13:99–113, 1992. [py-obspo-92] *Succeeds:* py-obspo-90, py-obspo-90t.

10645 M. S. Paterson and F. F. Yao. Point retrieval for polygons. *J. Algorithms*, 7:441–447, 1986. [py-prp-86]

M. S. Paterson. See also [5276, 5441, 13793].

L. Patniak. See also [3776].

L. M. Patniak. See also [386].

J. N. Pato. See also [11164].

N. M. Patrialakis. See also [6486].

10646 E. A. Patrick. *Fundamentals of Pattern Recognition*. Prentice Hall, Englewood Cliffs, NJ, 1972. [p-fpr-72]

10647 E. A. Patrick and F. P. Fisher. Generalized k-nearest neighbor decision rule. *Inform. Control*, 16:128–152, April 1970. [pf-gknnd-70]

E. A. Patrick. See also [5271].

10648 Maurizio Patrignani. On the complexity of orthogonal compaction. Technical Report RT-DIA-39-99, Dipartimento di Informatica e Automazione, Università di Roma Tre, Rome, Italy, January 1999. [p-coc-99] *URL:* http://www.dia.uniroma3.it/research/tech-rep/dia-39-99.ps. *Keywords:* graph drawing, planar, orthogonal, area, edge length, NP-completeness.

10649 M. Patrignani. On the complexity of orthogonal compaction. In F. Dehne, A. Gupta, J.-R. Sack, and R. Tamassia, editors, *Algorithms and Data Structures*, volume 1663 of *Lecture Notes Comput. Sci.*, pages 56–61. Springer-Verlag, 1999. [p-coc-99i]

10650 M. Patrignani. On the complexity of orthogonal compaction. *Comput. Geom. Theory Appl.*, 19:47–67, 2001. [p-coc-01]

10651 Maurizio Patrignani and Francesco Vargiu. 3DCube: A tool for three dimensional graph drawing. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 284–290. Springer-Verlag, 1997. [pv-3dttd-97] *Keywords:* graph drawing.

Maurizio Patrignani. See also [4143].

10652 N. M. Patrikalakis. Approximate conversion of rational splines. *Comput. Aided Geom. Design*, 6(2):155–165, 1989. [p-acrs-89]

10653 N. M. Patrikalakis. Geometric modeling in computer aided ship design. In *Proc. Marine Computers '86*, 1986. [p-gmcas-86]

10654 N. M. Patrikalakis. Interrogation of surface intersections. In R. E. Barnhill, editor, *Geometry Processing for Design and Manufacturing*, chapter 8, pages 161–185. Society for Industrial and Applied Mathematics, Philadelphia, PA, 1992. [p-isi-92]

10655 N. M. Patrikalakis. Shape interrogation. In C. Chryssostomidis, editor, *Proc. 16th Annual MIT Sea Grant College Program Lecture and Seminar: Automation in the Design and Manufacture of Large Marine Systems*, pages 83–104, 1990. [p-si-88]

10656 N. M. Patrikalakis. Surface-to-surface intersections. *IEEE Comput. Graph. Appl.*, 13(1):89–95, 1993. [p-ssi-93]

10657 N. M. Patrikalakis, P. G. Alourdas, G. R. Hottel, and S. T. Tuohy. Praxiteles: A computer aided geometric modeling system. In *Proc. Fifth International Conference on Marine Technology*, pages 221–227, 1990. [paht-pcagm-90]

10658 N. M. Patrikalakis and L. Bardis. Feature extraction from B-spline marine propeller representations. *Journal of Ship Research*, 36(3):233–247, 1992. [pb-febmp-92]

10659 N. M. Patrikalakis and L. Bardis. Localization of rational B-spline surfaces. *Engineering with Computers*, 7(4):237–252, 1991. [pb-lrbs-91]

10660 N. M. Patrikalakis and L. Bardis. Offsets of curves on rational B-spline surfaces. *Engineering with Computers*, 5:39–46, 1989. [pb-ocrbs-89]

10661 N. M. Patrikalakis, L. Bardis, and G. A. Kriezis. Approximation of B-spline geometries with lower degree representations. *Journal of Offshore Mechanics and Arctic Engineering, ASME Transactions*, 112(3):192–198, 1990. [pbk-abgld-90]

10662 N. M. Patrikalakis, W. Cho, C.-Y. Hu, T. Maekawa, E. C. Sherbrooke, and J. Zhou. Towards robust geometric modellers, 1994 progress report. In *Proc. 1995 NSF Design and Manufacturing Grantees Conference*, pages 139–140, 1995. [pchmsz-trgm1-94]

10663 N. M. Patrikalakis, C. Chryssostomidis, S. T. Tuohy, J. G. Bellingham, J. J. Leonard, J. W. Bales, B. A. Moran, and J. W. Yoon. Virtual environments for ocean exploration and visualization. In *Proc. CES '95: Workshop on Computer Technology for the Exploration of the Sea*, 1995. [pctblbmy-veoev-95]

10664 N. M. Patrikalakis and H. N. Gürsoy. Shape interrogation by medial axis transform. In *Proc. 16th ASME Design Automation Conference*, September 1990. [pg-simat-90]

10665 N. M. Patrikalakis, C.-Y. Hu, T. Maekawa, and E. C. Sherbrooke. Towards robust geometric modellers. In *Proc. 1994 NSF Design and Manufacturing Grantees Conference*, pages 199–200, 1994. [phms-trgm-94]

10666 N. M. Patrikalakis and G. A. Kriezis. Piecewise continuous algebraic surfaces in terms of B-splines. In M. J. Wozny, J. U. Turner, and K. Preiss, editors, *Proc. of the 1988 International Federation of Information Processing WG 5.2 / National Science Foundation Working Conference on Geometric Modeling: Geometric Modeling for Product Engineering*, pages 3–19, 1990. [pk-pcast-90]

10667 N. M. Patrikalakis and G. A. Kriezis. Representation of piecewise continuous algebraic surfaces in terms of B-splines. *Visual Comput.*, 5(6):360–374, 1989. [pk-rpcas-89]

10668 N. M. Patrikalakis, G. A. Kriezis, and P. V. Prakash. Investigation on surface-to-surface intersection problems. In *Proc. 16th Annual NSF Grantees Conference on Manufacturing Systems Research*, pages 169–176, 1990. [pkp-issip-90]

10669 N. M. Patrikalakis, T. Maekawa, E. C. Sherbrooke, and J. Zhou. Computation of singularities for engineering design. In L. Kunii and Y. Shinagawa, editors, *Proc. International Workshop on Modern Geometric Computing for Visualization*, pages 167–191, 1992. [pmsz-csed-92]

10670 N. M. Patrikalakis and P. V. Prakash. Free-form plate modeling using offset surfaces. *Journal of Offshore Mechanics and Arctic Engineering, ASME Transactions*, 110(3):287–294, 1988. [pp-ffpmu-88]

10671 N. M. Patrikalakis and P. V. Prakash. Intersections for trimmed surface patches. In *Proc. 8th International Symposium on Offshore Mechanics and Arctic Engineering*, pages 211–222, 1989. [pp-itsp-89]

10672 N. M. Patrikalakis and P. V. Prakash. Surface intersections for geometric modeling. *Journal of Mechanical Design, ASME Transactions*, 112(1):100–107, 1990. [pp-sigm-90]

10673 N. M. Patrikalakis, P. V. Prakash, H. N. Gürsoy, and G. A. Kriezis. Research topics in shape interrogation. In N. Magnenat-Thalmann and D. Thalmann, editors, *New Trends in Animation and Visualization*, chapter 2, pages 13–41. John Wiley & Sons, London, UK, 1991. [ppgk-rtsi-91]

N. M. Patrikalakis. See also [77, 1392–1395, 3288, 3289, 5248, 6487, 6488, 7135, 7158, 7159, 7541, 8354–8356, 9100–9102, 9868, 12117–12119, 13065–13071, 13126, 13376, 13880].

A. Pattekar. See also [8362].

10674 A. L. Patterson. A direct method for the determination of the components of interatomic distances in crystals. *Zeitschrift Krist.*, 90:517–542, 1935. [p-dmdci-35]

10675 A. L. Patterson. Amibguities in the X-ray analysis of crystal structures. *Physical Review*, 65:195–201, 1944. [p-axrac-44]

D. A. Patterson. See also [3647].

Petru Pau. See also [1408, 1409].

10676 R. P. Paul. *Robot Manipulators, Mathematics, Programming and Control*. MIT Press, 1981. [p-rmmpc-81]

R. P. Paul. See also [5619].

10677 W. Paul and J. Simon. *Decision trees and random access machines*, volume 30 of *Logic and Algorithmic Monographs*. Enseignement Mathematique, 1980. [ps-dtram-80]

10678 W. Paul, U. Vishkin, and H. Wagener. Parallel dictionaries on 2-3 trees. In *Proceedings of the Tenth ICALP*, pages 597–609, 1983. [pvw-pd23t-83]

10679 W. De Pauw, R. Helm, D. Kimelman, and J. Vlissides. Visualizing the behavior of object-oriented systems. In *Proc. 8th Annu. ACM Conf. Object-Oriented Program. Syst. Lang. Appl.*, volume 28 of *SIGPLAN Notices*, pages 326–337, 1993. [phkv-vboos-93] *Keywords:* graph drawing.

10680 T. Pavlidis. *Algorithms for Graphics and Image Processing*. Computer Science Press, Berlin, West Germany, 1982. [p-agip-82]

10681 T. Pavlidis. Analysis of set patterns. *Pattern Recogn.*, 1:165–178, 1968. [p-asp-68]

10682 T. Pavlidis. *Computer Graphics*. Computer Science Press, Potomac, MD, 1978. [p-cg-78]

10683 T. Pavlidis. Filling algorithms for raster graphics. *Comput. Graph. Image Process.*, 10:126–141, 1979. [p-farg-79]

10684 T. Pavlidis. Representation of figures by labelled graphs. *Pattern Recogn.*, 4:5–17, 1972. [p-rflg-72]

10685 T. Pavlidis and C. J. Van Wyk. An automatic beautifier for drawings and illustrations. *Comput. Graph.*, 19(3):225–234, 1985. Proc. SIGGRAPH '85. [pv-abdi-85]

T. Pavlidis. See also [5213, 11678–11681].

T. Payne. See also [3281].

T. H. Payne. See also [3282, 6691].

D. W. Payton. See also [7983, 9739].

10686 A. Paz. Minimization theorems and techniques for sequential stochastic machines. *Inform. Control*, 11:155–166, 1967. [p-mttss-67]

10687 J. Pearl. *Heuristics: Intelligent Search Strategies for Computer Problem Solving*. Addison-Wesley, Reading, MA, 1984. [p-hissc-84] *Keywords:* book.

10688 J. Pecht. On the index of concavity of neighborhood templates. *Acta Cybern.*, 7:373–376, 1986. [p-icnt-86]

Igor Pechtchanski. See also [7789].

10689 G. W. Peck. On *k*-sets in the plane. *Discrete Math.*, 56:73–74, 1985. [p-oksp-85]

Jean Pedersen. See also [6922].

J. O. Pedersen. See also [3658, 3659, 6744].

10690 P. Pedersen. Counting real zeros. Technical Report 545-R243, New York Univ., New York, NY, 1991. [p-crz-91]

D. O. Pederson. See also [7156].

10691 D. Pedoe. *Geometry, a comprehensive course*. Dover Publications, New York, 1970. [p-gcc-70]

D. Pedoe. See also [5656, 6988].

S. Pedroni. See also [4481].

D. Peeters. See also [6651].

10692 J. Pegna and F.-E. Wolter. A simple practical criterion to guarantee second order smoothness of blend surfaces. In B. Ravani, editor, *Proc. 15th ASME Design Automation Conference: Advances in Design Automation*, volume 1, pages 93–105, 1989. [pw-spcgs-89]

10693 J. Pegna and F.-E. Wolter. Designing and mapping trimming curves on surfaces using orthogonal projection. In B. Ravani, editor, *Proc. of the 16th ASME Design Automation Conference: Advances in Design Automation, Computer Aided and Computational Design*, volume I, pages 235–245, 1990. [pw-dmtcs-90]

10694 J. Pegna and F.-E. Wolter. Designing and mapping trimming curves on surfaces using orthogonal projection. *Journal of Mechanical Design, ASME Transactions*, ??, 1994. To appear. [pw-dmtcs-94]

10695 J. Pegna and F.-E. Wolter. Geometrical criteria to guarantee curvature continuity of blend surfaces. *Journal of Mechanical Design, ASME Transactions*, 114(1):201–210, 1992. [pw-gcgcc-92]

10696 Naixun Pei and Sue Whitesides. On folding rulers in regular polygons. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 11–16, 1997. [pw-frrp-97]

10697 N. Pei and S. Whitesides. On the reachable regions of chains. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 161–166, 1996. [pw-rrc-96]

J. Peiro. See also [10728].

10698 Roberto Peirone. Reflections can be trapped. *Amer. Math. Monthly*, 101:259–260, 1994. [p-rcbt-94]

10699 A. Pelc and I. Rival. Orders with level diagrams. Technical Report TR-87-11, Department of Computer Science, University of Ottawa, March 1987. [pr-old-87] *Keywords:* graph drawing.

A. Pelc. See also [454, 3679–3681].

10700 D. Peleg and A. Schäffer. Graph spanners. *J. Graph Theory*, 13:99–116, 1989. [ps-gs-89]

10701 D. Peleg and J. Ullman. An optimal synchonizer for the hypercube. In *Proc. 6th ACM Symp. on Princ. Distr. Comp.*, pages 77–85, 1987. [pu-osh-87] *Precedes:* pu-osh-89.

10702 D. Peleg and J. Ullman. An optimal synchonizer for the hypercube. *SIAM J. Comput.*, 18:740–747, 1989. [pu-osh-89] *Succeeds:* pu-osh-87.

10703 D. Peleg and E. Upfal. A tradeoff between space and efficiency for routing tables. In *Proc. 20th Annu. ACM Sympos. Theory Comput.*, pages 43–52, 1988. [pu-tbser-88]

D. Peleg. See also [1195, 1196, 1345].

S. Peleg. See also [12120, 13489, 13490].

Christian Pellegrini. See also [11315].

10704 M. Pellegrini. Building convex space partitions induced by pairwise interior-disjoint simplices. Technical Report ICSI TR-93-039, ICSI, August 1993. [p-bcspi-93]

10705 M. Pellegrini. *Combinatorical and algorithmic analysis of stabbing and visibility problems in 3-dimensional space*. PhD thesis, Courant Inst. Math. Sci., New York University, New York, NY, February 1991. [p-caasv-91] *Keywords:* doctoral thesis.

10706 Marco Pellegrini. Electrostatic fields without singularities: Theory and algorithms. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 184–191, 1996. [p-efwst-96] *Keywords:* electrostatic force between simplices, Monte Carlo method, integral geometry, approximation, charge densities.

10707 M. Pellegrini. Incidence and nearest-neighbor problems for lines in 3-space. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 130–137, 1992. [p-innpl-92] *Cites:* aass-sdp-90, am-rsps-92, as-tsbac-90, as-anps-91, as-cscas-, as-zsha-91, cegpsss-ccclr-90, cegs-lscaa-89, cegs-sessr-89, cegs-dwclp-92, ck-plscc-89, c-sdsno-87, cs-agpli-88, csw-qoubs-90, bhosk-ershs-91, egs-ccmfa-90, fhs-cmsp-89, gss-gmppt-88, h-cscca-91, ho-empls-89, ks-ampsc-88, ls-esmpa-87, ls-pptmc-87, m-ept-91, m-apcad-83, p-srs3d-90, p-rsicl-91, ps-fsl3s-92, ss-smprg-89, t-epcp-91, ZZZ.

10708 M. Pellegrini. Lower bounds on stabbing lines in 3-space. *Comput. Geom. Theory Appl.*, 3:53–58, 1993. [p-lbsl3-93]

10709 Marco Pellegrini. Monte Carlo approximation of form factors with error bounded a priori. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 287–296, 1995. [p-mcaff-95] *Keywords: Cites:* a-ijpop-94, bgsss-mcm-66, bo-arcgi-79, cg-hrsce-85, dr-mni-75, ejla-csmcd-91, f-iptia-68, hsa-rhra-91, jvv-rgcsu-86, kkkll-mcaep-90, lsg-beer-94, m-sosdr-91, m-hsrrm-91, ps-cgi-85, pt-dpplo-90, s-igbmf-93, s-iggp-76, sh-trht-92, sp-gtpmi-89, s-tlpm-87, weh-rtapr-89, wrc-rtsdi-88, ZZZ.

10710 M. Pellegrini. New results on ray-shooting and isotopy classes of lines in 3-dimensional space. Technical report, 1991. [p-nrrsi-91]

10711 M. Pellegrini. On collision-free placements of simplices and the closest pair of lines in 3-space. *SIAM J. Comput.*, 23(1):133–153, 1994. [p-cfpsc-94]

10712 M. Pellegrini. On lines missing polyhedral sets in 3-space. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 19–28, 1993. [p-lmps3-93] *Cites:* am-rsps-92, as-anps-91, as-tsbac-90, as-car-92, c-oaitd-89, cegs-lscaa-89, cegs-ablsp-89, cegs-dwclp-92, cosw-cds-84, c-narsc-87, bhosk-ershs-91, bhok-sanvp-92, e-acg-87, egs-ccmfa-90, gy-tsr-80, m-cen-89, m-cha-90i, m-rph-91, n-pa-88, n-tsott-86, ns-spots-89, ns-tsp-89, p-srs3d-90, p-rst3s-93, p-innpl-92, ps-fsl3s-92, pss-stsps-88, ps-cgi-85, pt-espl-89, rs-eoshs-88i, ss-smprg-89, t-mss-85, ZZZ.

10713 M. Pellegrini. On lines missing polyhedral sets in 3-space. *Discrete Comput. Geom.*, 12:203–221, 1994. [p-lmps3-94]

10714 Marco Pellegrini. On point location and motion planning among simplices. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, pages 95–104, 1994. [p-plmps-94] *Precedes:* p-plmps-96.

10715 Marco Pellegrini. On point location and motion planning among simplices. *SIAM J. Comput.*, 25:1061–1081, 1996. [p-plmps-96] *Succeeds:* p-plmps-94.

10716 M. Pellegrini. On the zone of a co-dimension *p* surface in a hyperplane arrangement. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 233–238, August 1991. [p-zcdps-91] *Precedes:* aps-zsha-93. *Cites:* ams-sscch-91, as-zsha-91, c-narsc-87, e-acg-87, g-cp-67, ZZZ.

10717 M. Pellegrini. Ray-shooting and isotopy classes of lines in 3-dimensional space. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 20–31. Springer-Verlag, 1991. [p-rsicl-91] *Keywords:* ray tracing, random sampling.

10718 M. Pellegrini. Ray shooting and lines in space. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 32, pages 599–614. CRC Press LLC, Boca Raton, FL, 1997. [p-rsls-97]

10719 M. Pellegrini. Ray shooting on triangles in 3-space. *Algorithmica*, 9:471–494, 1993. [p-rst3s-93]

10720 M. Pellegrini. Repetitive hidden surface removal for polyhedra. *J. Algorithms*, 21:80–101, 1996. [p-rhsrp-96]

10721 Marco Pellegrini. Repetitive hidden surface removal for polyhedral scenes. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 541–552. Springer-Verlag, 1993. [p-rhsrp-93]

10722 M. Pellegrini. Stabbing and ray shooting in 3-dimensional space. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 177–186, 1990. [p-srs3d-90] *Cites:* a-dapal-89, a-rsoas-89, ak-frtrc-87, aw-alts-87, bdeg-vmpv-90, cegs-lscaa-89, c-narsc-87, cs-vppt-86, e-acg-87, egs-cmfal-88, emprww-sls-82, eos-calha-86, g-irt-89, gos-rsipl-89, hp-mag-52, hs-ndssg-86, jk-spals-88, m-ai-70, mo-al3sd-88, os-oshsr-89, s-chdch-86, sml-rtatp-88, s-agtd-34, s-pcg-88, ZZZ.

10723 M. Pellegrini and P. Shor. Finding stabbing lines in 3-dimensional space. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 24–31, 1991. [ps-fsl3d-91]

10724 M. Pellegrini and P. Shor. Finding stabbing lines in 3-space. *Discrete Comput. Geom.*, 8:191–208, 1992. [ps-fsl3s-92]

M. Pellegrini. See also [178, 216, 860, 6381].

S. Pemmaraju. See also [6747, 6748].

G. Peng. See also [12321].

10725 Q. S. Peng. An algorithm for finding intersection lines between two B-spline surfaces. *CAD*, 16(4), July 1984. [p-afilb-84]

P. Penna. See also [3610, 3611].

A. de Pennington. See also [809, 11519, 11520].

D. Penny. See also [5429].

D. E. Penny. See also [4797].

J. W. Penny. See also [4715].

10726 K. R. Penrose. Extremal motion of a moved line segment. In *Proc. of the Montana Acad. of Sciences*, pages 46–51, 1973. [p-emmls-73]

10727 R. Penrose. Pentaplexity. *Eureka*, 39, 1978. [p-p-78]

M. Penttonen. See also [4201, 4202].

10728 J. Peraire, K. Morgan, and J. Peiro. Unstructured finite element mesh generation and adaptive procedures for cfd. In *AGARD FDP: Specialists's Meeting*, May 1989. [pmp-ufemg-89]

J. Peraire. See also [2253].

A. Perakis. See also [10579, 10580].

R. Peralta. See also [536].

Stéphane Perennes. See also [5727].

10729 A. L. Peressini, F. E. Sullivan, and J. J. Uhl. *The Mathematics of Nonlinear Programming*. Undergraduate Texts in Mathematics. Springer-Verlag, 1988. [psu-mnp-88]

10730 M. Perles and S. Shelah. A closed $(n+1)$-convex set in R^2 is a union of n^6 convex sets. *Israel J. Math.*, 70:305–312, 1990. [ps-cncsr-90]

M. Perles. See also [10230].

M. A. Perles. See also [547].

M. Perrin. See also [10266].

10731 G. Perrot. ?? *J. Comp. Chem.*, 13(1):1–11, 1992. [p--92]

Ernest Perry. See also [1662].

P. Persiano. See also [1075].

10732 H. Persson. NC machining of arbitrarily shaped pockets. *Comput. Aided Design*, 10(3):169–174, May 1978. [p-nmasp-78] *Annote:* makes use of 'bisector' net.

10733 J. Pertin-Troccaz. Grasping: A state of the art. In O. Khatib, J. J. Craig, and T. Lozano-Perez, editors, *The Robotics Review*, volume 1, pages 71–98. MIT Press, 1989. [p-gsa-89]

R. Perucchio. See also [11644, 11646, 11647].

M. Peshkin. See also [13561].

10734 M. A. Peshkin and A. C. Sanderson. Planning robotic manipulation strategies for workpieces that slide. *Internat. J. Robot. Autom.*, 4(5):524–531, 1988. [ps-prmsw-88]

10735 M. A. Peshkin and A. C. Sanderson. Reachable grasps on a polygon: The convex rope algorithm. Technical Report CMU-RI-TR-85-6, Carnegie-Mellon Univ., Pittsburgh, PA, 1985. [ps-rgpcr-85]

10736 M. A. Peshkin and A. C. Sanderson. Reachable grasps on a polygon: The convex rope algorithm. *Internat. J. Robot. Autom.*, RA-2:53–58, 1986. [ps-rgpcr-86]

10737 M. A. Peshkin and A. C. Sanderson. The motion of a pushed sliding workpiece. *Internat. J. Robot. Res.*, 4(6):569–598, 1988. [ps-mpsw-88]

C. S. Peskin. See also [1074].

M. A. Peskin. See also [2461].

10738 C. Peterkin. Some results on Davenport–Schinzel sequences. In R. Thomas and H. Williams, editors, *Congressus Numer. IX: Proc. 3rd Manitoba Conf. on Numer. Math. and Computing*, pages 337–344, 1973. [p-srdss-73]

10739 J. Peters. Local smooth surface interpolation: A classification. Preprint, Univ. Wisconsin, ?? [p-lssic-]

Joseph G. Peters. See also [5221, 9361–9363].

10740 T. Peters, N. Stewart, P. Fussel, and D. Ferguson. Algorithmic tolerances and semantics in data exchange. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 403–405, 1997. [psff-atsde-97] *Cites:* ds-rnmgc-, hpy-rismp1-96, hpy-rismp2-96, -nwp-91, -sp-, ZZZ.

T. J. Peters. See also [674].

10741 D. P. Peterson. Boundary to constructive solid geometry mappings: a focus on 2-d issues. Report ??, CAD Tech. Div., Sandia National Lab., Albuquerque, NM, ?? [p-bcsgm-??]

10742 D. P. Peterson. Halfspace representation of extrusions, solids of revolution, and pyramids. Report SAND84-0572, Sandia National Lab., Albuquerque, NM, 1984. [p-hresr-84]

10743 John W. Peterson. Tessellation of NURB surfaces. In Paul Heckbert, editor, *Graphics Gems IV*, pages 286–320. Academic Press, Boston, MA, 1994. [p-tns-94] *Keywords:* surface subdivision, NURB, Bezier surface, B-spline surface, polygonization. *Annote:* Gives code for polygonizing a very general class of parametric surfaces: NURBs. Polygonization of parametric surfaces is useful both for rendering and for modeling. Contains C code.

M. Peterson. See also [5883].

C. Petersson. See also [5312].

J. Petersson. See also [5313–5315].

Ola Petersson. See also [669].

10744 S. Petitjean. A computational geometric approach to visual hulls. *Internat. J. Comput. Geom. Appl.*, 8:407–436, 1998. [p-cgavh-98]

10745 S. Petitjean and E. Boyer. Regular and non-regular point sets: Properties and reconstruction. *Comput. Geom. Theory Appl.*, 19:101–126, 2001. [pb-rnrps-01]

Sylvain Petitjean. See also [2368].

D. Petkovic. See also [2073, 5336].

R. Petreschi. See also [8924, 8925].

Octavia Petrovici. See also [10400].

10746 I. G. Petrovskiĭ and O. A. Oleĭnik. On the topology of real algebraic surfaces. *Isvestia Akad. Nauk SSSR. Ser. Mat.*, 13:389–402, 1949. In Russian. [po-tras-49]

C. Peuch. See also [4492].

10747 T. Peucker and N. Chrisman. Cartographic data structures. *Amer. Cartogr.*, 2:55–69, 1975. [pc-cds-75]

10748 T. K. Peucker, R. J. Fowler, J. J. Little, and D. M. Mark. The triangulated irregular network. In *Amer. Soc. Photogrammetry Proc. Digital Terrain Models Symposium*, pages 516–532, 1978. [pflm-tin-78]

T. K. Peucker. See also [4401, 8914].

10749 ARC/INFO: an example of contemporary geograhic information system. In D. J. Peuquet and D. F. Marble, editors, *Introductory Readings in Geographic Information Systems*, pages 90–99. Taylor & Francis, London, 1990. [pm-aiecg-90]

10750 D. J. Peuquet and D. F. Marble, editors. *Introductory Readings in Geographic Information Systems.* Taylor & Francis, London, 1990. [pm-irgis-90]

10751 Technical description of the DIME system. In D. J. Peuquet and D. F. Marble, editors, *Introductory Readings in Geographic Information Systems*, pages 100–111. Taylor & Francis, London, 1990. [pm-tdds-90]

F. C. Peyrin. See also [4623].

10752 J. L. Pfaltz. Convex clusters in a discrete m-dimensional space. *SIAM J. Comput.*, 12:734–750, 1983. [p-ccdmd-83]

10753 J. L. Pfaltz, W. J. Berman, and E. M. Cagley. Partial-match retrieval using indexed descriptor files. *Commun. ACM*, 23:522–528, 1980. [pbc-pmrui-80]

J. L. Pfaltz. See also [11393].

10754 U. Pferschy, R. Rudolf, and G. J. Woeginger. Some geometric clustering problems. *Nordic J. Comput.*, 1:246–263, 1994. [prw-sgcp-94]

10755 H. Pfister and A. E. Kaufman. Cube-4 – A scalable architecture for real-time volume rendering. In *IEEE Visualization '96 Proceedings*, pages 47–54, San Francisco, CA, October 1996. ACM/SIGGRAPH Press. [pk-c4sar-96]

10756 G. Ch. Pflug. Random planar shapes and their statistical recognition. *Ann. Math. Artif. Intell.*, 13:267–280, 1995. [p-rpsts-95] *Keywords:* matching, shape recognition, vision.

Q. T. Pham. See also [3922–3924].

10757 M. Pharr, C. Kolb, R. Gershbein, and P. Hanrahan. Rendering complex scenes with memory-coherent ray tracing. In *Proc. SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, pages 101–108. ACM SIGGRAPH, Addison-Wesley, 1997. [pkgh-rcsmc-97]

C. M. Philip. See also [13407].

G. M. Philip. See also [13408].

M. Philips. See also [648].

Phillips. See also [5356].

C. A. Phillips. See also [8686].

10758 C. G. Phillips. *Movements of the hand.* Liverpool University Press, 1985. [p-mh-85]

10759 J. Phillips. On approximate matching against sets of geometric models. Technical Report, RUTCOR, Ruters University, New Brunswick, New Jersey, July 1990. [p-amasg-90]

10760 M. B. Phillips and M. O. Garret. An algorithm for locating and displaying the intersection of two arbitary surfaces. *IEEE Comput. Graph. Appl.*, ??, 1984. [pg-aldit-84]

R. Phillips. See also [9011, 9012].

10761 S. D. Phillips, B. Borchardt, and G. Caskey. Measurement uncertainty considerations for coordinate measuring machines. Technical Report NISTIR 5170, Precision Engineering Division, National Institute of Standards and Technology, Gaithersburg, MD, April 1993. [pbc-muccm-93]

T. Phillips. See also [9318].

C. Piatko. See also [798, 5588, 7759, 9740].

C. D. Piatko. See also [772, 799, 800, 5589, 5590, 9909].

10762 B. Piazza, R. Ringeisen, and S. Stueckle. On Conway's reduction of the thrackle conjecture and some associated drawings. To appear, 1994. [prs-crtcs-94]

10763 B. Piazza, R. Ringeisen, and S. Stueckle. Properties of non-minimum crossings for some classes of graphs. In Y. Alavi, editor, *Graph Theory, Combinatorics and Applications*, volume 2. John Wiley & Sons, New York, NY, 1991. [prs-pnmcs-91]

B. Piazza. See also [11234].

10764 J. C. Picard and M. Queyranne. Selected applications of minimum cuts in a network. *INFOR- Canad. J. Oper. Res. Inform. Process.*, 20:394–422, 1982. [pq-samcn-82]

10765 J. C. Picard and H. Ratliff. A cut approach to the rectilinear distance facility location problem. *Oper. Res.*, ??:422–433, 1978. [pr-cardf-78]

10766 S. Piccard. Sur les ensembles de distances des ensembles de points d'un espace Euclidean. *Mem. Univ. Neuchatel*, 13, 1939. [p-sledd-39]

M. Picchiola. See also [8304].

R. A. Piccinini. See also [5620].

G. Piccioli. See also [10630].

10767 G. Pick. Geometrisches zur Zahlenlehre. *Naturwissenschaftliche Zeitschrift Lotus (Prag)*, ??:311–319, 1899. [p-gzz-99]

H. Pick. See also [12903].

10768 C. A. Pickover. Random number generators: Pretty good ones are easy to find. *Visual Comput.*, 11(7):369–377, 1995. [p-rngpg-95]

L. A. Piegl. See also [5128–5131].

C. Pienovi. See also [3837–3843, 5114, 5342].

10769 D. Pierre. *Optimization theory with applications*. Dover, New York, NY, 1986. [p-ota-86]

10770 A. Pietracaprina and F. P. Preparata. A practical constructive scheme for deterministic shared-memory access. In *Proc. 5th ACM Sympos. Parallel Algorithms Architect.*, pages 101–109, 1993. [pp-pcsds-93]

A. Pietracaprina. See also [1533, 6322, 9021].

E. Pietrosanti. See also [4144].

Morakot Pilouk. See also [4385].

F. G. Pin. See also [6042, 11166].

10771 P. Y. Pinter. Optimal routing in rectilinear channels. *VLSI Systems and computations*, ??:160–177, 1981. [p-orrc-81]

R. Pinter. See also [8865].

R. Y. Pinter. See also [943, 5774, 8687, 8866].

10772 Sylvain Pion. *De la géométrie algorithmique au calcul géométrique*. Thèse de doctorat en sciences, Université de Nice-Sophia Antipolis, France, 1999. TU-0619. [p-gacg-99] *URL:* http://www.inria.fr/rrrt/tu-0619.html. *Keywords:* doctoral thesis.

10773 Sylvain Pion. Interval arithmetic: An efficient implementation and an application to computational geometry. In *Workshop on Applications of Interval Analysis to systems and Control*, pages 99–110, 1999. [p-iaeia-99] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html.

Sylvain Pion. See also [2157, 2468, 2469, 2477, 2478, 2482, 4047, 6887].

B. R. Piper. See also [1435].

A. Piperno. See also [3608, 3609, 3611, 3612].

N. Pipinger. See also [11779].

N. Pippenger. See also [4200, 8115].

T. Pisanski. See also [2115, 5438].

10774 C. Pisupati and L. Wolff. A central axis algorithm for 3d bronchial tree structures. In *IEEE Internat. Sympos. Comput. Vision*, pages 259–264, 1995. [pw-caa3d-95]

10775 C. Pisupati and L. Wolff. Corresponding lung tree volumes. Technical Report 1996.03, Johns Hopkins University, March 1996. [pw-cltv-96]

10776 Chandrasekhar Pisupati, Lawrence Wolff, Wayne Mitzner, and Elias Zerhouni. Geometric tree matching with applications to 3d lung structures. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C19–C20, 1996. [pwmz-gtma3-96] *Cites:* gmo-pmagp-94, pw-caa3d-95, pw-cltv-96, w-igt-95, ZZZ.

S. Pisupati. See also [50].

R. G. Pitchen. See also [12092].

10777 L. Pitt and R. E. Reinke. Polynomial-time solvability of clustering and conceptual clustering problems: the agglomerative-hierarchical algorithm. Report R-87-1371, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1987. [pr-ptscc-87]

10778 N. L. K. Pitteway. Computer graphics research in an academic environment. In *Proc. Datafair '73 Conf.*, pages 471–478, 1973. [p-cgrae-73]

S. M. Pizer. See also [10010].

10779 D. A. Plaisted. Heuristic matching for graphs satisfying the triangle inequality. *J. Algorithms*, 5:163–179, 1984. [p-hmgst-84]

10780 D. A. Plaisted and J. Hong. A heuristic triangulation algorithm. *J. Algorithms*, 8:405–437, 1987. [ph-hta-87] *Abstract:* We propose a heuristic triangulation algorithm. The algorithm runs in polynomial time and produces a triangulation within a ratio of O(log n) to the cost of an optimal triangulation of a set of n points in the Euclidean plane.

D. A. Plaisted. See also [12652].

10781 H. Plantinga. An algorithm for finding the weakly visible faces from a polygon in 3-d. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 45–51, 1992. [p-afwvf-92] *Cites:* arb-tiriu-90, bdeg-vmpv-90, fdfh-cgpp-90, fst-mladi-92, kd-irssr-79, m-wcohs-87, m-eahsr-89, m-hsrrm-91, o-agta-87, pd-voag-90, pds-rthle-90, p-cvpew-92, ps-cgi-85, ss-oadwv-90, sss-cthsa-74, ZZZ.

10782 H. Plantinga. Conservative visibility preprocessing for efficient walkthroughs of 3D scenes. Technical Report 92-4, Dept. Comput. Sci., Univ. Pittsburgh, Pittsburgh, PA, 1992. [p-cvpew-92]

10783 H. Plantinga and C. R. Dyer. Visibility, occlusion, and the aspect graph. *Internat. J. Comput. Vision*, 5(2):137–160, 1990. [pd-voag-90]

10784 H. Plantinga, C. R. Dyer, and W. B. Seals. Real-time hidden-line elimination for a rotating polyhedral scene using the aspect representation. In *Proc. Graphics Interface '90*, pages 9–16, 1990. [pds-rthle-90]

W. H. Plantinga. See also [7618].

M. Plass. See also [6406].

P. Plassman. See also [1814].

Paul Plassmann. See also [1810, 1823, 5591].

10785 W. Platinga and C. Dyer. An algorithm for constructing the aspect graph. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 123–131, 1986. [pd-acag-86]

10786 C. Platt. Planar lattices and planar graphs. *J. Combin. Theory Ser. B*, 21:30–39, 1976. [p-plpg-76] *Keywords:* graph drawing.

10787 J. C. Platt and A. H. Barr. Constraint methods for flexible models. *Comput. Graph.*, 22(4):279–287, 1988. Proc. SIGGRAPH '88. [pb-cmfm-88]

10788 L. K. Platzman and J. J. Bartholdi, III. Spacefilling curves and the planar travelling salesman problem. *J. ACM*, 36(4):719–737, October 1989. [pb-scpts-89] *Keywords:* graph theory, optimization, traveling salesman tours, two-dimensional, L_2 metric, heuristics, fractal geometry, empirical analysis.

L. K. Platzman. See also [1459–1462, 1468].

C. G. Plaxton. See also [306, 2078, 3663, 3665].

10789 A. Plaza and G. F. Carey. About local refinement of tetrahedral grids based on bisection. In *Proc. 5th International Meshing Roundtable*, pages 123–136, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [pc-alrtg-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

10790 J. Plesnik. A heuristic for the p-center problem in graphs. *Discrete Appl. Math.*, 17:263–268, 1987. [p-hppg-87]

10791 J. Plesńik. The NP-completeness of the Hamiltonian cycle problem in planar digraphs with degree bound two. *Inform. Process. Lett.*, 8:199–201, 1979. [p-nchcp-79]

10792 S. A. Plotkin and É. Tardos. Improved dual network simplex. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 367–376, 1990. [pt-idns-90]

S. A. Plotkin. See also [6013, 10189, 10190].

M. D. Plummer. See also [8989].

10793 A. Pnueli, A. Lempel, and S. Even. Transitive orientation of graphs and identification of permutation graphs. *Cand. J. Math.*, 23:160–175, 1971. [ple-togip-71]

10794 P. V. Poblete. The analysis of a fringe heuristic for binary search trees. *J. Algorithms*, 6:336–350, 1985. [p-afhbs-85]

10795 M. Pocchiola. Graphics in Flatland revisited. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 85–96. Springer-Verlag, 1990. [p-gfr-90]

10796 Michel Pocchiola. Horizon trees versus pseudo-triangulations. In *Abstracts 13th European Workshop Comput. Geom.*, page 12. Universität Würzburg, 1997. [p-htvpt-97] *Cites:* agt-wat-94, eg-tsa-89, pv-tsvcpt-96, r-cve2d-97, ZZZ.

10797 M. Pocchiola. The visibility complex. In *Proc. 5th Franco-Japanese Days on Combinatorics and Optimization*, page ??, 1992. [p-vc-92]

10798 Michel Pocchiola. The visibility complex. In *Abstracts 8th European Workshop Comput. Geom.*, pages 67–68. Utrecht University, 1992. [p-vc-92c]

10799 M. Pocchiola and G. Vegter. Computing the visibility graph via pseudo-triangulations. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 248–257, 1995. [pv-cvgpt-95] *Keywords:* topological sweep, visibility complex. *Cites:* ce-oails-92, eg-tsa-89, gt-ltasc-85, gm-osacv-91, hmrt-sjslt-86, ow-nmcvg-88, pv-vc-93, s-ec-86, w-cvgnl-85, ZZZ.

10800 M. Pocchiola and G. Vegter. Minimal tangent visibility graphs. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 24–29, 1994. [pv-mtvg-94] *Cites:* aaghi-vdp-86, ch-mvg-91, eg-tsa-89, gm-osacv-91, gs-rwnpc-90, gh-cvgnl-85, lw-apcfp-79, o-cgc18-93, ow-nmcvg-88, pv-vc-93, pv-otvtc-94, pv-savgc-94, r-sppcp-86, r-tseas-88, sh-nmvg-93, sr-facsv-90, km-eaesp-88, se-tlbsv-87, w-cvgnl-85, ZZZ.

10801 M. Pocchiola and G. Vegter. Minimal tangent visibility graphs. *Comput. Geom. Theory Appl.*, 6:303–314, 1996. [pv-mtvg-96] *Keywords:* visibility graphs, triangulations. *Succeeds:* pv-mtvg-94.

10802 M. Pocchiola and G. Vegter. On polygonal covers. Technical Report 96-16, Labo. Inf. Ens, 45 rue d'Ulm 75230 Paris, France, July 1996. [pv-pc-96] *Keywords:* illumination, covering, separation. *Comments: Succeeds:* pv-ptta-96.

10803 M. Pocchiola and G. Vegter. On polygonal covers. In B. Chazelle, J. Goodman, and R. Pollack, editors, *Advances in Discrete and Computational Geometry*, volume 223 of *Contemporary Mathematics*, pages 257–268. AMS, Providence, 1999. [pv-pc-99]

10804 M. Pocchiola and G. Vegter. Order types and visibility types of configurations of disjoint convex plane sets (extended abstract). Technical Report 94-4, Labo. Inf. Ens, January 1994. [pv-otvtc-94] *Keywords:* arrangements, visibility complexes. *Comments:*

10805 Michel Pocchiola and Gert Vegter. Pseudo-triangulations: Theory and applications. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 291–300, 1996. [pv-ptta-96] *Cites:* pv-vc-96, pv-cvgpt-95, b-rsdoh-93, c-cgr-95, f-icd-77, ers-ccsno-90, blwsz-om-93, rz-rspu-95, pa-cg-95, gp-ms-83, bcm-anlcg-90.

10806 M. Pocchiola and G. Vegter. Sweep algorithm for visibility graphs of curved obstacles. Manuscript, ??, 1993. [pv-savgc-93] *Precedes:* pv-savgc-94.

10807 M. Pocchiola and G. Vegter. Sweep algorithms for visibility graphs of curved obstacles. Technical report, ??, Liens, 1994. in preparation. [pv-savgc-94]

10808 M. Pocchiola and G. Vegter. The visibility complex. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 328–337, 1993. [pv-vc-93] *Precedes:* pv-vc-96. *Cites:* cg-vippg-89, gm-osacv-91, hm-oacvp-91, p-gfr-90, v-vddsv-90, v-dmvg-91, w-cvgnl-85, ZZZ.

10809 M. Pocchiola and G. Vegter. The visibility complex. *Internat. J. Comput. Geom. Appl.*, 6(3):279–308, 1996. [pv-vc-96] *Keywords:* visibility graphs, visibility complexes, triangulations. *Succeeds:* pv-vc-93.

10810 M. Pocchiola and G. Vegter. Topologically sweeping visibility complexes via pseudo-triangulations. *Discrete Comput. Geom.*, 16:419–453, December 1996. [pv-tsvcpt-96] *Keywords:* topological sweep, visibility complex, visibility graph, triangulation, pseudo-triangulation. *Succeeds:* pv-cvgpt-95.

Michel Pocchiola. See also [691–693, 8305–8309, 8560].

10811 Michel Pochiola and Gert Vegter. The illumination problem of l. fejes tóth revisited. In *Abstracts 12th European Workshop Comput. Geom.*, pages 29–30. Universität Münster, 1996. [pv-iplft-96]

10812 A. N. Podkorytov. Summation of multiple Fourier series over polyhedra. *Mat., Mekh., Astronom.*, N 1:51–58, 1980. [p-smfsp-80]

10813 A. V. Pogorelov. *Extrinsic Geometry of Convex Surfaces*, volume 35 of *Translations of Mathematical Monographs*. American Mathematical Society, Providence, RI, 1973. [p-egcs-73]

10814 A. V. Pogorelov. *Lectures on the Foundations of Geometry*. Noordhoff, 1966. [p-lfg-66]

10815 A. V. Pogorelov. Quasi-geodesic lines on a convex surface. *Mat. Sb.*, 25(62):275–306, 1949. English transl., *Amer. Math. Soc. Transl.* 74, 1952. [p-qglcs-49]

10816 A. V. Pogorelov. *The Minkowski Multidimensional Problem*. Winston, New York, NY, 1978. [p-mmp-78]

V. G. Polimenis. See also [655].

10817 G. Politis and D. Herbison-Evans. A Benesh movement notation interpreter. Report ??, Dept. Comput. Sci., Univ. Sydney, Sydney, Australia, 1985. [ph-bmni-85]

10818 S. Poljak and J. Rohn. Radius of nonsingularity. *Mathematics of Systems, Signals and Control*, ??, 1992. To appear. [pr-rn-92]

A. Pollack. See also [6438].

10819 R. Pollack and M. F. Roy. On the number of cells defined by a set of polynomials. *C. R. Acad. Sci. Paris*, 316:573–577, 1993. [pr-ncdsp-93]

10820 R. Pollack and Micha Sharir. Computing the geodesic center of a simple polygon. Technical Report 231, Dept. of Computer Science, Courant Institute of Mathematical Sciences, 1986. [ps-cgcsp-86]

10821 R. Pollack, Micha Sharir, and Günter Rote. Computing of the geodesic center of a simple polygon. *Discrete Comput. Geom.*, 4:611–626, 1989. [psr-cgcsp-89] *Keywords:* polygons, simple, shortest paths.

10822 R. Pollack, M. Sharir, and S. Sifrony. Separating two simple polygons by a sequence of translations. Technical Report 215, Courant Inst. Math. Sci., New York Univ., New York, NY, 1986. [pss-stsps-86]

10823 R. Pollack, Micha Sharir, and S. Sifrony. Separating two simple polygons by a sequence of translations. *Discrete Comput. Geom.*, 3:123–136, 1988. [pss-stsps-88] *Keywords:* polygons, simple, Davenport-Schinzel sequences, motion planning, rays.

10824 R. Pollack and R. Wenger. Necessary and sufficient conditions for hyperplane transversals. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 152–155, 1989. [pw-nscht-89] *Precedes:* pw-nscht-90. *Cites:* dgk-htir-63, e-rt-79, gp-ms-83, gp-htthd-88, g-ts-55, hdk-cgp-64, h-uegt-57, hk-crp-71, h-umkkm-23, k-tsct-80, k-ta-03, m-eat-84, s-tsppe-40, w-ghtti-90, ZZZ.

10825 R. Pollack and R. Wenger. Necessary and sufficient conditions for hyperplane transversals. *Combinatorica*, 10:307–311, 1990. [pw-nscht-90] *Succeeds:* pw-nscht-89.

R. Pollack. See also [141–143, 850, 851, 1495–1499, 2717, 2718, 2971–2973, 4693, 4694, 4697, 4698, 5524, 5525, 6104–6132, 6304, 8705, 8706, 10527, 10528, 12074].

H. O. Pollak. See also [5954, 7577].

S. M. Pollock. See also [13381].

S. E. Poltrock. See also [5110].

10826 G. Polya. Kombinatorische Anzahlbestimmungen für Gruppen, Graphen und chemische Verbindungen. *Acta Math.*, 68:145–254, 1937. [p-kafgg-37]

G. Pólya. See also [6679, 6680].

10827 G. H. Polychronopoulos. *Stochastic and dynamic shortest distance problems*. Ph.D. thesis, Operations Research Center, Massachusetts Inst. Tech., Cambridge, MA, 1992. Report 199. [p-sdsdp-92] *Keywords:* weighted regions, dynamic shortest paths.

Y. Pomeau. See also [1756].

10828 Madhav K. Ponamgi, Ming C. Lin, and Dinesh Manocha. Incremental collision detection for polygonal models. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages V7–V8, 1995. [plm-icdpm-95] *Keywords:* video review. *Cites:* cd-icott-87, c-oaitd-89, clmp-ecdie-94, clmp-iciec-95, pml-iacdb-95, lc-eaidc-91, mp-fitcp-78, ZZZ.

10829 M. K. Ponamgi, D. Manocha, and M. C. Lin. Incremental algorithms for collision detection between general solid models. Technical Report TR94-061, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, 1994. [pml-iacdb-94] *Precedes:* pml-iacdb-95.

10830 M. K. Ponamgi, D. Manocha, and M. C. Lin. Incremental algorithms for collision detection between general solid models. In *Proc. ACM Siggraph Sympos. Solid Modeling*, pages 293–304, 1995. [pml-iacdb-95] *Succeeds:* pml-iacdb-94.

M. K. Ponamgi. See also [3415–3417].

10831 J. Ponce. *Representation et manipulation d'objets tridimensionnels*. PhD thesis, Universite d'Orsay, Orsay, France, 1983. These de troisueme cycle. [p-remdt-83] *Keywords:* doctoral thesis.

10832 Jean Ponce and Bernard Faverjon. On computing three-finger force-closure grasps of polygonal objects. *IEEE Trans. Robot. Autom.*, 11(6), 1995. [pf-ctffc-95]

10833 Jean Ponce, Steve Sullivan, Attawith Sudsang, Jean-Daniel Boissonnat, and Jean-Pierre Merlet. On computing four-finger equilibrium and force-closure grasps of polyhedral objects. *Internat. J. Robot. Res.*, ??, 1996. [pssbm-cffef-96]

J. Ponce. See also [5151].

10834 C. Ponder. A search approach to general stabbing problems. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 195–202, 1991. [p-sagsp-91] *Cites:* ad-ahdsp-87, cgppsw-ccht-90, dgk-htir-63, e-ftssg-85, gl-mc-83, jk-spals-88, mkb-ma-79, pr-rn-92, pw-nscht-89, p-allpm-90, p-pcaam, r-lie-89, ZZZ.

10835 C. Ponder. An analytical look at linear performance models. Technical Report UCRL-JC-106105, Lawrence Livermore National Laboratory, September 1990. [p-allpm-90]

10836 C. Ponder. Principle component analysis under alternative error-metrics. in preparation. [p-pcaam]

F. Pont. See also [10938].

10837 Serge Pontier, Behzad Shariat, and Denis Vandorpe. Shape reconstruction using skeleton–based implicit surface. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 205–210, 1997. [psv-srusb-97]

10838 L. S. Pontryagin, V. G. Boltyanskii, R. V. Gamkrelidze, and E. F. Mishchenko. *The mathematical theory of optimal processes*. Interscience Publishers, 1962. [pbgm-mtop-62]

G. Poole. See also [10191].

10839 C. Poon, B. Zhu, and F. Chin. A polynomial time solution for labeling a rectilinear map. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 451–453, 1997. [pzc-ptslr-97] *Precedes:* pzc-ptslr-98. *Cites:* bc-ap1sq-94, cms-aclp-93, df-rbsdm-92, dmmmz-mlig-97, eis-ctmfp-76, fw-ppalm-91, i-pnm-75, j-cnpp-89, kr-pcr-92, ps-cgi-85, w-amlon-94, ww-mlhpg-95, y-laml-72, ZZZ.

10840 Chung Keung Poon, Binhai Zhu, and Francis Chin. A polynomial time solution for labeling a rectilinear map. *Inform. Process. Lett.*, 65(4):201–207. [pzc-ptslr-98] *Succeeds:* pzc-ptslr-97.

C. K. Poon. See also [13895].

10841 Sheung-Hung Poon, Chan-Su Shin, Tycho Strijk, and Alexander Wolff. Labeling points with weights. In *Abstracts 17th European Workshop Comput. Geom.*, pages 97–100. Freie Universität Berlin, 2001. [pssw-lpw-01]

10842 Jovan Popović and Hugues Hoppe. Progressive simplicial complexes. In *Proc. SIGGRAPH '97*, Computer Graphics Proceedings, Annual Conference Series, pages 217 – 224. ACM SIGGRAPH, ACM Press, 1997. [ph-psc-97]

10843 M. Popovic et al. Several approaches to implement the merging step of the split and merge region segmentation. In F. H. Post and W. Barth, editors, *Proc. Eurographics '91*, pages 399–412, Vienna, Austria, September 1991. Elsevier Science. [po-saims-91]

10844 R. J. Popplestone. Specifying manipulation in terms of spatial relationships. Research Report 117, Dept. Artif. Intell., Univ. Edinburgh, Edinburgh, Scotland, 1979. [p-smtsr-79]

L. J. Porcello. See also [3657].

T. Porter. See also [3518].

Jose Ramon Portillo. See also [5802].

10845 Mary-Anne K. Posenau. Approaches to high aspect ratio triangulations. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 30–35, 1993. [p-ahart-93] *Cites:* pm-dtcfd-92, b-nacvh-91, lp-gtdug-88, pmp-ufemg-89, m-amgvf-90, cd-vdbcd-85, e-acg-87, ZZZ.

10846 M.-A. K. Posenau and D. M. Mount. Delaunay triangulations and computational fluid dynamics meshes. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 316–321, 1992. [pm-dtcfd-92] *Cites:* bgr-ntp-88, b-amgct-89, ps-cgi-85, rs-metep-90, beg-pgmg-90, ahet-nggcf-91, twm-ngg-85, w-ngg-90, c-cdt-89, c-gqtm-89, b-nacvh-91, m-amgvf-90, w-msuma-90, ZZZ.

10847 M. J. Post. A minimum spanning ellipse algorithm. In *Proc. 22nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 115–122, 1981. [p-msea-81]

10848 M. J. Post. Computing minimum spanning ellipses. Technical Report CS-82-16, Dept. Comput. Sci., Brown Univ., Providence, RI, 1982. [p-cmse-82]

10849 M. J. Post. Minimum spanning ellipsoids. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 108–116, 1984. [p-mse-84] *Annote:* $O(n^2)$ time.

10850 M. M. Postinov. *Lectures in Algebraic Topology*. Nauka, Moscow, 1983. [p-lat-83]

10851 M. Potemesil. Generating octree models of 3D objects from their silhouettes in a sequence of images. *Comput. Vision Graph. Image Process.*, 40:1–29, 1987. [p-gom3o-87]

10852 M. Potmesil and H. Freeman. Implementation of two hidden-line algorithms. *Computers and Graphics*, 5:31–40, 1980. [pf-ithla-80]

A. Potthoff. See also [7490].

H. Pottmann. See also [10291].

Igor Pouchkarev. See also [7206].

R. S. Poulsen. See also [13031, 13037].

J. Poulton. See also [5637].

10853 M. B. Pour-El and J. I. Richards. *Computability in Analysis and Physics*. Springer-Verlag, Berlin, Heidelberg, 1988. [pr-cap-88]

10854 P. L. Powar. Minimal roughness property of the Delaunay triangulation: a shorter approach. *Comput. Aided Geom. Design*, 9:491–494, 1992. [p-mrpdt-92]

10855 M. J. D. Powell and M. A. Sabin. Piecewise quadratic approximations on triangles. *ACM Trans. Math. Softw.*, 3:316–325, 1977. [ps-pqat-77]

D. L. Powers. See also [3586].

S. Powers. See also [9086].

10856 N. Prabhu. Hamiltonian simple polytopes. Technical Report 90-17, DIMACS, Rutgers Univ., 1990. [p-hsp-90]

N. Prabhu. See also [8448, 9860].

10857 P. V. Prakash. *Surface-to-Surface Intersections for Geometric Modeling*. Ph.D. thesis, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1988. [p-ssigm-88] *Keywords:* doctoral thesis.

P. V. Prakash. See also [8356, 10668, 10670–10673].

10858 D. Chithra Prasad, Sudebkumar P. Pal, and Tamal K. Dey. Visibility with multiple diffuse reflections. *Comput. Geom. Theory Appl.*, 10:187–196, 1998. [ppd-vmdr-98]

D. C. Prasad. See also [835–838, 2045, 4108].

V. C. Prasad. See also [11672].

V. K. Prasanna Kumar. See also [521, 522].

10859 V. K. Prasanna and C. S. Raghavendra. Array processor with multiple broadcasting. *Journal of Parallel and Distributed Processing*, 4:173–190, 1987. [pr-apmb-87]

10860 V. K. Prasanna and A. S. Rao. Parallel orientation of polygonal parts. In *Proc. Internat. Conf. Parallel Process.*, 1992. [pr-popp-92]

10861 J. P. Pratt and V. P. Heuring. Designing digital optical computing systems: power and and crosstalk. *Appl. Optics*, 31(23):4657–4661, 1992. [ph-ddocs-92]

M. J. Pratt. See also [5152].

10862 V. Pratt. Direct least squares fitting of algebraic surfaces. In *Proc. Siggraph '87*, 1987. [p-dlsfas-87]

10863 V. Pratt. Techniques for conic splines. *Comput. Graph.*, 19(3):151–159, 1985. Proc. SIGGRAPH '85. [p-tcs-85]

V. Pratt. See also [2105].

10864 B. T. Preas and M. J. Lorenzetti. *Physical design automation of VLSI systems*. Benjamin Cummings, Menlo Park, CA, 1988. [pl-pdavs-88]

10865 Waldemar Preilowski. Parallel triangulation of nonconvex polytopes. In *Proc. 18th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, page ??, 1992. [p-ptnp-92]

10866 W. Preilowski. Parallel triangulation of nonconvex polytopes. In *Abstracts 8th European Workshop Comput. Geom.*, pages 97–99. Utrecht University, 1992. [p-ptnp-92c]

10867 Waldemar Preilowski. The pathtree: a suitable datastructure for parallel rayshooting. In *Abstracts 9th European Workshop Comput. Geom.*, pages 14–16. FernUniversität Hagen, 1993. [p-psdpr-93]

10868 W. Preilowski and W. Mumbeck. A time-optimal algorithm for the computing of Voronoi diagrams. In *Graph-Theoretic Concepts in Computer Science. Proceedings.*, pages 424–433, 1989. [pm-toacv-89]

10869 W. Preilowsky, E. Dahlhaus, and G. Wechsung. New parallel algorithms for convex hull and triangulation in 3-dimensional space. In *Proc. 17th Internat. Sympos. Math. Found. Comput. Sci.*, volume 629 of *Lecture Notes Comput. Sci.*, pages 442–450. Springer-Verlag, 1992. [pdw-npach-92]

B. Preis. See also [8390].

10870 F. P. Preparata. A new approach to planar point location. *SIAM J. Comput.*, 10(3):473–482, 1981. [p-nappl-81]

10871 F. P. Preparata. A note on locating a set of points in a planar subdivision. *SIAM J. Comput.*, 8:542–545, 1979. [p-nlspp-79]

10872 F. P. Preparata. An optimal real-time algorithm for planar convex hulls. *Commun. ACM*, 22:402–405, 1979. [p-ortap-79]

10873 Franco P. Preparata, editor. *Computational Geometry*, volume 1 of *Adv. Comput. Res.* JAI Press, Greenwich, Conn., 1983. [p-cg-83] *Annote:* Contains the following items: c-pcp-83, eow-gfcs-83, gy-tsr-83, d-gatcl-83, l-mcprg-83, be-ewcst-83, bow-cmhds-83, ab-acddv-83, ddg-fsp-83, s-ghsgc-83, g-dpcp-83, mz-pmhfa-83.

10874 F. P. Preparata. Minimum spanning circle. Technical report, Univ. Illinois, Urbana, IL, 1977. in 'Steps into Computational Geometry'. [p-msc-77]

10875 F. P. Preparata. Optimal three-dimensional VLSI layouts. *Math. Syst. Theory*, 16:1–8, 1983. [p-otdvl-83]

10876 Franco P. Preparata, editor. *Parallel and Distributed Computing*, volume 4 of *Adv. Comput. Res.* JAI Press, Greenwich, Conn., 1987. [p-pdc-87]

10877 F. P. Preparata. Planar point location revisited. *Internat. J. Found. Comput. Sci.*, 1(1):71–86, 1990. [p-pplr-90]

10878 F. P. Preparata. Robustness in geometric algorithms. In *Proc. 1st ACM Workshop on Appl. Comput. Geom.*, pages 29–30, May 1996. [p-rga-96]

10879 F. P. Preparata. Steps into computational geometry. Report R-760, Coordinated Sci. Lab., Univ. Illinois, Urbana, IL, 1977. [p-scg-77]

10880 F. P. Preparata. Steps into computational geometry: Notebook II. Report R-792, Coordinated Sci. Lab., Univ. Illinois, Urbana, IL, 1977. [p-scgn2-77]

10881 F. P. Preparata. The medial axis of a simple polygon. In *Proc. 6th Internat. Sympos. Math. Found. Comput. Sci.*, volume 53 of *Lecture Notes Comput. Sci.*, pages 443–450. Springer-Verlag, 1977. [p-masp-77]

10882 Franco P. Preparata, editor. *VLSI Theory*, volume 2 of *Adv. Comput. Res.* JAI Press, Greenwich, Conn., 1984. [p-vt-84]

10883 F. P. Preparata and S. J. Hong. Convex hulls of finite sets of points in two and three dimensions. *Commun. ACM*, 20:87–93, 1977. [ph-chfsp-77] *Keywords:* divide-and-conquer, worst-case analysis. *Annote:* Claims $O(n \log n)$ time, but actually takes $O(n^2)$ time in special cases [d-iafch-90].

10884 F. P. Preparata and W. Lipski, Jr. Optimal three-layer channel routing. *IEEE Trans. Comput.*, C-33:427–437, 1984. [pl-otlcr-84] *Succeeds:* pl-tlae-82.

10885 F. P. Preparata and W. Lipski, Jr. Three layers are enough. In *Proc. 23rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 350–357, 1982. [pl-tlae-82] *Precedes:* pl-otlcr-84.

10886 F. P. Preparata and D. E. Muller. Finding the intersection of n half-spaces in time $O(n \log n)$. *Theoret. Comput. Sci.*, 8:45–55, 1979. [pm-finhs-79]

10887 F. P. Preparata and M. I. Shamos. *Computational Geometry: An Introduction*. Springer-Verlag, New York, NY, 1985. [ps-cgi-85] *Comments:* corrected and expanded second printing, 1988. *Precedes:* ps-cgi-90.

10888 F. P. Preparata and M. I. Shamos. *Computational Geometry: An Introduction*. Springer-Verlag, 3rd edition, October 1990. [ps-cgi-90] *ISBN:* 3-540-96131-3. *Succeeds:* ps-cgi-85.

10889 F. P. Preparata and K. J. Supowit. Testing a simple polygon for monotonicity. *Inform. Process. Lett.*, 12(4):161–164, 1981. [ps-tspm-81] *Keywords:* polygons, design of algorithms.

10890 F. P. Preparata and R. Tamassia. A fully dynamic planar point location technique. Report UILU-ENG-87-2266, Coordinated Sci. Lab., Univ. Illinois, Urbana, IL, 1987. [pt-fdppl-87] *Keywords:* point location, data structuring, on-line. *Precedes:* pt-dpplo-89.

10891 F. P. Preparata and R. Tamassia. Dynamic planar point location with optimal query time. In *Proc. 6th Sympos. Theoret. Aspects Comput. Sci.*, volume 349 of *Lecture Notes Comput. Sci.*, pages 84–95. Springer-Verlag, 1989. [pt-dpplo-89] *Keywords:* subdivisions, point location, on-line, two-dimensional. *Succeeds:* pt-fdppl-87. *Precedes:* pt-dpplo-90.

10892 F. P. Preparata and R. Tamassia. Dynamic planar point location with optimal query time. *Theoret. Comput. Sci.*, 74:95–114, 1990. [pt-dpplo-90] *Succeeds:* pt-dpplo-89.

10893 F. P. Preparata and R. Tamassia. Efficient point location in a convex spatial cell-complex. *SIAM J. Comput.*, 21:267–280, 1992. [pt-eplcs-92] *Succeeds:* pt-espl-89.

10894 F. P. Preparata and R. Tamassia. Efficient spatial point location. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 3–11. Springer-Verlag, 1989. [pt-espl-89] *Precedes:* pt-eplcs-92.

10895 F. P. Preparata and R. Tamassia. Fully dynamic point location in a monotone subdivision. *SIAM J. Comput.*, 18(4):811–830, 1989. [pt-fdplm-89]

10896 F. P. Preparata and R. Tamassia. Fully dynamic techniques for point location and transitive closure in planar structures. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 558–567, 1988. [pt-fdtpl-88] *Comments:* In two journal papers: [12748], [10895].

10897 F. P. Preparata and J. S. Vitter. A simplified technique for hidden-line elimination in terrains. In *Proc. 9th Sympos. Theoret. Aspects Comput. Sci.*, volume 577 of *Lecture Notes Comput. Sci.*, pages 135–146. Springer-Verlag, 1992. [pv-sthle-92] *Precedes:* pv-sthle-93.

10898 F. P. Preparata and J. S. Vitter. A simplified technique for hidden-line elimination in terrains. *Internat. J. Comput. Geom. Appl.*, 3:167–181, 1993. [pv-sthle-93] *Succeeds:* pv-sthle-92.

10899 F. P. Preparata, J. S. Vitter, and M. Yvinec. Computation of the axial view of a set of isothetic parallelepipeds. Report LIENS-88-1, Lab. d'Informatique, Dept. Math. d'Informatique, Ecole Normale Supérieure, Paris, France, 1988. [pvy-cavsi-88] *Precedes:* pvy-cavsi-90.

10900 F. P. Preparata, J. S. Vitter, and M. Yvinec. Computation of the axial view of a set of isothetic parallelepipeds. *ACM Trans. Graph.*, 9:278–300, 1990. [pvy-cavsi-90] *Succeeds:* pvy-cavsi-88.

10901 F. P. Preparata, J. S. Vitter, and M. Yvinec. Output-sensitive generation of the perspective view of isothetic parallelepipeds. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 71–84. Springer-Verlag, 1990. [pvy-osgpv-90]

10902 F. P. Preparata, J. S. Vitter, and M. Yvinec. Output-sensitive generation of the perspective view of isothetic parallelepipeds. *Algorithmica*, 8:257–283, 1992. [pvy-osgpv-92] *Keywords:* geometric probing, polyhedral scenes.

F. P. Preparata. See also [175, 477–480, 623, 624, 1185–1187, 1639, 1640, 2021–2024, 2178–2180, 2185, 2186, 2213, 2214, 2939, 2940, 3016, 3017, 3178, 3179, 4036, 4037, 4048–4052, 4725, 4743–4745, 5772, 7476, 7481, 7482, 7578, 7716, 8414, 8617–8624, 8877–8879, 8891–8893, 9475, 9476, 9928, 10144, 10770, 12742, 12745, 12747, 12748].

10903 W. Press, S. Teukolsky, W. Vetterling, and B. Flannery. *Numerical Recipes in C.* Cambridge University Press, 1st edition, 1988. [ptvf-nrc-88] *Succeeds:* pftv-nr-86.

10904 W. H. Press, B. P. Flannery, S. A. Teukolsky, and W. T. Vetterling. *Numerical Recipes*. Cambridge University Press, 1986. [pftv-nr-86] *Precedes:* ptvf-nrc-88.

10905 William H. Press, Brian P. Flannery, Saul A. Teukolsky, and William T. Vetterling. *Numerical Recipes in C.* Cambridge University Press, Cambridge, England, 2nd edition, 1993. [pftv-nrc-93]

10906 K. Preston and L. Uhr. *Multicomputers and Image Processing Algorithms*. Academic Press, 1982. [pu-mipa-82]

J. M. S. Prewitt. See also [11000].

E. P. Preyss. See also [7983].

10907 W. I. Pribble. Molds for reaction injection, structural foam and expandable styrene molding. In J. H. DuBois and W. I. Pribble, editors, *Plastics mold engineering handbook*. Van Nostrand Reinhold Company Inc., New York, NY, 1987. [p-mrisf-87]

10908 K. H. Pribram. *Languages of the brain*. Prentice-Hall inc., Englewood cliffs, New Jersey, 1971. [p-lb-71]

H. I. Price. See also [1516].

10909 Mark Price, Clive Stops, and Geoffrey Butlin. A medial object toolkit for meshing and other applications. In *Proc. 4th International Meshing Roundtable*, pages 219–230, Albuquerque, NM, 1995. Sandia National Laboratories. [psb-motmo-95]

M. A. Price. See also [7601].

10910 D. Priest. Algorithms for arbitrary precision floating point arithmetic. In *Proc. 10th Symp. on coputer arithmetic*, pages 132–143, 1991. [p-aapfp-91]

10911 D. Priest. *On properties of floating point arithmetics: numerical stability and the cost of accurate computations*. Ph.D. thesis, Dept. of mathematics, Univ. of California at Berkeley, 1992. [p-pfpan-92] *Keywords:* doctoral thesis.

10912 D. Prill. On approximations and incidence in cylindrical algebraic decompositions. *SIAM J. Comput.*, 15:972–993, 1986. [p-aicad-86]

10913 R. C. Prim. Shortest connection networks and some generalizations. *Bell Syst. Tech. J.*, 36:1389–1401, 1957. [p-scnsg-57]

J. F. Prins. See also [6912].

F. B. Prinz. See also [10978, 13376].

Cecilia M. Procopiuc. See also [217, 218].

Octavian Procopiuc. See also [748].

A. Prodon. See also [8803].

L. G. Proll. See also [4563].

H. J. Prömel. See also [8274].

A. Proskurowski. See also [811, 813].

Zenon Protopapa. See also [8267].

10914 L. B. Protsko, P. G. Sorenson, J. P. Tremblay, and D. A. Schaefer. Towards the automatic generation of software diagrams. *IEEE Trans. Softw. Eng.*, SE-17(1):10–21, 1991. [psts-tagsd-91] *Keywords:* graph drawing.

10915 J. S. Provan. Convexity and the Steiner tree problem. *Networks*, 18:57–72, 1988. [p-cstp-88]

10916 J. S. Provan. Two new criteria for finding Steiner hulls in Steiner tree problems. *Algorithmica*, 7:289–302, 1992. [p-tncfs-92]

Kirk Pruhs. See also [1219, 7691–7694].

10917 P. Prusinkiewicz. Space complexity of the contour problem for a set of iso-rectangles. Manuscript, Dept. Comput. Sci., Univ. Regina, Regina, SK, December 1984. [p-sccps-84] *Keywords:* isothetic rectangles, construction, plane-sweep, segment trees, worst-case analysis, output-sensitive. *Annote:* $O(n \log n + k)$ time, $O(n)$ space.

10918 P. Prusinkiewicz and V. V. Raghavan. A simple space-optimal contour algorithm for a set of iso-rectangles. Report CS-83-03, Dept. Comput. Sci., Univ. Regina, Regina, SK, 1983. [pr-ssoca-83] *Keywords:* isothetic rectangles, construction, plane-sweep, linked lists, worst-case analysis. *Annote:* $O(n^2)$ time, $O(n)$ space.

P. Prusinkiewicz. See also [13339].

T. Przytycka. See also [69, 8495].

G. Pucci. See also [6322, 9021].

10919 C. Puech and H. Yahia. Analysis of a neighbour finding algorithm in quadtrees. Report ??, Lab. Recherche Inform., Univ. Paris Sud, Orsay, France, 1984. [py-anfaq-84]

10920 C. Puech and H. Yahia. Quadtrees, octrees, hyperoctrees: a unified analytical approach to tree data structures used in graphics, geometric modeling and image processing. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 272–280, 1985. [py-qohua-85] *Cites:* achllstu-mairp-81, an-bp-72, beh-gms-79, b-gmcv-74, b-ame-74, dt-dtoeo-81, drs-rrbcq-80, e-rsp-70, fp-ochr3-84, f-addmd-79, fs-ppmta-83, ftyk-oasm-83, ftyk-eotds-83, g-ewrq-82, gd-tdsgi-81, h-ecdsg-78, hs-oiuqt-79, i-lgto-81, j-cmtdo-79, jt-otur3-82, kd-epurd-76, m-oe-80, m-gmuqe-82, mm-anrt-78, p-remdt-83, py-anfaq-84, rr-rtdo-78, r-rrstm-80, rv-smcsr-83, s-rrqba-80, s-dtdqt-80, s-rrqbc-80, s-cpirq-81, s-ccluq-81, s-acrq-81, s-nftir-82, s-qmat-83, s-qrhds-84, sw-ebq-84, s-rtddi-81, s-lfdle-81, ykf-ordsa-84, yk-lsdso-83, ys-hdsmd-83, ZZZ.

C. Puech. See also [2763, 2764, 4493–4500, 5318, 5763, 9248, 11282, 12204, 12205].

J. Puerto. See also [10127, 10128, 11320].

10921 W. Pugh. Skip list cookbook. Technical Report CS-TR-2286, Dept. Comput. Sci., Univ. Maryland, College Park, MD, July 1989. [p-slc-89]

10922 W. Pugh. Skip lists: a probabilistic alternative to balanced trees. *Commun. ACM*, 33(6):668–676, 1990. [p-slpab-90] *Keywords:* data structuring, randomized algorithms.

A. K. Pujari. See also [8533, 12030].

10923 D. Pullar. Comparative study of algorithms for reporting geometrical intersections. In *Proc. 4th Internat. Sympos. Spatial Data Handling*, pages 66–76, 1990. [p-csarg-90]

W. Pulleyblank. See also [1321, 7644, 7645].

10924 W. R. Pulleyblank. Polyhedral combinatorics. In G. L. Nemhauser, A. H. G. Rinnooy Kan, and M. J. Todd, editors, *Optimization*, volume 1 of *Handbooks in Operations Research and Management Science*, pages 371–446. North-Holland, 1989. [p-pc-89]

W. R. Pulleyblank. See also [541, 542, 5190].

10925 E. Puppo. Variable resolution terrain surfaces. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 202–210, 1996. [p-vrts-96]

E. Puppo. See also [2548, 3313, 3845, 3846, 3851–3855, 5343, 5344, 12863, 12868].

10926 Helen Purchase. Which aesthetic has the greatest effect on human understanding? In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 248–261. Springer-Verlag, 1997. [p-wageh-97] *Keywords:* graph drawing.

10927 Helen C. Purchase. Effective information visualisation: A study of graph drawing aesthetics and algorithms. *Interact. Comput.*, 13(2):147–162, 2000. [p-eivsg-00] *Succeeds:* p-wageh-97.

10928 Helen C. Purchase. Performance of layout algorithms: Comprehension, not computation. *J. Visual Lang. Comput.*, 9(6):647–657, 1998. [p-placc-98]

10929 H. C. Purchase, R. F. Cohen, and M. James. Validating graph drawing aesthetics. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 435–446. Springer-Verlag, 1996. [pcj-vgda-96] *Keywords:* graph drawing, aesthetics, human-computer interaction.

10930 H. C. Purchase, R. F. Cohen, and M. I. James. An experimental study of the basis for graph drawing algorithms. *ACM J. Experim. Algorithmics*, 2(4), 1997. [pcj-esbgd-97] *URL:* http://www.jea.acm.org/1997/PurchaseDrawing/. *Succeeds:* pcj-vgda-96.

H. C. Purchase. See also [1925].

10931 G. Purdy. Repeated angles in E_4. *Discrete Comput. Geom.*, 3:73–75, 1988. [p-rae-88]

G. Purdy. See also [4998].

10932 G. B. Purdy. The minimum number of empty triangles. *AMS Abstracts*, 3:318, 1982. [p-mnet-82]

G. B. Purdy. See also [2624].

L. Pyber. See also [4993].

10933 K. Qiu, S. G. Akl, and H. Meijer. The star and pancake interconnection networks: Properties and algorithms. Technical Report 91-297, Dept. Computing and Information Sci, Queen's University, Canada, March 1991. [qam-spinp-91]

10934 K. Qiu, H. Meijer, and S. Akl. Decomposing a star graph into disjoint cycles. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 70–73, 1990. [qma-dsgdc-90] *Cites:* ak-gtmsi-86, ahk-sgaan-87, ak-ftsg-87, a-dapa-89, qma-dsgdc-90t, ZZZ.

10935 K. Qiu, H. Meijer, and S. G. Akl. Decomposing a star graph into disjoint cycles. Technical Report 90-278, Dept. Comput. Inform. Sci., Queen's Univ., Kingston, Canada, May 1990. [qma-dsgdc-90t]

10936 K. Qiu, H. Meijer, and S. G. Akl. Parallel routing and sorting on the pancake network. Proc. International Conf. on Computing and Information, Ottawa, to appear-91, May 1991. [qma-prspn-91]

K. Qiu. See also [430].

10937 E. Quak and L. Schumaker. Cubic spline fitting using data dependent triangulations. *Comput. Aided Geom. Design*, 7:293–302, 1990. [qs-csfdd-90]

10938 F. K. H. Quek, R. F. Franklin, and F. Pont. A decision system for autonomous robot navigation over rough terrain. In *Proc. SPIE Applications of Artificial Intelligence*, volume ??, page ??, 1985. [qfp-dsarn-85]

M. Queyranne. See also [10764].

K. Qui. See also [431, 432].

K. M. Quinlan. See also [13693, 13694].

J. Quinn. See also [4429].

10939 M. J. Quinn. Analysis and benchmarking of two parallel sorting algorithms: hyperquicksort and quickmerge. *BIT*, 29(2):239–250, 1989. [q-abtps-89]

A. Quintero. See also [1201].

Y. Rabani. See also [2277, 2278, 7816, 8427].

10940 Rich Rabbitz. Fast collision detection of moving convex polyhedra. In Paul Heckbert, editor, *Graphics Gems IV*, pages 83–109. Academic Press, Boston, MA, 1994. [r-fcdmc-94] *Keywords:* animation, collision detection, computational geometry, polyhedron. *Annote:* A turn-key piece of software that solves a difficult but basic problem in physically based animation and interactive modeling. Contains C code.

10941 M. O. Rabin. Probabilistic algorithms. In J. F. Traub, editor, *Algorithms and Complexity: New Directions and Recent Results*, pages 21–39. Academic Press, New York, NY, 1976. [r-pa-76]

10942 M. O. Rabin. Probabilistic algorithms in finite fields. *SIAM J. Comput.*, 9(2):273–280, 1980. [r-paff-80]

10943 M. O. Rabin. Proving simultaneous positivity of linear forms. *J. Comput. Syst. Sci.*, 6:639–650, 1972. [r-psplf-72]

M. O. Rabin. See also [1077].

P. Rabinivitz. See also [3821].

A. Rabinovitch. See also [179].

C. Rackoff. See also [474].

10944 G. Radack and N. Badler. A new boundary encoding with applications to jigsaw puzzles. Manuscript, Dept. Comput. Inform. Sci., Univ. Pennsylvania, Philadelphia, PA, ?? [rb-nbeaj-??]

10945 H. Rademacher. *Lectures on Elementary Number Theory*. Blaisdell, New York, NY, 1964. [r-lent-64]

10946 H. Rademacher and O. Toeplitz. *The Enjoyment of Mathematics*. Princeton University Press, Princeton, NJ, 1957. [rt-em-57]

10947 H. Rademacher and O. Toeplitz. The spanning circle of a finite set of points. In *The Enjoyment of Mathematics*, chapter 16. Princeton University Press, 1957. [rt-scfsp-57]

H. Rademacher. See also [12499].

V. Radhakrishnan. See also [7211, 9188].

10948 J. D. Radke. On the shape of a set of points. In G. T. Toussaint, editor, *Computational Morphology*, pages 105–136. North-Holland, Amsterdam, Netherlands, 1988. [r-ssp-88]

J. D. Radke. See also [8090].

10949 R. Rado. Monochromatic paths in graphs. In B. Bollobás, editor, *Advances in Graph Theory*, volume 3 of *Ann. Discrete Math.*, pages 191–194. North-Holland, Amsterdam, 1978. [r-mpg-78]

10950 J. Radon. Mengen konvexer Körper, die einen gemeinsamen Punkt enthalten. *Math. Ann.*, 83:113–115, 1921. [r-mkkde-21]

10951 J. Radon. Über die bestimmung von funktionen duch ihre integralwerte längs gewisser mannigfaltigkeiten. *Ber. Verb. Sächs. Wiss., Leipzig, Math. Phys. Kl.*, 69:262–277, 1917. [r-bfigm-17]

C. S. Rafferty. See also [1305].

10952 P. Ragde. The parallel simplicity of compaction and chaining. In *Proc. 17th International Colloquium on Automata, Languages and Programming, LNCS 443*, pages 744–751. Springer-Verlag, 1990. [r-pscc-90]

B. Raghavachari. See also [5681, 5682, 7760, 8031, 8401].

M. Raghavan. See also [1228].

10953 P. Raghavan. Computational geometry impact potential: A business and industrial perspective. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 276–276, 1996. [r-cgipb-96] *Annote:* Invited Lecture by P. Raghavan.

10954 P. Raghavan. Information retrieval algorithms: A survey. In *Proc. 18th ACM-SIAM Sympos. Discrete Algorithms*, pages 11–18, January 1997. [r-iras]

10955 P. Raghavan. Lecture notes on randomized algorithms. Research Report RC15340, IBM, 1990. [r-lnra-90]

P. Raghavan. See also [199, 219, 286, 307, 324, 888, 889, 1443, 1828, 1829, 2098–2100, 2460, 6409, 6410, 7385, 7392, 7424, 7817, 7845, 7926, 8187, 9879, 9880].

10956 V. V. Raghavan, J. Cohon, and S. Sahni. Manhattan wiring. In *Proc. 19th Allerton Conf. Commun. Control Comput.*, pages 1–10, 1981. [rcs-mw-81]

10957 V. V. Raghavan and C. T. Yu. A note on a multidimensional searching problem. *Inform. Process. Lett.*, 6:133–135, 1977. [ry-nmsp-77]

V. V. Raghavan. See also [10918].

C. S. Raghavendra. See also [2783, 10859].

P. Raghawan. See also [308].

10958 S. Raghotama and V. Shapiro. Necessary conditions for boundary representation variance. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 77–86, 1997. [rs-ncbrv-97] *Cites:* a-at-76, adps-pptpt-95, a-bt-79, bfhcp-gcs-93, cch-gngcb-96, ch-efbd-96, hy-t-61, hr-rmsm-96, h-gsm-89, h-sggr-93, hd-pvd-94, k-ts-93, k-mpnte-95, lm-sgch-95, m-eat-84, or-sdimp-89t, p-lat-83, r-dsmbr-96, r-mmrso-79, r-rrstm-80, r-rtsmi-84, r-cfitf-96, s-mgrsd-97, sv-wipfs-95, rs-brvps-97, s-scctf-92, ZZZ.

10959 S. Raghothama and V. Shapiro. Boundary representation variance in parametric solid modeling. Technical Report SAL 1997-1, Univ. Wisconsin, Madison, WI, January 1997. [rs-brvps-97]

A. Raghunathan. See also [1820, 8217, 9881–9884].

A. Raghuram. See also [12010].

10960 Ingemar Ragnemalm. *The Euclidean Distance Transform*. Linköping studies in science and technology, ph.D. dissertation, Department of Electrical Engineering, Linköping University, Sweden, 1993. 304. [r-edt-93] *Keywords:* doctoral thesis.

10961 Md. Saidur Rahman, Shin ichi Nakano, and Takao Nishizeki. Rectangular grid drawings of plane graphs. *Comput. Geom. Theory Appl.*, 10(3):203–220, 1998. [rnn-rgdpg-98]

10962 Md. Saidur Rahman, Shin-ichi Nakano, and Takao Nishizeki. A linear algorithm for optimal orthogonal drawings of triconnected cubic plane graphs. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 99–110. Springer-Verlag, 1997. [rnn-laood-97] *Keywords:* graph drawing.

10963 M. H. Raibert and J. K. Hodgins. Animation of dynamic legged locomotion. *Comput. Graph.*, ??:349–358, 1991. Proc. SIGGRAPH '91. [rh-adll-91]

H. Raiffa. See also [9886].

T. Raita. See also [2256].

J. Raja. See also [6983].

S. Rajagopalan. See also [548].

10964 V. T. Rajan. Minimum time trajectory planning. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 759–764, March 1985. [r-mttp-85]

10965 V. T. Rajan. Optimality of the Delaunay triangulation in R^d. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 357–363, 1991. [r-odtr-91] *Keywords:* Delaunay triangulation. *Precedes:* r-odtr-94. *Cites:* a-vds-88, b-vdch-79, e-acg-87, es-vda-86, e-atccd-89, f-savd-87, gs-pmgsc-85, l-gtgac-72, ps-cgi-85, sh-cpp-75, s-cg-78, sntm-amgus-90, ZZZ.

10966 V. T. Rajan. Optimality of the Delaunay triangulation in R^d. *Discrete Comput. Geom.*, 12:189–202, 1994. [r-odtr-94] *Succeeds:* r-odtr-91.

V. T. Rajan. See also [2621, 2833–2836, 5062, 5144, 7794, 9336].

A. Rajaraman. See also [6452, 6690].

10967 S. Rajasekaran and S. Ramaswami. Optimal parallel randomized algorithms for the Voronoi diagram of line segments in the plane and related problems. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 57–66, 1994. [rr-oprav-94] *Cites:* acgoy-pcg-88, ap-np3dc-93, acg-cdctd-89, ag-epsgp-85, c-pagp-80, cs-arscg-89, c-pms-88, cg-opapp-92, dk-ppess-87, f-savd-86, gmv-ttnct-92, g-gpmee-93, goy-cvdsl-89, hw-ensrq-87, k-eccs-79, k-osps-83, ld-gvdp-81, m-fppa1-88, oy-rmpmd-85, rs-pnrst-89, rs-oprat-92, rs-orpac-92, y-oavds-87, ZZZ.

10968 S. Rajasekaran and J. H. Reif. Optimal and sublogarithmic time randomized parallel sorting algorithms. *SIAM J. Comput.*, ??:594–607, 1989. [rr-ostrp-89]

10969 S. Rajasekaran and S. Sen. Random sampling techniques and parallel algorithms design. In J. H. Reif, editor, *Synthesis of Parallel Algorithms*, pages 411–452. Morgan Kaufmann Publishers, 1993. [rs-rstpa-93]

L. B. Rall. See also [2135].

T. A. Ralston. See also [3633].

10970 V. Ramachandran and J. Reif. Planarity testing in parallel. Technical Report TR-90-15, Department of Computer Science, University of Texas at Austin, 1990. [rr-ptp-90] *Keywords:* graph drawing.

10971 V. Ramachandran and J. H. Reif. An optimal parallel algorithm for graph planarity. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 282–293, 1989. [rr-opagp-89] *Keywords:* graph drawing. *Comments:* Submitted to J. Comput. System Sci.

V. Ramachandran. See also [5685, 5686, 5933, 7846, 7847, 9027, 9028].

Kumar Ramaiyer. See also [1039, 2654, 6183, 6184].

V. Ramaiyer. See also [1778, 1779].

R. Ramakrishnan. See also [6041].

10972 K. Ramamohanarao, J. W. Lloyd, and J. A. Thom. Partial-match retrieval using hashing and descriptors. *ACM Trans. Database Syst.*, 8:552–576, 1983. [rlt-pmruh-83]

R. Ramamurthy. See also [5145].

Raman. See also [668].

R. Raman. See also [4197, 6046–6051, 6557].

10973 V. Raman and S. S. Iyengar. Properties and applications of forests of quadtrees for pictorial data representation. *BIT*, 23:472–486, 1983. [ri-pafqp-83]

V. Raman. See also [5040–5042].

10974 P. Ramanan. A new lower bound technique and its application: tight lower bound for a polygon triangulation problem. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 281–290, 1991. [r-nlbti-91] *Annote:* $\Omega(n \log n)$ for minimum-weight triangulation of simple polygon with weighted vertices.

P. Ramanan. See also [3097, 7777].

10975 G. Ramanathan and V. S. Alagar. Algorithmic motion planning in robotics: Coordinated motion of several discs amidst polygonal barriers. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 514–522, 1985. [ra-amprc-85]

10976 R. Ramaraj and G. M. Nielson. Interpolation over a sphere based on a minimum norm network. *Comput. Aided Geom. Design*, 4:41–57, 1987. [rn-isbmn-87] *Annote:* Sphere triangulation. Switching based on max-min angle test. (Is this the same as taking the convex hull?).

10977 V. Ramasubramanian and K. K. Paliwal. Fast k-dimensional tree algorithms for nearest neighbor search with applications to vector quantization encoding. *IEEE Trans. Signal Processing*, 40:518–531, 1992. [rp-fkdta-92]

10978 K. Ramaswami, Y. Yamaguchi, and F. B. Prinz. Spatial partitioning of solids for freeform fabrication. In *Proc. 4th Sympos. Solid Modeling Found. Applications*, pages 346–353, May 1997. [ryp-spsff-97]

10979 Suneeta Ramaswami, Pedro Ramos, and Godfried Toussaint. Converting triangulations to quadrangulations. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 297–302, 1995. [rrt-ctq-95] *Precedes:* rrt-ctq-98.

10980 Suneeta Ramaswami, Pedro Ramos, and Godfried Toussaint. Converting triangulations to quadrangulations. *Comput. Geom. Theory Appl.*, 9(4):257–276, 1998. [rrt-ctq-98] *Succeeds:* rrt-ctq-95.

S. Ramaswami. See also [379, 1686, 1687, 2329, 6072, 6073, 10967].

10981 S. Ramaswamy and S. Subramanian. Path caching: A technique for optimal external searching. In *Proc. 13th Annu. ACM Sympos. Principles Database Syst.*, pages 25–35, 1994. [rs-pctoe-94]

Sridhar Ramaswamy. See also [748, 7717, 12593].

K. Ramayier. See also [3749].

10982 Urs Ramer. An iterative procedure for the polygonal approximation of plane curves. *Comput. Graph. Image Process.*, 1:244–256. [r-ippap-]

V. Ramesh. See also [11293].

G. Ramkumar. See also [1483, 11357].

10983 G. D. Ramkumar. An algorithm to compute the Minkowski sum outer-face of two simple polygons. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 234–241, 1996. [r-acmso-96] *Cites:* bgrr-pttc-, cegghss-rspug-91, cegss-cfals-93, gt-drssp-93, grs-kfcg-83, gs-ccrs-87, hcahs-csfms-95, kos-cmsrp-91i, l-spcsa-83, ZZZ.

G. D. Ramkumar. See also [1484, 1485].

G. D. S. Ramkumar. See also [3798].

F. Ramme. See also [9809].

Pedro Ramos-Alonso. See also [5754, 8961].

10984 E. Ramos. Construction of 1-d lower envelopes and applications. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 57–66, 1997. [r-c1dle-97] *Cites:* a-gpia-91i, am-rsss-94, agr-cfssa-95, agr-pahdc-94, ar-cvddp-96, a-sdcgp-85, c-osrch-95, csy-oscpf-95, c-chdc-93, cegs-dwclp-93, cm-dosch-92, cm-ltdao-93, cs-arscg-89, c-sdsno-87, cgo-mftpe-90, dk-fdpi-83, e-acg-87, es-otatd-91, em-sstcd-90, gg-ptpch-91, gz-odapp-95, g-uaadp-91, g-gpmee-93, g-fdplp-96, goy-cvdsl-93, gr-bidgp-97, gs-fospc-96, hr-wmhtb-92, h-bevv-56, ks-upcha-86, k-cavd-89, m-aogdc-91, m-cha-91, m-ept-92, ms-datdd-96, ms-ufetp-91, m-apcad-83, m-cgitr-93, p-plmps-94, ps-cgi-85, rr-oprav-94, r-aierb-94, rs-oprat-92, sa-dsstg-95, ZZZ.

10985 E. Ramos. Intersection of unit-balls and diameter of a point set in R^3. *Comput. Geom. Theory Appl.*, 6:in press, 1996. [r-iubdp-96]

10986 E. Ramos. Intersection of unit-balls and diameter of a point set in R^3. *Computat. Geom. Theory Appl.*, 8:57–65, 1997. [r-iubdp-97]

10987 E. Ramos. The number of 3-sets of a finite point set in the plane. Technical Report UIUCDCS-R-93-1843, Dept. Comput. Sci., Univ. Illinois, Urbana-Champaign , IL, 1993. [r-n3sfp-93]

E. Ramos. See also [3602].

10988 E. A. Ramos. An algorithm for intersecting equal radius balls R^3. Technical Report UIUCDCS-R-94-1851, Dept. of Computer Science, University of Illinois at Urbana-Champaign, 1994. [r-aierb-94]

10989 E. A. Ramos. An optimal deterministic algorithm for computing the diameter of a three-dimensional point set. *Discrete Comput. Geom.*, 26:233–244, 2001. [r-odacd-01]

10990 Edgar A. Ramos. Deterministic algorithms for 3-D diameter and some 2-D lower envelopes. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 290–299, 2000. [r-dadsl-00]

10991 Edgar A. Ramos. Linear programming queries revisited. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 176–181, 2000. [r-lpqr-00]

E. A. Ramos. See also [618–622, 625, 3603, 4101, 4106, 4107, 4488, 6185].

10992 P. Ramos. *Tolerancia de Estructuras Geométrias y Combinatorias.* PhD thesis, ?? in spanish, in preparation. [r-tegc] *Keywords:* doctoral thesis.

Pedro Ramos. See also [32, 33, 41, 2063, 2312, 5755, 5756, 10979, 10980].

10993 Pedro A. Ramos. Computing roundness in practice. In *Abstracts 14th European Workshop Comput. Geom.*, pages 125–126. Universitat Polytènica de Catalunya, Barcelona, 1998. [r-crp-98]

10994 Pedro A. Ramos. Computing roundness is easy if the set is almost round. In *Proc. 15th Annu. ACM Sympos. Comput. Geom.*, pages 307–315, 1999. [r-cresa-99]

Pedro A. Ramos. See also [42, 5752, 7221, 7231].

J. X. Rampon. See also [5202].

J. Ramsden. See also [6007].

10995 F. P. Ramsey. On a problem of formal logic. *Proc. London Math. Soc.*, 30:264–286, 1930. [r-pfl-30]

N. Ramsey. See also [7680].

10996 L. Ramshaw. Blossoming: A connected-the-dots approach to splines. Technical Report 19, Digital Systems Research Center, Palo Alto, CA, 1987. [r-bcdas-87]

10997 L. Ramshaw. CSL notebook entry: The braiding of floating point lines. Unpublished note, 1982. [r-cnebf-82]

L. Ramshaw. See also [1485, 6416].

10998 Adee Ran and Nir Sochen. Differential geometry techniques in stereo vision. In *Abstracts 16th European Workshop Comput. Geom.*, pages 98–103. Ben-Gurion University of the Negev, 2000. [rs-dgtsv-00]

10999 A. G. Ranade. How to emulate shared memory. *J. Comput. Syst. Sci.*, 42:307–326, 1991. [r-hesm-91]

11000 S. Ranade, A. Rosenfeld, and J. M. S. Prewitt. Use of quadtrees for image segmentation. Report TR-878, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1980. [rrp-uqis-80]

11001 S. Ranade, A. Rosenfeld, and H. Samet. Shape approximation using quadtrees. Report TR-847, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1979. [rrs-sauq-79]

11002 S. Ranade, A. Rosenfeld, and H. Samet. Shape approximation using quadtrees. *Pattern Recogn.*, 15(1):31–40, 1982. [rrs-sauq-82]

11003 S. Ranade and M. Shneier. Using quadtrees for smooth images. *Pattern Recogn.*, 15:31–40, 1981. [rs-uqsi-81]

R. Randell. See also [5117].

11004 J. F. Randolph. *Calculus and Analytic Geometry.* Wadsworth, 1961. [r-cag-61]

S. Rane. See also [4248].

C. P. Rangan. See also [12597].

M. Ranganathan. See also [5121].

11005 K. Rangarajan, M. Shah, and D. V. Brackle. Optimal corner detector. In *Proc. 2nd Int. Conf. Comput. Visison*, pages 90–94, 1988. [rsb-ocd-88]

Desh Ranjan. See also [974].

11006 V. Ranjan and A. Fournier. Creating union of spheres models from multiple views. *J. Graphics Tools*, 1(4):21–39, 1996. [rf-cusmm-96]

11007 Vishwa Ranjan and Alain Fournier. Union of spheres (uos) model for volumetric data. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C2–C3, 1995. [rf-usumv-95] *Keywords: Cites:* a-pdpaa-87, e-ubids-93, em-tdas-94, rf-vmvd-94, w-sedbe-91, ZZZ.

11008 V. Ranjan and A. Fournier. Volume models for volumetric data. *IEEE Computer*, 27(7):28–36, July 1994. [rf-vmvd-94]

11009 R. A. Rankin. The closest packing of spherical caps in n dimensions. *Proc. Glasgow Math. Assoc.*, 2:139–144, 1955. [r-cpscn-55]

11010 Anil Rao and Ken Goldberg. Placing registration marks. *IEEE Transactions on Industrial Electronics*, 41, February 1994. [rg-prm-94]

11011 A. Rao and K. Y. Goldberg. Recovering the shape of a polygon from its diameter. Technical Report, Inst. Robot. Intell. Syst., Univ. Southern California, 1991. [rg-rspid-91]

11012 A. Rao, D. Kriegman, and K. Goldberg. Complete algorithms for reorienting polyhedral parts using a pivoting gripper. Technical Report UU-CS-1994-49, Utrecht university, Utrecht, Netherlands, 1994. [rkg-carpp-94] *URL:* ftp://ftp.cs.ruu.nl/pub/RUU/CS/techreps/CS-1994/1994-49.ps.gz.

11013 Anil Rao, David Kriegman, and Ken Goldberg. Complete algorithms for reorienting polyhedral parts using a pivoting gripper. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C22–C23, 1995. [rkg-carpp-95] *Keywords: Cites:* cgrw-pgfip-94, h-fuenl-89, k-cspps-92, rkg-carpp-94, ZZZ.

A. Rao. See also [5222, 10460, 13274, 13562].

11014 A. S. Rao and K. Y. Goldberg. Computing grasp functions. *Comput. Geom. Theory Appl.*, 6:145–168, 1996. [rg-cgf-96]

11015 A. S. Rao and K. Y. Goldberg. Manipulating algebraic parts in the plane. *IEEE Trans. Robot. Autom.*, 11(4):598–602, August 1995. [rg-mapp-95]

11016 A. S. Rao and K. Y. Goldberg. On the recovery of a polygon's shapes from its diameter function. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 210–215, 1992. [rg-rpsid-92] *Cites:* cy-sp-87, d-argon-92, g-sprm-90, g-oppws-93, ic-copop-91, j-atag-85, kg-srrg-92, k-oeupj-88, l-rpp-88, pr-popp-92, ps-cgi-85, rg-sdrpp-94, rg-sdrps-91, rg-ogp-92, r-cscsl-87, s-pgp-89, yb-cf-61, ZZZ.

11017 A. S. Rao and K. Y. Goldberg. Orienting generalized polygons. In *Proc. IEEE Internat. Conf. Robot. Autom.*, May 1992. [rg-ogp-92]

11018 A. S. Rao and K. Y. Goldberg. Shape from diameter: on the recovery of a polygon's shape from its diameter function. Technical Report 270, Inst. Robot. Intell. Syst., Univ. Southern California, Los Angeles, CA, August 1991. [rg-sdrps-91]

11019 A. S. Rao and K. Y. Goldberg. Shape from diameter: Recognizing polygonal parts with a parallel-jaw gripper. *IRob*, 13(1):16–37, 1994. [rg-sdrpp-94]

A. S. Rao. See also [2724, 10860].

11020 M. M. Rao. *Probability Theory with Applications.* Academic Press, Orlando, FL, 1984. [r-pta-84]

11021 N. S. V. Rao. Algorithmic framework for learned robot navigation in unknown terrain. *IEEE Computer*, 22:37–43, 1989. [r-aflrv-89] *Keywords:* on-line motion planning.

11022 N. S. V. Rao, S. S. Iyengar, C. C. Jorgensen, and C. R. Weisbin. Computational geometry approach to autonomous robot navigation in an unexplored terrain. Report ??, Dept. Comput. Sci., Louisiana State Univ. Baton Rouge, Baton Rouge, LA, 1985. [rijw-cgaar-85]

11023 N. S. V. Rao, S. S. Iyengar, C. C. Jorgensen, and C. R. Weisbin. On terrain acquisition by a finite-sized mobile robot in plane. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1314–1319, 1987. [rijw-tafsm-87]

11024 N. S. V. Rao, S. S. Iyengar, C. C. Jorgensen, and C. R. Weisbin. Robot navigation in an unexplored terrain. *Journal of Robotic Systems*, 3(4):389–407, 1986. [rijw-rnut-86]

11025 N. S. V. Rao, S. S. Iyengar, B. J. Oommen, and R. L. Kashyap. On terrain model acquisition by a point robot amidst polyhedral obstacles. *Internat. J. Robot. Autom.*, 4(4):450–455, 1988. [riok-tmapr-88]

11026 N. S. V. Rao, S. Kareti, W. Shi, and S. S. Iyengar. Robot navigation in unknown terrains: introductory survey of non-heuristic algorithms. Technical Report ORNL/TM-12410, Oak Ridge National Laboratory, 1993. [rksi-rnut-93]

11027 N. S. V. Rao, N. Stoltzfus, and S. S. Iyengar. A "retraction" method for learned navigation in unknown terrains for a circular robot. Technical Report, Computer Science, Old dominion Univ., 1988. [rsi-rmlnu-88]

11028 N. S. V. Rao, V. K. Vaishnavi, and S. S. Iyengar. On the dynamization of data structures. *BIT*, 28:37–53, 1988. [rvi-dds-88]

S. Rao. See also [888, 889, 8064, 8242].

11029 Satish B. Rao and Warren D. Smith. Approximating geometrical graphs via "spanners" and "banyans". In *Proc. 30th Annu. ACM Sympos. Theory Comput.*, pages 540–550, 1998. [rs-aggsb-98] *Keywords:* Polynomial time approximation schemes, optimal algorithms, derandomization, Traveling salesman tour, Steiner minimum tree, Minimum spanning tree, Minimum matchings, 2-matchings, Edge cover, Rectilinear Steiner minimum tree, quadtrees, spanners, banyans. *Abstract:* We give deterministic and randomized algorithms to find a Euclidean traveling salesman tour (TST) of length within $(1+1/s)$ times optimal. They run in $O(N \log N)$ time and $O(N)$ space for constant dimension and s. These time and space bounds are optimal in an algebraic computation tree model. We can also find a $(1+1/s)$ times optimal length 2-matching (M2M), edge cover (EC), minimum spanning tree (MST), Steiner minimal tree (SMT), rectilinear ditto (RSMT), and related graphs in the same time bound.

This improves recent algorithms of Arora, which had used $N(\log N)^{O(s^{d-1})}$ time in fixed dimension d to produce a $(1+1/s)$ times optimal TST (or SMT, RSMT) with success probability 1/2. To verify success, however, Arora could only use a deterministic version of his algorithm that took a factor of N^d more time. The increase in running time for our deterministic version depends only on s.

Arora's approach can also be extended to produce other $(1+\epsilon)$-approximate geometrical graphs besides TSTs, e.g. the minimum matching (MM) and subgraph versions of the MST and TST problems. Our methods (at least at the moment) don't apply to those problems, but we can produce a $1.001 \exp(8 \cdot 2^{1-1/(d-1)} \sqrt{d})$-approximate MM in $O(N \log N)$ Monte Carlo time.

Our algorithms are based on using low-weight Euclidean *spanner graphs* (and generalizations of them) in conjunction with the hierarchical structure theorems that serve as the basis of Arora's work.

A "t-spanner" is a graph on N sites such that shortest path distance between two spanner vertices approximates the Euclidean distance to within a factor of t. By making work by Arya, Das, et al. more explicit, we show that a $(1+1/s)$-spanner of N sites in d-space is computable in $(sd)^{O(d)} N \log N$ time and $(sd)^{O(d)} N$ space, has maximum valence $(sd)^{O(d)}$, and is $(sd)^{O(d)}$ times longer than the MST. We show that spanners can in principle be made orders of magnitude shorter and simpler by allowing "Steiner points."

We introduce a remarkable generalization of the notion of "t-spanner," the "t-banyan," that t-approximates interconnection costs for site subsets of *any* cardinality, not just 2. If $d \geq 1$ and $\epsilon > 0$ are fixed, we show a $(1+\epsilon)$-banyan of N sites in d-space exists, has $O(N)$ vertices and $O(N)$ edges, is only a constant factor longer than the MST, and is computable in $O(N \log N)$ time.

11030 S. V. Rao and A. Mukhopadhyay. An efficient algorithm for computing β-skeleton and its generalization. In *Abstracts 13th European Workshop Comput. Geom.*, pages 7–9. Universität Würzburg, 1997. [rm-eacbs-97]

S. V. Rao. See also [10288].

S. V. N. Rao. See also [7434].

B. Raphael. See also [6698].

11031 A. Rappaport. Displayable-selectable models and boundary representations in geometric operation graphs. In *Theory and Practice of Geometric Modeling*, October 1996. [r-dsmbr-96]

11032 D. Rappaport. A convex hull algorithm for discs, and applications. *Comput. Geom. Theory Appl.*, 1(3):171–181, 1992. [r-chada-92] *Keywords:* disc, convex hull, Voronoi diagram, transversals, minimum spanning circle.

11033 D. Rappaport. A linear algorithm for eliminating hidden lines from a polygonal cylinder. *Visual Comput.*, 2:44–53, 1986. [r-laehl-86] *Keywords:* design of algorithms, computer graphics, visibility, hidden line/surface elimination, worst-case analysis, three-dimensional.

11034 D. Rappaport. Computing simple circuits from a set of line segments is NP-complete. Technical Report SOCS-86.6, McGill University, 1986. [r-cscsl-86]

11035 D. Rappaport. Computing simple circuits from a set of line segments is NP-complete. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 322–330, 1987. [r-cscsl-87] *Keywords:* complexity theory, visibility, NP-completeness, polygons, polygonal chains, geometric graphs, traveling salesman tours, line segments. *Cites:* gjt-phcpn-76, ips-hpgg-82, llrs-tsp-85, m-vcihr-82, o-uocd-86, obw-cdnh-84, r-ccops-86, r-ccscp-86, rit-cscsl-86, rt-rplbo-86, t-prgc-80, t-cgm-86, ZZZ.

11036 D. Rappaport. Computing the furthest-site Voronoi diagram for a set of discs. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 57–66. Springer-Verlag, 1989. [r-cfsvd-89]

11037 D. Rappaport. Minimum polygon transversals of line segments. Technical Report CISC-92-333, Queen's University, 1992. [r-mptls-92] *Precedes:* r-mptls-95.

11038 D. Rappaport. Minimum polygon transversals of line segments. *Internat. J. Comput. Geom. Appl.*, 5:243–256, 1995. [r-mptls-95] *Keywords:* computational geometry, transversal, simple polygon, convex hull. *Succeeds:* r-mptls-92.

11039 D. Rappaport. On the complexity of computing orthogonal polygons from a set of points. Technical Report TR-SOCS-86.9, McGill Univ., Montreal, PQ, 1986. [r-ccops-86]

11040 David Rappaport, editor. *Proc. 9th Canad. Conf. Comput. Geom.*, Kingston, ON, August 1997. Dept. Comput. Info. Sci., Queen's Univ. [r-p9ccc-97] *URL:* http://www.qucis.queensu.ca/cccg97. *Comments:* electronic proceedings online; paper copies C$20 plus postage, order form on website.

11041 D. Rappaport. *The complexity of computing simple circuits in the plane*. Ph.D. thesis, School Comput. Sci., McGill Univ., Montreal, PQ, 1986. [r-ccscp-86] *Keywords:* complexity theory, design of algorithms, operations research, worst-case analysis, NP-completeness, points, line segments, polygons, polygonal chains, doctoral thesis.

11042 D. Rappaport, H. Imai, and G. T. Toussaint. Computing simple circuits from a set of line segments. *Discrete Comput. Geom.*, 5(3):289–304, 1990. [rit-cscsl-90] *Succeeds:* rit-cscsl-86.

11043 D. Rappaport, H. Imai, and G. T. Toussaint. On computing simple circuits on a set of line segments. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 52–60, 1986. [rit-cscsl-86] *Precedes:* rit-cscsl-90. *Cites:* bo-arcgi-79, g-eadch-72, hk-nammb-73, r-cscsl-86, sh-gip-76, t-hnchf-85, ZZZ.

11044 D. Rappaport and A. Rosenbloom. Moldable and castable polygons. *Comput. Geom. Theory Appl.*, 4:219–233, 1994. [rr-mcp-94] *Succeeds:* rr-mcp-92.

11045 D. Rappaport and G. T. Toussaint. A simple linear hidden-line algorithm for star-shaped polygones. Technical Report SOCS-83.23, McGill Univ., Montreal, PQ, 1983. [rt-slhla-83]

11046 D. Rappaport and G. T. Toussaint. A simple linear hidden-line algorithm for star-shaped polygons. *Pattern Recogn. Lett.*, 3:35–39, 1985. [rt-slhla-85] *Keywords:* design of algorithms, visibility, star-shaped.

D. Rappaport. See also [413, 708, 794, 795, 1169, 1170, 3478–3480, 3672, 4594, 4845, 5227, 6727, 9060, 9063–9067, 9495–9497, 11387].

D. H. Rappaport. See also [9068].

11047 A. Rappoport. An efficient algorithm for constructing the convex differences tree of a simple polygon. *Comput. Graph. Forum*, 11(4):235–240, October 1992. [r-eaccd-92]

11048 A. Rappoport. An efficient algorithm for line and polygon clipping. *Visual Comput.*, 7(1):19–28, January 1991. [r-ealpc-91]

11049 A. Rappoport. The extended convex difference tree (ECDT) representation for N-dimensional polyhedra. *Internat. J. Comput. Geom. Appl.*, 1(3):227–241, 1991. [r-ecdte-91] *Keywords:* n-dimensional polyhedra, constructive solid geometry, CSG, convexity, boolean operations, geometric data structures, convex difference tree, CDT.

11050 Ari Rappoport. Using convex differences for hierarchical representations of polygonal maps. In *Proc. Graphics Interface'90*, pages 183–189, May 1990. [r-ucdhr-90]

Ari Rappoport. See also [5045–5047].

11051 Norel Raquel, Daniel Fischer, Ruth Nussinov, and Haim J. Wolfson. 3-d docking of protein molecules. In *Combinatorial Pattern Matching*, volume ?? of *Lecture Notes Comput. Sci.*, page ?? Springer-Verlag, 1993. [rfnw-3ddpm-93]

M. Rarick. See also [8472].

11052 R. Rasala. Geometric aspects of the polaroid Zip Code based mapping system. Manuscript, ??, ?? [r-gapzc-??]

11053 R. Rasch. *Abstrakte inverse Voronoidiagramme*. Ph.D. thesis, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1994. [r-aiv-94] *Keywords:* doctoral thesis.

R. Rasch. See also [9452].

Mahesh Rathi. See also [3256, 3257].

P. Rathmann. See also [6670].

11054 ?? Rathmill. *Robotics Assembly*. Springer-Verlag, 1985. [r-ra-85]

H. Ratliff. See also [10765].

11055 H. Ratschek and J. Rokne. Determination of the exact sign of a sum. Unpublished manuscript, 1995. [rr-dess-95]

11056 H. Ratschek and J. Rokne. Exact and optimal convex hulls in 2D. *Internat. J. Comput. Geom. Appl.*, 10:109–129, 2000. [rr-eochd-00]

H. Ratschek. See also [5826].

D. Ratz. See also [6628].

A. Rau-Chaplin. See also [1026, 1027, 3891–3899, 3917, 3925, 3926].

11057 V. G. Rau, L. G. Parkomov, V. V. Ilyukhin, and N. V. Belov. On the calculation of possible Patterson cyclotomic sets, i. *Doklady Akad. Nauk SSSR*, 255(4):858–861, 1980. [rpib-cppcs1-80] *Precedes:* rpib-cppcs2-80.

11058 V. G. Rau, L. G. Parkomov, V. V. Ilyukhin, and N. V. Belov. On the calculation of possible Patterson cyclotomic sets, ii. *Doklady Akad. Nauk SSSR*, 255(5):1110–1113, 1980. [rpib-cppcs2-80] *Succeeds:* rpib-cppcs1-80.

11059 M. Rauch. Fully dynamic biconnectivity in graphs. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 50–59, 1992. [r-fdbg-92]

11060 M. Rauch. Improved data structures for fully dynamic biconnectivity. In *Proc. 26th Annu. ACM Sympos. Theory Comput.*, pages 686–695, 1994. [r-idsfd-94]

M. Rauch. See also [6855].

Monika H. Rauch. See also [7415].

11061 Thomas Rausch, Franz-Erich Wolter, and Oliver Sniehotta. Computation of medial curves on surfaces. Technical Report 1, Welfen Laboratory, Universität Hannover, August 1996. [rws-cmcs-96] *URL:* http://www-c.informatik.uni-hannover.de. *Keywords:* CAD, geometric modeling, equidistantial set, medial curve, cut locus, focal curves, geodesics on surfaces, medial axis, offsets. *Annote:* To appear, IMA Conference Proceedings Series of the 7th IMA Conference on The Mathematics of Surfaces.

Thomas Rausch. See also [8416].

11062 R. Ravi, R. Sundaram, M. V. Marathe, D. J. Rosenkrantz, and S. S. Ravi. Spanning trees short and small. In *Proc. 5th ACM-SIAM Sympos. Discrete Algorithms*, pages 546–555, 1994. [rsmrr-stss-94]

R. Ravi. See also [5794].

11063 S. S. Ravi, D. J. Rosenkrantz, and G. K. Tayi. Facility dispersion problems: Heuristics and special cases. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 355–366. Springer-Verlag, 1991. [rrt-fdphs-91]

S. S. Ravi. See also [2089, 7211, 9186–9188, 11062, 13419].

Y. Ravid. See also [7816].

11064 G. Rawlings and D. Wood. Restricted-oriented convex sets. Technical Report CS-89-01, Dept. Comput. Sci., Univ. Waterloo, 1989. [rw-rocs-89]

G. Rawlings. See also [11817].

G. Rawlins. See also [1216].

11065 G. J. E. Rawlins. *Explorations in restricted-orientation geometry*. Ph.D. thesis, Univ. Waterloo, Waterloo, ON, 1987. [r-erog-87] *Keywords:* doctoral thesis.

11066 G. J. E. Rawlins, R. Baeza-Yates, and J. C. Culberson. Searching with uncertainty. In R. Karlsson and A. Lingas, editors, *Proc. 1st Scand. Workshop Algorithm Theory*, volume 318 of *Lecture Notes Comput. Sci.*, pages 176–189. Springer-Verlag, 1988. [rbc-su-88]

11067 G. J. E. Rawlins and M. Overmars. Computing the link diameter of a polygon with holes. Report ??, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1988. [ro-cldph-88] *Comments:* Neither author has any recollection (as of May 1998) of this paper ever existing or what it was about. We can probably remove it from the bib file. (Comment added by Joe Mitchell, after conferring with both authors by email.).

11068 G. J. E. Rawlins, P. Widmayer, and D. Wood. Hole problems for rectangles in the plane. *SIAM J. Algebraic Discrete Methods*, 1:86–97, 1988. [rww-hprp-88]

11069 G. J. E. Rawlins and D. Wood. A decomposition theorem for convexity spaces. *J. Geom.*, 36:143–159, 1989. [rw-dtcs-89]

11070 G. J. E. Rawlins and D. Wood. Computational geometry with restricted orientations. In *Proc. 13th IFIP Conf. System Modelling and Optimization*, volume 113 of *Lecture Notes in Control and Information Science*, pages 375–384. Springer-Verlag, 1988. [rw-cgro-88]

11071 G. J. E. Rawlins and D. Wood. Guards with monotone sight: a new version of the art gallery theorem. Report ??, Univ. Waterloo, Waterloo, ON, 1988. [rw-gmsnv-88]

11072 G. J. E. Rawlins and D. Wood. Optimal computation of finitely oriented convex hulls. *Inform. Comput.*, 72:150–166, 1987. [rw-ocfoc-87]

11073 G. J. E. Rawlins and D. Wood. Ortho-convexity and its generalizations. In G. T. Toussaint, editor, *Computational Morphology*, pages 137–152. North-Holland, Amsterdam, Netherlands, 1988. [rw-ocig-88]

11074 G. J. E. Rawlins and D. Wood. Restricted-orientation convexity. Technical Report 86-36, Univ. Waterloo, Waterloo, ON, 1986. [rw-roc-86]

11075 G. J. E. Rawlins and D. Wood. Restricted-oriented convex sets. *Inform. Sci.*, 54:263–281, 1991. [rw-rocs-91]

G. J. E. Rawlins. See also [3641, 11818–11820].

John Rawlinson. See also [2634].

11076 B. Ray and K. Ray. A new approach to polygonal approximation. *Pattern Recogn. Lett.*, 12:229–234, 1991. [rr-napa-91]

C. K. Ray. See also [5506].

K. Ray. See also [11076].

R. Ray. See also [8481].

W. Ray. See also [13730].

11077 H. Raynaud. Sur l'enveloppe convex des nuages de points aleatoires dans R^n. *J. Appl. Probab.*, 7:35–48, 1970. [r-slcdn-70]

11078 V. J. Rayward-Smith and A. Clare. On finding Steiner vertices. *Networks*, 16:283–294, 1986. [rc-fsv-86]

Mohammadreza Razzazi. See also [6078, 6082–6086, 9793].

11079 R. Read. Methods for computer display and manipulation of graphs and the corresponding algorithms. Technical Report 86-12, Faculty of Mathematics, Univ. of Waterloo, July 1986. [r-mcdmg-86] *Keywords:* graph drawing.

11080 R. Read. New methods for drawing a planar graph given the cyclic order of the edges at each vertex. *Congr. Numer.*, 56:31–44, 1987. [r-nmdpg-87] *Keywords:* graph drawing.

11081 D. F. Rearick. *??* PhD thesis, California Inst. Tech., 1960. [r-??-60] *Keywords:* doctoral thesis.

11082 J. Reay. An extension of radon's theorem. *Illinois J. Math.*, 12:184–189, 1968. [r-ert-68]

J. R. Reay. See also [4242].

11083 François Rebufat. Handling rotations in the placement of curved convex polygons. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 87–92, 1997. [r-hrpcc-97]

François Rebufat. See also [2157].

T. Recio. See also [2122, 3531–3534, 9338, 9339, 9341, 9342].

11084 R. Reckhow. Covering orthogonally convex polygons with three orientations of dents. Technical Report 87-17, Dept. Comput. Sci., Univ. Alberta, Edmonton, Alberta, Canada, August 1987. [r-cocpt-87]

R. Reckhow. See also [3642, 3643].

11085 R. A. Reckhow and J. Culberson. Covering a simple orthogonal polygon with a minimum number of orthogonally convex polygons. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 268–277, 1987. [rc-csopm-87] *Precedes:* cr-occop-89a. *Cites:* a-agpiv-84, fk-acrri-84, k-mchco-86, m-snpcs-79, os-snhpd-83, rw-roc-86, ZZZ.

R. A. Reckhow. See also [3644, 3645].

11086 D. R. Reddy and S. M. Rubin. Representation of three-dimensional objects. Report CMU-CS-78-113, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1978. [rr-rtdo-78]

11087 Jayachandra Reddy and George Turkiyyah. Computation of 3D skeletons using a generalized Delaunay triangulation technique. *Comput. Aided Design*, 27(9):677–694, 1995. [rt-c3dsu-95]

J. N. Reddy. See also [10229].

11088 M. Reddy. Perceptually-driven polygon reduction. *Comput. Graph. Forum*, 15(4):191–203, October 1996. [r-pdpr-96]

P. G. Reddy. See also [8533].

11089 G. Reeb. Sur les points singuliers d'une forme de pfaff complement integrable ou d'une fonction numerique. *Comptes Rendus Acad. Sciences Paris*, 222:847–849, 1946. [r-slpsd-46]

B. Reed. See also [5085, 5617, 9818].

11090 J. A. Reeds and L. A. Shepp. Optimal paths for a car that goes both forwards and backwards. *Pacific Journal of Mathematics*, 145(2), 1990. [rs-opctg-90]

11091 J. A. Reeds, L. A. Shepp, P. C. Fishburn, and J. C. Lagarias. Sets uniquely determined by projections. *Discrete Math.*, 91, 1991. [rsfl-sudp-91]

J. A. Reeds. See also [5293, 8448].

11092 E. G. Rees. *Notes on Geometry*. Springer-Verlag, Berlin, Germany, 1983. [r-ng-83]

11093 J. A. Rees, N. I. Adams, and J. R. Meehan. The T manual. Technical report, Dept. Comput. Sci., Yale Univ., New Haven, CT, 1984. [ram-tm-84]

11094 W. T. Reeves. Particle systems - a technique for modeling a class of fuzzy objects. *ACM Trans. Graph.*, 2(2):91–108, April 1983. [r-pstmc-83]

R. Regal. See also [1617].

11095 A. Rege. A complete and practical algorithm for geometric theorem proving. Technical Report, Univ. California, Berkeley, CA, 1995. [r-cpagt-95t]

11096 Ashutosh Rege. A complete and practical algorithm for geometric theorem proving. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 277–286, 1995. [r-cpagt-95] *Keywords: Cites:* c-crsas-91, c-isda-91, c-pegtu-84, c-mgtp-88, clo-iva-92, gm-eabwr-91, g-rgtpm-63, k-gtpuh-86, k-ragtp-89, ks-abaag-86, r-cpagt-95t, rc-slprf-95, rc-tag-95, r-ccgfo-89, r-deas-32, r-da-50, w-dpmtp-78, w-sramt-84, z-epc-93, ZZZ.

11097 A. Rege and J. Canny. A toolkit for algebra and geometry. In *Proc. ACM Sympos. Symbolic and Algebraic Computation*, 1995. Submitted. [rc-tag-95]

11098 A. Rege and J. Canny. Straight-line programs for real field extensions and perturbations. *Internat. J. Comput. Geom. Appl.*, ??, 1995. Submitted. [rc-slprf-95]

A. Rege. See also [2698, 2699].

11099 M. G. Reggiani and F. E. Marchetti. A proposed method for representing hierarchies. *IEEE Trans. Syst. Man Cybern.*, 18(1):2–8, 1988. [rm-pmrh-88] *Keywords:* graph drawing.

M. Regnier. See also [1217].

11100 Gabriele Reich and Peter Widmayer. Beyond Steiner's problem: A VLSI oriented generalization. In *Proc. 15th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 411 of *Lecture Notes Comput. Sci.*, pages 196–210. Springer-Verlag, 1989. [rw-bspvo-89]

Gabriele Reich. See also [7334].

M. Reichert. See also [4366].

11101 M. Reichling. On the detection of a common intersection of k convex objects in the plane. *Inform. Process. Lett.*, 29:25–29, 1988. [r-dcikc-88a]

11102 M. Reichling. On the detection of a common intersection of k convex polyhedra. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 180–186. Springer-Verlag, 1988. [r-dcikc-88i] *Annote:* 4th Intern. Workshop Comput. Geom.

I. Reichstein. See also [10289].

T. Reico. See also [6783].

K. B. Reid. See also [3537].

11103 M. Reid. Potential field computation for robotic path planning using a microchannel slm. *??*, pages 188–191. [r-pfcrp-]

11104 M. Reid-Miller, G. L. Miller, and F. Modugno. List ranking and parallel tree contraction. In J. H. Reif, editor, *Synthesis of Parallel Algorithms*, pages 115–194. Morgan Kaufmann Publishers, Inc., San Mateo, CA, 1993. [rmm-lrptc-93]

D. Reif. See also [2407].

11105 J. Reif and M. Sharir. Motion planning in the presence of moving obstacles. Manuscript, ??, 1985. [rs-mppmo-85t]

11106 John Reif and Micha Sharir. Motion planning in the presence of moving obstacles. *J. ACM*, 41(4):764–790, July 1994. [rs-mppmo-94] *Succeeds:* rs-mppmo-85.

11107 J. Reif and J. Storer. Minimizing turns for discrete movement in the interior of a polygon. Technical Report, Harvard Univ.,, Cambridge, MA, December 1985. [rs-mtdmi-85]

11108 J. Reif and S. Tate. Approximate kinodynamic planning using L_2 norm dynamic bounds. Technical Report, Duke Univ., Durham, NC, 1989. [rt-akpul-89] *Precedes:* rt-akpul-94.

11109 J. Reif and A. Tyagi. Efficient parallel algorithms for optical computing with the DFT primitive. In *Proc. 10th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 472 of *Lecture Notes Comput. Sci.*, pages 149–160. Springer-Verlag, 1990. [rt-epaoc-90]

11110 J. Reif, J. Tygar, and A. Yoshida. Computability and complexity of ray tracing. *Discrete Comput. Geom.*, 11:265–288, 1994. [rty-ccrt-94] *Succeeds:* rty-ccobt-90.

11111 John Reif and Hongyan Wang. Nonuniform discretization for kinodynamic motion planning and its applications. In Jean-Paul Laumond and Mark Overmars, editors, *Algorithms for Robotic Motion and Manipulation*, pages 97–112, Wellesley, MA, 1997. A.K. Peters. Proc. 1996 Workshop on the Algorithmic Foundations of Robotics, Toulouse, France, July 1996. [rw-nudkm-96]

11112 John Reif and Hongyan Wang. The complexity of the two dimensional curvature-constrained shortest-path problem. In *Proc. 3rd Workshop Algorithmic Found. Robot.*, page to appear, 1998. [rw-ctdcc-98]

J. Reif. See also [806, 1368, 1369, 2695, 2698, 2699, 4371, 5254, 10572, 10970].

11113 J. H. Reif. A topological approach to dynamic graph connectivity. *Inform. Process. Lett.*, 25:65–70, 1987. [r-tadgc-87]

11114 J. H. Reif. An optimal parallel algorithm for integer sorting. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 496–504, 1985. [r-opais-85]

11115 J. H. Reif. Complexity of the generalized movers problem. In J. Hopcroft, J. Schwartz, and Micha Sharir, editors, *Planning, Geometry and Complexity of Robot Motion*, pages 267–281. Ablex Publishing, Norwood, NJ, 1987. [r-cgmp-87] *Succeeds:* r-cmpg-79.

11116 J. H. Reif. Complexity of the mover's problem and generalizations. In *Proc. 20th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 421–427, 1979. [r-cmpg-79] *Precedes:* r-cgmp-87.

11117 J. H. Reif. *Synthesis of Parallel Algorithms*. Morgan Kaufmann Publishers, Inc., San Mateo, CA, 1993. [r-spa-93]

11118 J. H. Reif and S. Sen. An efficient output-sensitive hidden-surface removal algorithm and its parallelization. Technical report, CS Dept., Duke U., Durham, NC 27706, USA, 1988. [rs-eoshs-88t]

11119 J. H. Reif and S. Sen. An efficient output-sensitive hidden-surface removal algorithms and its parallelization. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 193–200, 1988. [rs-eoshs-88i] *Cites:* cg-vippg-85, mn-dfc-86, cs-vppt-86, m-ss-84, m-mdscg-84, ps-cgi-85, c-tpca-82, m-wcohs-86, w-tsshl-83, lp-lppsi-77, p-ortap-79, cd-icott-87, m-awcdt-81, n-flsah-85, s-tsbhl-81, g-pahle-87, acg-cdctd-87, sss-cthsa-74, ZZZ.

11120 J. H. Reif and S. Sen. Optimal parallel algorithms for computational geometry. Report CS-1988-1, Dept. Comput. Sci., Duke Univ., Durham, NC, 1988. [rs-opacg-88]

11121 J. H. Reif and S. Sen. Optimal parallel randomized algorithms for three-dimensional convex hulls and related problems. *SIAM J. Comput.*, 21:466–485, 1992. [rs-oprat-92]

11122 John H. Reif and Sandeep Sen. Optimal randomized parallel algorithms for computational geometry. In *Proc. 1987 Internat. Conf. Parallel Process.*, pages 270–277, University Park, PA, 1987. Pennsylvania State Univ Press. [rs-orpac-87] *Keywords:* randomized parallel algorithms, computational geometry, concurrent-read exclusive write, parallel random-access machines. *Annote:* Including polygon triangulation. *Abstract:* The authors present parallel algorithms for some fundamental problems in computational geometry which have optimal running time with very high probability (approaching 1 as n yields infinity). These include planar point location, triangulation, trapezoidal decomposition, 3-D maxima, two- set dominance counting, and range-counting, among others. Most of these algorithms run on the CREW PRAM model with O(n) processors and execute in O(log n) time. Most of these algorithms use a novel data structure called the nested plane sweep tree. Random splitting is used very effectively to divide and conquer on the plane, raising the possibility of extending this technique to higher dimensions. 20 refs.

11123 John H. Reif and Sandeep Sen. Optimal randomized parallel algorithms for computational geometry. *Algorithmica*, 7(1):91–117, 1992. [rs-orpac-92] *Keywords:* randomized algorithms, parallel algorithms, crew pram, computational geometry. *Abstract:* We present parallel algorithms for some fundamental problems in computational geometry which have a running time of O(log n) using n processors, with very high probability (approaching 1 as n yields infinity). These include planar-point location, triangulation, and trapezoidal decomposition. We also present optimal algorithms for three-dimensional maxima and two-set dominance counting by an application of integer sorting. Most of these algorithms run on a CREW PRAM model and have optimal processor-time product which improve on the previously best-known algorithms of Atallah and Goodrich [5] for these problems. The crux of these algorithms is a useful data structure which emulates the plane- sweeping paradigm used for sequential algorithms. We extend some of the techniques used by Reischuk [26] and Reif and Valiant [25] for flashsort algorithm to perform divide and conquer in a plane very efficiently leading to the improved performance by our approach. (Author abstract) 28 Refs.

11124 John H. Reif and Sandeep Sen. Parallel computational geometry: An approach using randomization. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 765–828. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [rs-pcgau-00] *Annote:* Chapter 18 of su-hcg-00.

11125 J. H. Reif and S. Sen. Polling: a new randomized sampling technique for computational geometry. In *Proc. 21st Annu. ACM Sympos. Theory Comput.*, pages 394–404, 1989. [rs-pnrst-89] *Comments:* To appear in SIAM J. Comput. as Optimal parallel algorithms for 3D convex hulls and related problems.

11126 J. H. Reif and S. Sen. Randomized algorithms for binary search and load balancing on fixed connection networks with geometric applications. In *Proc. 2nd ACM Sympos. Parallel Algorithms Architect.*, pages 327–337, 1990. [rs-rabsl-90]

11127 J. H. Reif and S. Sen. Randomized algorithms for binary search and load balancing on fixed connection networks with geometric applications. *SIAM J. Comput.*, 23(3):633–651, 1994. [rs-rabsl-94]

11128 J. H. Reif and Micha Sharir. Motion planning in the presence of moving obstacles. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 144–154, 1985. [rs-mppmo-85] *Keywords:* motion planning, lower bounds, algebraic geometry. *Precedes:* rs-mppmo-94.

11129 J. H. Reif and J. A. Storer. 3-dimensional shortest paths in the presence of polyhedral obstacles. In *Proc. 13th Internat. Sympos. Math. Found. Comput. Sci.*, volume 3:24 of *Lecture Notes Comput. Sci.*, pages 85–92. Springer-Verlag, 1988. [rs-dsppp-88] *Succeeds:* rs-spesp-85.

11130 J. H. Reif and J. A. Storer. A single-exponential upper bound for finding shortest paths in three dimensions. Technical Report, ?? [rs-seubf-??] *Comments:* To appear, JACM. The original report was broken into two papers. *Succeeds:* rs-spesp-85.

11131 J. H. Reif and J. A. Storer. A single-exponential upper bound for finding shortest paths in three dimensions. *J. ACM*, 41(5):1013–1019, 1994. [rs-seubf-94] *Succeeds:* rs-spesp-85.

11132 J. H. Reif and J. A. Storer. Minimizing turns for discrete movement in the interior of a polygon. *Internat. J. Robot. Autom.*, ??:182–193, 1987. [rs-mtdmi-87]

11133 J. H. Reif and J. A. Storer. Shortest paths in Euclidean spaces with polyhedral obstacles. Report CS-85-121, Dept. Comput. Sci., Brandeis Univ., Waltham, MA, 1985. [rs-spesp-85] *Precedes:* rs-dsppp-88.

11134 John H. Reif and Stephen R. Tate. Approximate kinodynamic planning using L_2-norm dynamic bounds. *Comput. Math. Appl.*, 27(5):29–44, 1994. [rt-akpul-94] *Succeeds:* rt-akpul-89.

11135 J. H. Reif, J. D. Tyger, and A. Yoshida. The computability and complexity of optical beam tracing. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 106–115, 1990. [rty-ccobt-90] *Keywords:* ray tracing, complexity theory.

11136 J. H. Reif and L. G. Valiant. A logarithmic time sort for linear size networks. *J. ACM*, 34(1):60–76, 1987. [rv-ltsls-87]

11137 J. H. Reif and H. Wang. On-line navigation through weighted regions. Technical report, Dept. Computer Science, Duke University, 1993. [rw-olntr-93] *Comments:* Presented at the fall workshop, October 1993. Previous title: On-Line Navigation Through Regions of Variable Densities.

J. H. Reif. See also [1603, 2700, 6912, 7761, 7762, 8143, 9620, 10968, 10971, 12549, 12550].

M. Reif. See also [7389, 7390].

11138 G. Reinelt. Fast heuristics for large geometric traveling salesman problems. *ORSA J. Comput.*, 4:206–217, 1992. [r-fhlgt-92]

G. Reinelt. See also [2274, 3272, 7646, 7647].

11139 D. Reiner, M. Brodie, G. Brown, M. Chilenskas, M. Friedell, D. Kramlich, J. Lehman, and A. Rosenthal. A database design and evaluation workbench: Preliminary report. In *Proc. Internat. Conf. on Systems Development and Requirements Specification*, 1984. [rbbcfklr-ddewp-84] *Keywords:* graph drawing.

11140 D. Reiner and G. Brown. Heuristic layout for DDEW ER+ diagrams, 1985. [rb-hlded-85] *Keywords:* graph drawing.

11141 D. Reiner, G. Brown, M. Friedell, J. Lehman, R. McKee, P. Rheingans, and A. Rosenthal. A database designer's workbench. In S. Spaccapietra, editor, *Entity-Relationship Approach: Proc. 5th Internat. Conf. on Entity-Relationship Approach (Dijon France 1987)*, pages 347–360, New York, NY, 1987. North-Holland. [rbflmrr-ddw-87] *Keywords:* graph drawing.

J. Reinfelds. See also [7916].

11142 E. Reingold and J. Tilford. Tidier drawing of trees. *IEEE Trans. Softw. Eng.*, SE-7(2):223–228, 1981. [rt-tdt-81] *Keywords:* graph drawing.

E. Reingold. See also [5628].

11143 E. M. Reingold. On the optimality of some set algorithms. *J. ACM*, 19:649–659, 1972. [r-ossa-72]

11144 E. M. Reingold, J. Nievergelt, and N. Deo. *Combinatorial Algorithms: Theory and Practice*. Prentice Hall, Englewood Cliffs, NJ, 1977. [rnd-catp-77] *Keywords:* graph drawing.

11145 E. M. Reingold and K. J. Supowit. Probabilistic analysis of divide-and-conquer heuristics for minimum weighted Euclidean matching. *Networks*, 13:49–66, 1983. [rs-padch-83] *Keywords:* matchings, average-case analysis, divide-and-conquer.

11146 E. M. Reingold and R. E. Tarjan. On a greedy heuristic for complete matching. *SIAM J. Comput.*, 10:676–681, 1981. [rt-ghcm-81]

E. M. Reingold. See also [552, 6039, 10145, 12650–12652].

R. E. Reinke. See also [10777].

11147 R. Reischuk. Probabilistic parallel algorithms for sorting and selection. *SIAM J. Comput.*, 14(2):396–409, May 1985. [r-ppass-85]

R. Reischuk. See also [3519].

D. I. Reisis. See also [8413].

S. Reisner. See also [8963].

S. Reiss. See also [4266].

11148 S. P. Reiss. 3-D visualization of program information. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 12–24. Springer-Verlag, 1995. [r-3dvpi-95] *Keywords:* graph drawing, 3D.

11149 Steven P. Reiss. A conceptual programming environment. In *Proc. 9th Intl. Conf. on Software Engineering*, 1987. [r-cpe-87]

11150 S. P. Reiss. A framework for abstract 3d visualization. In *Proc. IEEE Sympos. on Visual Languages*, 1993. [r-fa3v-93] *Keywords:* graph drawing.

11151 Steven P. Reiss. A retrospective view of the FIELD programming environment. Brown University, submitted for publication, 1994. [r-rvfpe-94]

11152 S. P. Reiss. An engine for the 3D visualization of program information. *J. Visual Lang. Comput.*, 6(3):299–323, 1995. (special issue on Graph Visualization, edited by I. F. Cruz and P. Eades). [r-e3vpi-95] *Keywords:* graph drawing, 3D, system, software visualization. *Succeeds:* r-3dvpi-95.

11153 Steven P. Reiss. *FIELD: A Friendly Integrated Environment for Learning and Development*. Kluwer, 1994. [r-ffiel-94]

11154 Steven P. Reiss. Fragments: A mechanism for low cost data integration. Brown U. Computer Science Tech Report, May 1995. [r-fmlcd-95]

11155 Steven P. Reiss. GARDEN tools: support for graphical programming. In *Proc. Workshop on Advanced Software Development Environments*, 1986. [r-gtsgp-86]

11156 S. P. Reiss. Integration mechanisms in the FIELD environment. Technical Report CS-88-18, Department of Computer Science, Brown University, 1988. [r-imfe-88] *Keywords:* graph drawing.

11157 Steven P. Reiss. Presentation and editing of structured 3-D graphics. *Proc. HCI '93*, ??, August 1993. [r-pes3g-93]

11158 Steven P. Reiss. Simplifying data integration: the design of the Desert software development environment. In *Proc. 18th Intl Conf on Software Engineering*, pages 398–407, 1996. [r-sdidd-96]

11159 Steven P. Reiss. Visual languages and the GARDEN system. In *Proc. Intl. Workshop on Visual Aids To Programming*, 1986. [r-vlgs-86]

11160 Steven P. Reiss. Working in the GARDEN garden environment for conceptual programming. *IEEE Softw.*, 4(6):16–27, 1987. [r-wgecp-87]

11161 Steven P. Reiss and Isabel F. Cruz. Practical software visualization. *Proc. CHI Workshop on Program Visualization*, ??, April 1994. [rc-psv-94]

11162 Steven P. Reiss, Eric J. Golin, and Robert V. Rubin. Prototyping visual languages with the GARDEN system. In *Proc. IEEE Symp. on Visual Languages*, 1986. [rgr-pvlgs-86]

11163 S. P. Reiss, S. Meyers, and C. Duby. Using GELO to visualize software systems. In *Proc. UIST*, pages 149–157, 1989. [rmd-ugvss-89] *Keywords:* graph drawing.

11164 S. P. Reiss and J. N. Pato. Displaying program and data structures. In *Proc. 20th Hawaii Internat. Conf. on System Sciences*, 1987. [rp-dpds-87] *Keywords:* graph drawing.

11165 Steven P. Reiss and Manojit Sarkar. Generating program abstractions using an object-oriented database. Brown University Department of Computer Science, 1992. [rs-gpauo-92]

Steven P. Reiss. See also [1539, 4304, 4307, 4470, 8690, 9555, 9556, 11652].

11166 D. B. Reister and F. G. Pin. Time-optimal trajectories for mobile robots with two independently driven wheels. *Internat. J. Robot. Res.*, 13:38–54, 1994. [rp-totmr-94] *Annote:* related to [3094], but uses methods of optimal control.

11167 R. Reiterman, V. Rödel, and E. Šiňajová. Embeddings of graphs in Euclidean spaces. *Discrete Comput. Geom.*, 4:349–364, 1989. [rrs-eges-89]

A. Rema. See also [8364].

E. Remila. See also [1546].

Peter M. Remmele. See also [6010].

Baltasar Cuevas Renaud. See also [10562].

11168 F. Rendl. On the Euclidean assignment problem. *J. Comput. Appl. Math.*, 23:257–265, 1988. [r-eap-88] *Keywords:* optimization, expected-case analysis. *Comments:* replaces the techreport r-eap-87. *Annote:* linear-time heuristic for the MAXIMUM bipartite matching between two sets of n points in the unit square with an abolute error of $O(n^{5/6})$. For uniformly distributed points, the z of the value of the maximum matching satisfies $\lim_{n\to\infty} = (\sqrt{3} + \log(1+\sqrt{2}))/3$ almost surely.

11169 F. Rendl and G. Woeginger. Reconstructing sets of orthogonal line segments in the plane. Technical report, Tecnische Univ. Graz, Graz, Austria, 1990. [rw-rsols-90]

11170 J. Renegar. A faster PSPACE algorithm for deciding the existential theory of the reals. In *Proc. 29th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 291–295, 1988. [r-fpade-88]

11171 J. Renegar. On the computational complexity and geometry of the first order theory of the reals. Technical Report 853, School Oper. Res. Indust. Engrg., Cornell Univ., Ithaca, NY, July 1989. [r-ccgfo-89]

11172 J. Renegar. On the computational complexity and geometry of the first order theory of the reals. *J. Symbolic Comput.*, 13(3):255–352, 1992. [r-ccgfo-92]

11173 R. J. Renka. Algorithm 623: Interpolation on the surface of a sphere. *ACM Trans. Math. Softw.*, 10(4):437–439, 1984. [r-a623i-84] *Succeeds:* r-idss-84.

11174 R. J. Renka. Algorithm 624: Triangulation and interpolation of arbitrary distributed points in the plane. *ACM Trans. Math. Softw.*, 10:440–442, 1984. [r-a624t-84]

11175 R. J. Renka. Interpolation of data on the surface of a sphere. *ACM Trans. Math. Softw.*, 10(4):417–436, 1984. [r-idss-84] *Precedes:* r-a623i-84. *Annote:* constructs Delaunay triangulation on sphere surface using iterative (flip) algorithm; used to fit C^1 surface; $O(n^2)$ time.

R. J. Renka. See also [3377, 3378].

11176 R. L. Renka and A. K. Cline. A triangle-based C^1 interpolation method. *Rocky Mountain J. Math.*, 14(1):223–238, 1984. [rc-tbcim-84]

R. L. Renka. See also [3379].

11177 B. Rennie and A. Dobson. Upper bounds for the lengths of Davenport–Schinzel sequences. *Utilitas Math.*, 8:181–185, 1975. [rd-ublds-75]

11178 A. Rényi and R. Sulanke. Über die konvexe Hülle von n zufällig gerwähten Punkten I. *Z. Wahrsch. Verw. Gebiete*, 2:75–84, 1963. [rs-udkhv-63]

11179 A. Rényi and R. Sulanke. Zufällige konvexe Polygone in einem Ringgebiet. *Z. Wahrsch. Verw. Gebiete*, 9:146–157, 1968. [rs-zkper-68]

A. Renyi. See also [4999].

11180 Kevin J. Renze and James H. Oliver. Generalized unstructured decimation. *IEEE Comput. Graph. Appl.*, 16(6):24–32, November 1996. [ro-gud-96] *Keywords:* surface simplification, volume decimation, irregular grids.

11181 T. W. Reps. *Generating Language-Based Environments*. MIT Press, 1984. [r-glbe-84]

11182 T. W. Reps and T. Teitelbaum. *The Synthesizer Generator*. Springer-Verlag, 1989. [rt-sg-89]

11183 A. Requicha. Representations of rigid solid objects. In *Comput. Aided Design*, volume 89 of *Lecture Notes Comput. Sci.*, pages 2–78. Springer-Verlag, 1980. [r-rrso-80]

A. Requicha. See also [11404, 11405].

11184 A. A. Requicha and H. B. Voelcker. Solid modeling: A historical summary and contemporary assessment. *IEEE Comput. Graph. Appl.*, 2(2):9–24, March 1982. [rv-smhsc-82]

11185 A. A. G. Requicha. Mathematical meaning and computational representation of tolerance specifications. In *Proc. 1993 Int. Forum on Dimensional Tolerancing and Metrology*, pages 61–68, 1993. [r-mmcrt-93]

11186 A. A. G. Requicha. Mathematical models of rigid solid objects. Report TM-28, College Engrg. Appl. Sci., Univ. Rochester, Rochester, NY, 1979. [r-mmrso-79]

11187 A. A. G. Requicha. Representation of tolerances in solid modeling: Issues and alternative approaches. In M. S. Pickett and J. W. Boyse, editors, *Solid Modeling by Computers*. Plenum Publishers Corp., 1984. [r-rtsmi-84]

11188 A. A. G. Requicha. Representations of rigid solids: theory, methods, and systems. *ACM Comput. Surv.*, 12:437–464, 1980. [r-rrstm-80]

11189 A. A. G. Requicha and R. B. Tilove. Mathematical foundations of constructive solid geometry: general topology of closed regular sets. Report TM-27, College Engrg. Appl. Sci., Univ. Rochester, Rochester, NY, 1978. [rt-mfcsg-78]

11190 A. A. G. Requicha and H. B. Voelcker. Boolean operations in solid modelling: boundary evaluation and merging algorithms. Report ??, College Engrg. Appl. Sci., Univ. Rochester, Rochester, NY, 1984. [rv-bosmb-84]

11191 A. A. G. Requicha and H. B. Voelcker. Boolean operations in solid modelling: boundary evaluation and merging algorithms. *Proc. IEEE*, 73(1), 1985. [rv-bosmb-85]

11192 A. A. G. Requicha and H. B. Voelcker. Constructive solid geometry. Report TM-25, Production Automat. Project, Univ. Rochester, Rochester, NY, 1980. [rv-csg-80]

11193 A. A. G. Requicha and H. B. Voelcker. Solid modeling: Current status and research directions. *IEEE Comput. Graph. Appl.*, 3:25–37, October 1983. [rv-smcsr-83]

A. A. G. Requicha. See also [322, 8656, 8657, 11409, 12921, 13278].

E. K. Ressler. See also [2696].

G. Ressler. See also [2697].

11194 F. Reuleaux. *The Kinematics of Machinery*. Macmilly and Company, 1876. Republished by Dover in 1963. [r-km-76]

11195 Jean-Pierre Reveilles. Mathematical foundations of discrete geometry. In *Abstracts 9th European Workshop Comput. Geom.*, pages 27–30. FernUniversität Hagen, 1993. [r-mfdg-93]

P. Z. Revesz. See also [3248].

11196 C. Rey and R. Ward. On determining the on-line minimax linear fit to a discrete point set in the plane. *Inform. Process. Lett.*, 24:97–101, 1987. [rw-dolml-87]

Pedro Reyes. See also [5802].

11197 C. W. Reynolds. Flocks, herds, and schools: A distributed behavioral model. *Comput. Graph.*, 21(4):25–34, 1987. Proc. SIGGRAPH '87. [r-fhsdb-87] *Keywords:* bird, fish, aggregate motion, particle system, actor, flight, behavioral animation, constraints, path, planning.

11198 M. Rezayat. Mid-surface abstraction from 3d solid models: General theory and applications. *Comput. Aided Design*, 28(11):905–915, November 1996. [r-msa3d-96]

11199 P. de Rezende and W. Jacometti. Geolab: An environment for development of algorithms in computational geometry. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 175–180, 1993. [rj-gedac-93] *Cites:* ra-aeaa-, b-aa-87, b-zsaam-92, rj-agaug-93, ey-dlge-88, j-guapd-92, mn-lledt-89a, s-ooweg-90, kmmns-cgw-90, s-tfsaa-90, rj-agaug-93, ZZZ.

11200 P. J. de Rezende and R. V. Amorim. Anima - An environment for algorithm animation, ?? To appear. [ra-aeaa-]

11201 P. J. de Rezende and W. R. Jacometti. Animation of geometric algorithms using GeoLab. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 401–402, 1993. [rj-agaug-93] *Keywords:* video review. *Cites:* b-aa-87, b-zsaam-92, ra-aeaa-, ey-dlge-88, j-guapd-92, k-iacgw-90, mn-lledt-89, s-ooweg-90, s-tfsaa-90, ZZZ.

11202 P. J. de Rezende and D. T. Lee. Point set pattern matching in d-dimensions. *Algorithmica*, 13:387–404, 1995. [rl-pspmd-95]

11203 P. J. de Rezende, D. T. Lee, and Y. F. Wu. Rectilinear shortest paths in the presence of rectangular barriers. *Discrete Comput. Geom.*, 4:41–53, 1989. [rlw-rsppr-89] *Succeeds:* rlw-rsprb-85.

11204 P. J. de Rezende, D. T. Lee, and Y. F. Wu. Rectilinear shortest paths with rectangular barriers. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 204–213, 1985. [rlw-rsprb-85] *Precedes:* rlw-rsppr-89. *Cites:* ahu-daca-74, b-lbact-83, d-ntpcg-59, egs-oplms-86, k-osps-83, ll-fmrdp-81, l-prp-78, lp-esppr-84, lw-apcfp-79, s-cg-78, ss-spps-84, v-atmtd-74, wpw-mtpr-74, ZZZ.

11205 G. Rhee. DNA restriction mapping from random-clone data. Technical Report WUCS-88-18, Dept. Comput. Sci., Washington Univ., St. Louis, MO, 1988. [r-drmrc-88]

P. Rheingans. See also [11141].

D. W. Rhind. See also [9106].

11206 J. E. Rhodes. Analysis and synthesis of optical images. *Amer. J. Phys.*, 21:337–343, May 1953. [r-asoi-53]

11207 W. T. Rhodes. Optical signal processing: Fourier transform and convolution/correlation. In *Proc. of SPIE*, volume 634, pages 57–63, 1986. [r-ospft-86]

W. T. Rhodes. See also [6134].

11208 D. Rhynsburger. Analytic delineation of Thiessen polygons. *Geogr. Anal.*, 5:133–144, 1973. [r-adtp-73]

C. Ribeiro. See also [3575].

C. C. Ribeiro. See also [1050, 1051, 3858, 3859].

11209 A. Ricci. A constructive geometry for computer graphics. *Comput. J.*, ??, 1972. [r-cgcg-72]

11210 A. Ricci. An algorithm for the removal of hidden lines in 3-d scenes. *Comput. J.*, 14:375–377, 1971. [r-arhl3-71]

11211 J. Rice. *Mathematical Software III*. Academic Press, New York, NY, 1977. [r-ms3-77]

11212 J. R. Rice and R. F. Boisvert. *Solving Elliptical Problems Using ELLPACK*. Springer-Verlag, New York, 1985. [rb-sepue-85]

J. Richard. See also [3742].

11213 D. Richards. Fast heuristic algorithms for rectilinear Steiner trees. *Algorithmica*, 4:191–207, 1989. [r-fhars-89]

11214 D. Richards and A. L. Liestman. Degree-constrained pyramid spanners. Technical Report TR-90-16, University of Virginia, 1990. [rl-dcps-90]

11215 D. Richards and J. S. Salowe. Mixed spanning trees in theory and practice. *Internat. J. Comput. Geom. Appl.*, 9(3):277–292, June 1999. [rs-msttp-99]

11216 D. S. Richards and J. S. Salowe. A linear-time algorithm to construct a rectilinear Steiner minimal tree for k-extremal point sets. *Algorithmica*, 7:247–276, 1992. [rs-ltacr-92]

11217 D. S. Richards and J. S. Salowe. A rectilinear Steiner minimal tree algorithm for convex point sets. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 201–212. Springer-Verlag, 1990. [rs-rsmta-90]

11218 D. S. Richards and J. S. Salowe. A simple proof of Hwang's theorem for rectilinear Steiner minimal tree. *Ann. Oper. Res.*, 33:549–556, 1991. [rs-sphtr-91]

11219 D. S. Richards and J. S. Salowe. Stacks, queues, and deques with order-statistic operations. *Acta Inform.*, 29:395–414, 1992. [rs-sqdos-92]

D. S. Richards. See also [3436, 7268, 7273].

11220 F. M. Richards. Areas, volumes, packing, and protein structure. *Annu. Rev. Biophys. Bioeng.*, 6:151–176, 1977. [r-avpps-77]

11221 F. M. Richards. The interpretation of protein structures: Total volume, group volume distributions and packing density. *Journal of Molecular Biology*, 82:1–14, 1974. [r-ipstv-74] *Annote:* Voronoi polyhedron models volume of an atom. VP calculated with $O(N^3)$ iterative algorithm.

F. M. Richards. See also [8583].

J. I. Richards. See also [10853].

11222 R. F. Richbourg. *Solving a Class of Spatial Reasoning Problems: Minimal-Cost Path Planning in the Cartesian Plane.* PhD thesis, Naval Postgraduate School, Monterey, CA, 1987. [r-scsrp-87] *Keywords:* doctoral thesis.

11223 R. F. Richbourg, N. C. Rowe, and M. J. Zyda. Exploiting capability constraints to solve global, two-dimensional path planning problems. Technical Report NPS-86-006, Department of Computer Science, Naval Postgraduate School, 1986. [rrz-eccsg-86]

11224 R. F. Richbourg, N. C. Rowe, M. J. Zyda, and R. McGhee. Solving global two-dimensional routing problems using Snell's law. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1631–1636, 1987. [rrzm-sgtdr-87]

R. F. Richbourg. See also [11452, 11453].

G. Richelli. See also [1508].

11225 M. Richetin, G. Rives, and M. Naranjo. Algorithm rapide pour la determination des k plus proches voisins. *RAIRO Inform. Theor.*, 14:369–378, 1980. [rrn-arpld-80]

11226 J. Richter-Gebert. Combinatorial obstructions to the lifting of weaving diagrams. *Discrete Comput. Geom.*, 10:287–312, 1993. [r-colwd-93]

11227 J. Richter-Gebert. Oriented matroids with few mutations. *Discrete Comput. Geom.*, 10:251–269, 1993. [r-omfm-93]

11228 J. Richter-Gebert and G. M. Ziegler. Oriented matroids. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 6, pages 111–132. CRC Press LLC, Boca Raton, FL, 1997. [rgz-om-97]

11229 J. Richter-Gebert and G. M. Ziegler. Realization spaces of 4-polytopes are universal. *Bull. Amer. Math. Soc.*, 32(4), October 1995. [rz-rspu-95]

Jürgen Richter-Gebert. See also [1593, 1594, 2286, 6818, 8276, 8277, 9784].

J. Richter. See also [2233].

11230 R. Riedinger, P. Oelhafen, M. Habar, and H. J. Guntherodt. A new realization of the global Delaunay-Voronoi tesselation in arbitrary dimension. *Zeitschrift Fur Physikalische Chemie Neue Folge*, 157(P1):47–51, 1988. [rohg-nrgdv-88] *Annote:* Insertion algorithm?

11231 R. Riedinger, P. Oelhafen, M. Habar, and H. J. Guntherodt. About the Delaunay-Voronoi tesselation. *J. Comput. Phys.*, 74(1):61–72, 1988. [rohg-advt-88] *Annote:* Circumsphere (selection) algorithm.

11232 R. Riesenfeld. Applications of B-spline approximation to geometric problems of computer-aided design. Technical Report UTEC-CS-73-126, Dept. Comput. Sci., Univ. Utah, Salt Lake City, UT, 1973. [r-absag-73]

R. Riesenfeld. See also [3406, 8474].

11233 R. F. Riesenfeld. Homogeneous coordinates and projective planes in computer graphics. *IEEE Comput. Graph. Appl.*, 1:50–55, 1981. [r-hcppc-81]

R. F. Riesenfeld. See also [1439, 6203].

R. R. Riesenfeld. See also [8475].

I. Rigoutsos. See also [1766].

Søren Riis. See also [671].

C. J. van Rijsbergen. See also [12283].

G. Rinaldi. See also [7646].

11234 R. Ringeisen, S. Stueckle, and B. Piazza. Subgraphs and bounds on maximum crossings. *Bulletin of the Institute for Combinatorics and its Applications*, 2:33–46, 1991. [rsp-sbmc-91]

R. Ringeisen. See also [10762, 10763].

11235 G. Ringel. *Map-color theorem.* Springer-Verlag, New York, NY, 1974. [r-mct-74]

A. H. G. Rinnooy Kan. See also [8538].

11236 B. D. Ripley. Modelling spatial patterns. *J. Roy. Statist. Soc. Ser. B*, 39:172–192, 1972. [r-msp-72]

11237 Samuel Rippa. Long and thin triangles can be good for linear interpolation. *SIAM J. Numer. Anal.*, 29(1):257–270, February 1992. [r-lttcb-92] *Keywords:* piecewise linear interpolation surface (plis), triangulations. *Abstract:* Given a set of data points in R**2 and corresponding data values, it is clear that the quality of a Piecewise Linear Interpolation Surface (PLIS) over triangles depends on the specific triangulation of the data points. In this paper, the question of what are good triangles (and triangulations) for linear interpolation is studied further. First, the model problem of constructing optimal triangulations for interpolating quadratic functions by PLIS is considered. Next, a new interpretation of existing error bounds for interpolating general smooth functions by PLIS is studied. The conclusion is that triangles should be long in directions where the magnitude of the second directional derivative of F is small and thin in directions where the magnitude of the second directional derivative of F is large. (Author abstract) 17 Refs.

11238 Samuel Rippa. Minimal roughness property of the Delaunay triangulation. *Comput. Aided Geom. Design*, 7:489–497, 1990. [r-mrpdt-90] *Annote:* If we use a triangulation to define a surface, the roughness measure is the l_2 norm squared of the surface. Proves that DT minimizes roughness, irrespective of height. Key point: is that if we call the distances between each vertex and the intersection of the diagonals a,b,c,d then quad is cyclic iff ac = bd.

11239 S. Rippa and B. Schiff. Minimum energy triangulations for elliptic problems. *Computer Methods in Applied Mechanics and Engineering*, 84:257–274, 1990. [rs-metep-90] *Annote:* MET is triangulation that minimizes some energy function J. Shows that DT minimizes Laplace functional. Switchings to improve triangulation. *Abstract:* We consider the family of finite element spaces of fixed dimension, defined over all triangulations of a given polygonal domain in R^2, based on a common set of nodes (vertices). A minimum energy triangulation, relative to a given elliptic problem, is a triangulation for which the finite element solution has the minimal energy. The minimum energy triangulation can be considered optimal, as it minimizes the solution error in the natural norm associated with the problem. It is shown in this paper that the well-known Delaunay triangulation of a set of points in R^2 is a minimum energy triangulation for the energy functional associated with the nonhomogeneous Laplace equation. Minimum energy triangulations may be very expensive to compute. In this paper, therefore, we present algorithms for constructing locally minimal energy triangulations and outline efficient schemes for computing suboptimal triangulations. In both cases the basic idea is to improve an initial triangulation by using local operations on the edges of the triangulation. It is shown for several model problems that such sub- minimal energy triangulations can significantly improve the quality of the approximate solution. (Author abstract) 13 Refs.

Samuel Rippa. See also [4566, 4567].

11240 J. Rippel. A non-Hamiltonian visibility graph. Technical Report 009, Smith College, 1991. [r-nhvg-91]

J. Rippel. See also [10401–10403].

11241 J. Risler. Placement of curved polygons. Report LMENS-91 -2, Laboratoire de Mathématiques, Ecole Normale Supérieure, UA 762 du CNRS, 1991. [r-pcp-91]

J.-J. Risler. See also [1610, 1611, 6212].

11242 T. Risse. Hough transform for line recognition: Complexity of evidence accumulation and cluster detection. *Computer Vision*, 46:327–345, 1989. [r-trcad-89]

11243 T. Risset and S. W. Song. A real-time systolic algorithm for on-the-fly hidden surface removal. In *Proc. 1993 Internat. Conf. Application-Specific Array Processors, Venice, Italy*, page ??, October 1993. [rs-rtsaf-93] *Keywords:* parallel computation. *Comments:* to appear.

11244 J. F. Ritt. *Differential Algebra*, volume 33 of *Colloquium Publications*. American Mathematical Society, New York, NY, 1950. [r-da-50]

11245 J. F. Ritt. *Differential Equations from the Algebraic Standpoint*, volume 14 of *Colloquium Publications*. American Mathematical Society, New York, NY, 1932. [r-deas-32]

11246 G. L. Ritter, H. B. Woodruff, S. R. Lowry, and T. L. Isenhour. An algorithm for the selective nearest neighbor decision rule. *IEEE Trans. Inform. Theory*, IT-21:665–669, 1975. [rwli-asnnd-75]

11247 I. Rival. Graphical data structures for ordered sets. In I. Rival, editor, *Algorithms and Order*, pages 3–31. Kluwer Academic Publishers, 1989. [r-gdsos-89] *Keywords:* graph drawing.

11248 I. Rival. Reading, drawing, and order. In I. G. Rosenberg and G. Sabidussi, editors, *Algebras and Orders*, pages 359–404. Kluwer Academic Publishers, 1993. [r-rdo-93] *Keywords:* graph drawing.

11249 I. Rival. The diagram. In I. Rival, editor, *Graphs and Orders*, pages 103–133. Reidel Publishing, 1985. [r-d-85] *Keywords:* graph drawing.

11250 I. Rival and J. Urrutia. Order models for motion in three-space. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 33, 1989. [ru-ommts-89] *Keywords:* motion planning.

11251 I. Rival and J. Urrutia. Representing orders on the plane by translating convex figures. *Order*, 4:319–339, 1988. [ru-roptc-88]

11252 I. Rival and R. Wille. Lattices freely generated by partially ordered sets: Which can be drawn? *J. Reine Angew. Math.*, 310:56–80, 1979. [rw-lfgpo-79] *Keywords:* graph drawing.

I. Rival. See also [454, 3679–3683, 4138, 5092, 5352, 5353, 6709, 7519, 7626, 7990, 8923, 10195–10197, 10699].

11253 Maria-Cecilia Rivara. A discussion on the triangulation refinement problem. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 42–47, 1993. [r-dtrp-93] *Cites:* bde-tpwla-92, bc-mgrfc-92, ps-cgi-85, r-ddsfa-84, r-artgs-84, r-srdas-89, r-lmmam-91, rs-lbatc-75, ir-scstp-92, r-ggb4t-87, rl-3rasa-92, s-fcbmt-80, ZZZ.

11254 M. C. Rivara. A grid generator based on 4-triangles conforming mesh-refinement algorithms. *Internat. J. Numer. Methods Eng.*, 24(7):1343–1354, 1987. [r-ggb4t-87] *Annote:* Works by subdividing triangles.

11255 M. C. Rivara. Algorithms for refining triangular grids suitable for adaptive and multigrid techniques. *Internat. J. Numer. Methods Eng.*, 20:745–756, 1984. [r-artgs-84] *Annote:* Repeatedly bisects longest side of triangle.

11256 M. C. Rivara. Design and data structure of fully adaptive multigrid, finite-element software. *ACM Trans. Math. Softw.*, 10:242–264, 1984. [r-ddsfa-84]

11257 M. C. Rivara. Local modification of meshes for adaptive and/or multigrid finite element methods. *J. Comp. Appl. Math.*, 36:79–89, 1991. [r-lmmam-91]

11258 Maria-Cecilia Rivara. New mathematical tool and techniques for the refinement and/or improvement of unstructured triangulations. In *Proc. 5th International Meshing Roundtable*, pages 77–86, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [r-nmttr-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

11259 María-Cecilia Rivara. Nondegeneracy properties of 3D longest-edge algorithms for the quality refinement of triangulations. In *Abstracts 15th European Workshop Comput. Geom.*, pages 73–75. INRIA Sophia-Antipolis, 1999. [r-np3le-99]

11260 María-Cecilia Rivara. Numerical generation of nested series of general triangular grids. In C. K. Chui, L. L. Schumaker, and F. I. Utreras, editors, *Topics in Multivariate Approximation*, pages 193–206, New York, 1987. Academic Press. [r-ngnsg-87] *Annote:* Basic idea is to split a triangle with an edge to the centre of its longest side. This can then trigger further splits to remove non conforming points. Resulting should be as good as the original one.

11261 M. C. Rivara. Selctive refinement/derefinement algorithms for sequences of nested triangulations. *Internat. J. Numer. Methods Eng.*, ??:2289–2906, 1989. [r-srdas-89]

11262 M. C. Rivara and C. Levin. A 3-D refinement algorithm suitable for adaptive and multigrid techniques. *Comm. Applied Numer. Meth.*, 8:281–290, 1992. [rl-3rasa-92]

M. C. Rivara. See also [7400].

11263 Mari'a-Cecilia Rivara and Patricio Inostroza. A discussion on mixed (longest-side midpoint insertion) Delaunay techniques for the triangulation refinement problem. In *Proc. 4th International Meshing Roundtable*, pages 335–346, Albuquerque, NM, 1995. Sandia National Laboratories. [ri-dmlsm-95]

Stéphane Riveière. See also [4498].

11264 E. Rivera-Campo. A note on separation of plane convex sets. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 78–80, 1990. [r-nspcs-90] *Cites:* t-sppcs-79, ZZZ.

11265 Eduardo Rivera-Campo and Virginia Urrutia-Galicia. A note on the tree graph of a set of points in the plane. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 46–49, 1997. [ru-ntgsp-97]

11266 E. Rivera-Campo and V. Urrutia-Galicia. Hamilton cycles in the path graph of a set of points in convex position. *Comput. Geom. Theory Appl.*, 18:65–72, 2001. [ru-hcpgs-01]

11267 E. Rivera-Campo and J. Urrutia. A property of convex polygons. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 203–206, August 1991. [ru-pcp-91] *Cites:* ers-ccsno-90, f-icd-77, hk-spcs-90, r-nspcs-90, t-sppcs-79, ZZZ.

Eduardo Rivera-Campo. See also [3684–3694, 5086, 5087, 10529].

11268 J. Rivero and A. Inselberg. Extensión al anásis del espacio de fase de sistemas dinaámicos por las coordenadas paralelas. Report ??, IBM Los Angeles Sci. Center, Los Angeles, CA, 1984. [ri-eaade-84]

G. Rives. See also [11225].

R. Rivest. See also [2101, 5346, 5347, 7282, 8865].

11269 R. L. Rivest. Analysis of associative retrieval algorithms. Report STAN-CS-74-415, Dept. Comput. Sci., Stanford Univ., Stanford, CA, 1974. [r-aara-74]

11270 R. L. Rivest. On hash-coding algorithms for partial-match retrieval. In *Proc. 15th Annu. IEEE Sympos. Switching Automata Theory*, pages 95–103, 1974. [r-hcapm-74] *Precedes:* r-pmra-76.

11271 R. L. Rivest. On the optimality of Elias's algorithm for performing best-match searches. In *Information Processing*, pages 678–681. North-Holland, 1974. [r-oeapb-74]

11272 R. L. Rivest. Partial-match retrieval algorithms. *SIAM J. Comput.*, 5:19–50, 1976. [r-pmra-76] *Succeeds:* r-hcapm-74.

11273 R. L. Rivest. The "PI" (placement and interconnect) system. In *Proc. 19th ACM-IEEE Design Automation Conf.*, pages 475–481, 1982. [r-ppis-82]

R. L. Rivest. See also [1301, 1899, 1900, 2105, 3548, 3549, 8866, 8869, 8870, 13780, 13781].

11274 S. Rivière. *Calculs de Visibilité dans un Environnement 2D*. PhD thesis, Université Joseph Fourier, Grenoble, France, 1997. [r-cve2d-97] *Keywords:* doctoral thesis.

11275 S. Rivière. Comparison d'algorithmes de calcul de graphes de visibilité. Rapport du stage, DEA IMA, 1993. [r-cddcd-93]

11276 Stéphane Rivière. Dealing with degeneracies and numerical imprecisions when computing visibility graphs. In *Abstracts 12th European Workshop Comput. Geom.*, pages 35–38. Universität Münster, 1996. [r-ddnic-96]

11277 S. Rivière. Dynamic visibility in polygonal scenes with the visibility complex. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 421–423, 1997. [r-dvpsv-97] *Cites:* dy-rchyd-93, gs-iuvms-96, ol-mcp-81, pv-vc-96, r-vc2dp-97, ZZZ.

11278 S. Rivière. Experimental comparison of two algorithms for computing visibility graphs. Manuscript, ??, 1993. [r-ectac-93]

11279 Stéphane Rivière. Topologically sweeping the visibility complex of polygonal scenes. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C36–C37, 1995. [r-tsvcp-95] *Keywords:* visibility graph optimal algorithm, experimental. *Cites:* eg-tsa-86, gm-osacv-87, ow-nmcvg-88, pv-savgc-93, pv-vc-93, pv-cvgpt-95, r-ectac-93, ZZZ.

11280 S. Rivière. *Visibility computations in 2D polygonal scenes*. PhD thesis, Université Joseph Fourier, Grenoble, France, 1997. [r-vc2dp-97] *Keywords:* doctoral thesis.

11281 Stéphane Rivière. Walking in the visibility complex with applications to visibility polygons and dynamic visibility. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 147–152, 1997. [r-wvcav-97]

11282 S. Rivière, R. Orti, F. Durand, and C. Puech. Using the visibility complex for radiosity computation. In *ACM Workshop Appl. Comput. Geom.*, May 1996. [rodp-uvcrc-96]

S. Rivière. See also [693, 4499].

11283 I. Rivin. A characterization of ideal polyhedra in hyperbolic 3-space. Preprint, ??, 1992. [r-ciph3-92]

11284 Igor Rivin. Euclidean structures on simplicial surfaces and hyperbolic volume. *Ann. Math.*, 139(3):553–580, 1994. [r-esssh-94]

11285 I. Rivin. *On geometry of convex polyhedra in hyperbolic 3-space*. Ph.D. thesis, Princeton Univ., Princeton, NJ, 1986. [r-gcph3-86] *Keywords:* doctoral thesis.

11286 I. Rivin. On the geometry of ideal polyhedra in hyperbolic 3-space. *Topology*, ??, ?? To appear. [r-giph3-]

11287 I. Rivin. Some applications of the hyperbolic volume formula of Lobachevskii and Milnor. preprint, 1992. [r-ahvfl-92]

11288 I. Rivin and W. D. Smith. Ideal polyhedra in h^3 are determined by their dihedral angles. manuscript, NEC Research Institute, 1991. [rs-iphdd-91]

11289 I. Rivin and W. D. Smith. Inscribable graphs. Manuscript, NEC Research Institute, Princeton, NJ, 1991. [rs-ig-91]

I. Rivin. See also [4229, 6990–6992].

11290 T. Rivlin. *An Introduction to the Approcimation of Functions*. Dover, New York, 1969. [r-iaf-69]

11291 T. J. Rivlin. Approximating by circles. *Computing*, 21:93–104, 1979. [r-ac-79]

11292 J. W. Roach, P. Paripati, and J. Wright. A CAD system based on spherical dual representation. *IEEE Comput.*, 20(8):37–44, 1987. [rpw-csbsd-87]

11293 J. W. Roach, J. Wright, and V. Ramesh. Spherical dual images: A 3-D representation method that combines dual space and Gaussian spheres. In *Proceedings of Workshop on Computer Vision: Representation and Control*, pages 236–241, 1986. [rwr-sdi3d-86]

J. W. Roach. See also [6749, 6750].

Eugenio Roanes-Lozano. See also [43].

11294 L. Robbiano. On the theory of graded structures. *J. Symbolic Comput.*, 2:139–170, 1986. [r-tgs-86]

11295 L. Robbiano. Term orderings on the polynomial ring. In *European Conference on Computer Algebra*, volume 20 of *Lecture Notes Comput. Sci.*, pages 513–517. Springer-Verlag, 1985. [r-topr-85]

H. Robbins. See also [3652].

11296 M. O. Robbins and P. A. Thompson. Critical velocity of stick-slip motion. *Science*, 253:916–925, 1991. [rt-cvssm-91]

S. Robbins. See also [160, 1979–1982, 5081].

S. M. Robbins. See also [1991].

11297 J. Robert and G. Toussaint. Computational geometry and facility location. Technical Report SOCS 90.20, McGill Univ., Montreal, PQ, 1990. [rt-cgfl-90]

11298 J.-M. Robert. Geometric orderings and Helly-type theorem for intersecting translates in the plane. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 61–66, 1993. [r-gohtt-93] *Precedes:* r-goita-97. *Cites:* ab-eact-87, es-mnwsn-90, ew-spdtl-89, gpw-gtt-93, h-uegt-57, k-cgct-86, kll-gpct-86, kll-gpdt-87, kll-gpdt-87, t-pgcct-89, w-ghtti-90, w-gpcc-90, ZZZ.

11299 J.-M. Robert. Geometric orderings of intersecting translates and their applications. *Comput. Geom. Theory Appl.*, 7:59–72, 1997. [r-goita-97] *Succeeds:* r-gohtt-93.

11300 J.-M. Robert and G. Toussaint. Linear approximation of simple objects. In *Proc. 9th Sympos. Theoret. Aspects Comput. Sci.*, volume 577 of *Lecture Notes Comput. Sci.*, pages 233–244. Springer-Verlag, 1992. [rt-laso-92] *Precedes:* rt-laso-94.

11301 J.-M. Robert and G. Toussaint. Linear approximation of simple objects. *Comput. Geom. Theory Appl.*, 4:27–52, 1994. [rt-laso-94] *Succeeds:* rt-laso-92.

J.-M. Robert. See also [1171, 1959, 2171, 2172, 3673, 3674, 5088, 5089, 6011, 6411, 6412, 7141–7143].

11302 Fred S. Roberts. Graph theory and its applications to problems of society. *SIAM, CBMS-NSF REgional Conf. Series in Applied Mathematics, Philadelphia*, ??, 1978. [r-gtaps-78]

11303 F. S. Roberts. Indifference graphs. In F. Harary, editor, *Proof Techniques in Graph Theory*, pages 139–146. Academic Press, New York, 1969. [r-ig-69]

F. S. Roberts. See also [1314].

J. Roberts. See also [6406].

11304 S. Roberts. On the figures formed by the intercepts of a system of straight lines in a plane, and an analogous relations in space of three dimensions. *Proc. London Math. Soc.*, 19:405–422, 1888. [r-ffiss-88]

A. Robertson. See also [5976].

E. L. Robertson. See also [7823].

11305 G. G. Robertson, J. D. Mackinlay, and S. K. Card. Cone trees: Animated 3D visualizations of hierarchical information. In *Proc. ACM Conf. on Human Factors in Computing Systems*, pages 189–193, 1991. [rmc-cta3v-91] *Keywords:* graph drawing.

11306 H. G. Robertson. Curvature and arc length. *SIAM J. Appl. Math.*, 19:697–699, 1970. [r-cal-70]

11307 N. Robertson, D. P. Sanders, P. Seymour, and R. Thomas. Efficiently four-coloring planar graphs. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, pages 571–575, 1996. [rsst-efcpg-96]

11308 N. Robertson and P. D. Seymour. Graph minors II. Algorithmic aspects of tree width. *J. Algorithms*, 7:309–322, 1986. [rs-gm2aa-86]

11309 G. Robins. The ISI grapher: A portable tool for displaying graphs pictorially. Technical Report ISI/RS-87-196, Information Sciences Inst., University of Southern California, 1987. also in Proc. Symboliikka '87 Helsinki Finland August 1987. [r-igptd-87] *Keywords:* graph drawing.

11310 G. Robins and J. S. Salowe. Low-degree minimum spanning trees. *Discrete Comput. Geom.*, 14:151–165, 1995. [rs-ldmst-95]

11311 G. Robins and J. S. Salowe. On the maximum degree of minimum spanning trees. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 250–258, 1994. [rs-mdmst-94] *Cites:* bgmrz-tsees-93, bgrz-ngnos-93, clr-ia-90, cfg-upg-90, de-eaahc-84, gj-cigtn-79, gp-1stp-87, gh-hmstp-85, gs-canen-83, h-tdicl-91, hvw-narst-90, kl-bpss-78, kr-ncist-92, k-sssgt-56, pv-tgprt-84, pl-pdavs-88, p-scnsg-57, sw-ersta-93, t-nrtpc-83, w-cbdd-65, ZZZ.

G. Robins. See also [1450, 1451, 1506, 7162, 7163, 7662–7664].

D. J. Robinson. See also [807, 4345, 12093].

D. M. Robinson. See also [9537].

G. P. Robinson. See also [3437].

J. S. Robinson. See also [8779].

11312 J. T. Robinson. The k-d-B-tree: A search structure for large multidimensional dynamic indexes. Report CMU-CS-81-106, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1981. [r-kdbts-81t] *Precedes:* r-kdbts-81i.

11313 J. T. Robinson. The k-d-b-tree: a search structure for large multidimensional dynamic indexes. In *Proc. ACM SIGACT-SIGMOD Conf. Principles Database Systems*, pages 10–18, 1981. [r-kdbts-81i] *Succeeds:* r-kdbts-81t.

11314 R. M. Robinson. Undecidability and nonperiodicity of tilings of the plane. *Invent. Math.*, 12:177–909, 1971. [r-untp-71]

A. D. Robison. See also [4746].

J. M. Robson. See also [5318].

M. Robson. See also [1546].

11315 Michel Roch, Jacques Weber, and Christian Pellegrini. 3D images of molecular properties by triangulation of contour lines. *Comput. Graph. Forum*, 7(3):195–202, September 1988. [rwp-3dimp-88] *Annote:* I can't understand their algorithm.

11316 Jairo Rocha. Polygonal decomposition into singular and regular regions. In *Abstracts 15th European Workshop Comput. Geom.*, pages 185–190. INRIA Sophia-Antipolis, 1999. [r-pdsrr-99]

M. Roche. See also [7062].

11317 R. T. Rockafellar. *Convex Analysis*. Princeton University Press, 1970. [r-ca-70]

11318 A. Rockwood, K. Heaton, and T. Davis. Real-time rendering of trimmed surfaces. In *Proc. SIGGRAPH '89*, pages 107–117, 1989. [rhd-rtrts-89]

11319 A. Rockwood and J. Owen. Blending surfaces in solid geometric modeling. In *SIAM Conf. on Geometric Modeling and Robotics*, 1985. [ro-bssgm-85]

M. Rodeh. See also [7410].

V. Rödel. See also [11167].

S. Rodger. See also [5548, 5549].

J. R. Rodgers. See also [1845].

V. Rödl. See also [5465].

11320 A. Rodriguez-Chia, S. Nickel, and J. Puerto. A flexible approach to location problems. Report in Wirtschaftsmathematik 26, University of Kaiserslautern, Department of Mathematics, 1997. [rnp-falp-97]

A. Rodriguez-Chia. See also [10127].

D. Roelants van Baronaigien. See also [9018].

L. E. Roemer. See also [11912].

11321 C. A. Rogers. Covering a sphere with spheres. *Mathematika*, 10:157–164, 1963. [r-css-63]

11322 C. A. Rogers. *Packing and Covering*. Cambridge University Press, Cambridge, England, 1964. [r-pc-64] *Keywords:* book.

C. A. Rogers. See also [5096].

11323 D. F. Rogers and J. A. Adams. *Mathematical Elements for Computer Graphics*. McGraw-Hill, 1st edition, 1976. [ra-mecg-76]

11324 D. F. Rogers and J. A. Adams. *Mathematical Elements for Computer Graphics*. McGraw-Hill, New York, 2nd edition, 1990. [ra-mecg-90]

11325 H. Rogers. *Theory of Recursive Functions and Effective Computability*. McGraw-Hill, New York, 1967. [r-trfec-67]

P. Rogerson. See also [5427].

K. H. Roh. See also [3236].

11326 André Rohe. Parallele Heuristiken für sehr große Traveling Saleman Probleme. Diplomarbeit, Universität Bonn, Institut für Diskrete Mathematik, 1997. [r-phsgt-97] *URL:* http://www.or.uni-bonn.de/home/rohe/diplom.ps.gz. *Keywords:* master thesis.

11327 F. J. Rohlf. A probabilistic minimum spanning tree algorithm. *Inform. Process. Lett.*, 7:44–48, 1978. [r-pmsta-78]

11328 F. J. Rohlf. Computational efficiency of agglomerative clustering algorithms. Report RC 6831 (#29312), IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1977. [r-ceaca-77]

11329 F. J. Rohlf. Hierarchical clustering using the minimum spanning tree. *Comput. J.*, 16:93–95, 1973. [r-hcums-73]

J. H. Rohlf. See also [385].

11330 J. Rohn. Linear interval equations. *Linear Algebra and its applications*, 126:39–78, 1989. [r-lie-89]

J. Rohn. See also [10818].

11331 H. Rohnert. A dynamization of the all-pairs least cost problem. In *Proc. 2nd Sympos. Theoret. Aspects Comput. Sci.*, volume 182 of *Lecture Notes Comput. Sci.*, pages 279–286. Springer-Verlag, 1985. [r-daplc-85]

11332 H. Rohnert. A new algorithm for shortest paths avoiding convex polygonal obstacles. Report A86/02, Fachber. Inform., Univ. Saarlandes, Saarbrücken, West Germany, 1986. [r-naspa-86]

11333 H. Rohnert. Moving a disc between polygons. In *Proc. 1st Internat. Conf. Indust. Applied Math.*, pages 85–98, 1987. [r-mdbp-87] *Precedes:* r-mdbp-91.

11334 H. Rohnert. Moving a disc between polygons. *Algorithmica*, 6:182–191, 1991. [r-mdbp-91] *Succeeds:* r-mdbp-87.

11335 H. Rohnert. Shortest paths in the plane with convex polygonal obstacles. *Inform. Process. Lett.*, 23:71–76, 1986. [r-sppcp-86]

11336 H. Rohnert. Time and space efficient algorithms for shortest paths between convex polygons. *Inform. Process. Lett.*, 27:175–179, 1988. [r-tseas-88]

H. Rohnert. See also [4203, 4204].

Christoph Rohrer. See also [2392].

11337 A. S. Rojer. *Space-variant computer vision with a complex-logarithmic sensor geometry.* PhD thesis, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, 1989. [r-svcvc-89] *Keywords:* doctoral thesis.

11338 A. S. Rojer and E. L. Schwartz. Design considerations for a space-variant visual sensor with a complex-logarithmic sensor geometry. In *Proc. 10th IEEE Internat. Conf. Pattern Recogn.*, volume 2, pages 278–285, 1990. [rs-dcsvv-90]

11339 J. Rokne, S. Wang, and X. Wu. Optimal bipartitions of point sets. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 11–16, 1992. [rww-obps-92] *Cites:* aiks-fkpmd-91, abky-cabmm-88, a-dp-86, bh-cpcoe-89, c-acdl-83, dn-cgacp-85, eg-tsa-89, eos-calha-86, crw-gc-91, cgl-pgd-85, hs-ftp-91, mw-fobpp-91, ol-mcp-81, portap-79, ZZZ.

11340 J. Rokne and S. Z. Wang. An optimal algorithm for the set diameter problem in three dimensions. Manuscript, Dept. Comput. Sci., Univ. Calgary, Calgary, AB, June 1992. [rw-oasdp-92] *Keywords:* diameter, antipodal pair, polyhedra, three-dimensional, geometric transformations, reciprocal search.

11341 J. Rokne, S. Z. Wang, and X. Wu. The largest-volume inscribed rooted tetrahedron in a convex polyhedron. Research Report 92/471/09, Dept. Comput. Sci., Univ. Calgary, Calgary, AB, March 1992. [rww-lvirt-92] *Keywords:* design of algorithms, three-dimensional, tetrahedra, polyhedra, geometric transformations. *Abstract:* Given a polyhedron with n vertices, we present an algorithm for finding the maximum tetrahedron rooted on a face of the polyhedron in $O(n \log n)$ time. For the result we need to discuss a class of reciprocal search problems.

J. Rokne. See also [5826, 5827, 11055, 11056].

11342 J. G. Rokne, B. Wyvill, and X. Wu. Fast line scan-conversion. *ACM Trans. Graph.*, 9:376–388, 1990. [rww-flsc-90] *Keywords:* digital geometry, computer graphics, design of algorithms, approximation, incrementation, lines, two-dimensional, empirical analysis. *Annote:* "an overall gain in speed of about 4 over the original Bresenham algorithm".

J. G. Rokne. See also [1340, 13714–13716, 13786, 13787].

11343 D. Rolfsen. *Knots and Links.* Publish or Perish, Berkeley, CA, 1976. [r-kl-76]

11344 Kathleen Romanik. *Approximate Testing Theory.* Ph.D. thesis, Dept. Comput. Sci., Univ. Maryland at College Park, College Park, MD, August 1992. Technical Report CS-TR-2947/UMIACS-TR-92-89. [r-att-92] *Keywords:* doctoral thesis, probing, point probes, approximate testing.

11345 Kathleen Romanik. Directed rectangle-visibility graphs have unbounded dimension. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 163–167, 1995. [r-drvgh-95] *Keywords:* graph drawing, visibility, order. *Comments:* To appear in Discrete Appl. Math.

11346 K. Romanik. Directed vr-representable graphs have unbounded dimension. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 177–181. Springer-Verlag, 1995. [r-dvrgh-95] *Keywords:* graph drawing, visibility, order.

11347 Kathleen Romanik. Geometric probing and testing - a survey. Technical Report 95-42, DIMACS, Rutgers Univ., September 1995. [r-gpts-95t] *Keywords:* probing, testing. *Succeeds:* r-gpts-95i.

11348 Kathleen Romanik. Geometric probing and testing - a survey. In *Proc. VI Congreso Español de Geometria Computacional*, July 1995. [r-gpts-95i] *Keywords:* probing, testing. *Precedes:* r-gpts-95t.

11349 K. Romanik and S. Salzberg. Testing orthogonal shapes. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 216–222, 1992. [rs-tos-92] *Keywords:* probing, point probes, testing, orthogonal. *Precedes:* rs-tos-95.

11350 Kathleen Romanik and Steven Salzberg. Testing orthogonal shapes. *Comput. Geom. Theory Appl.*, 5:33–49, 1995. [rs-tos-95] *Keywords:* probing, point probes, testing, orthogonal. *Succeeds:* rs-tos-92.

11351 Kathleen Romanik and Sven Schuierer. Optimal robot localization in trees. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 264–273, 1996. [rs-orlt-96] *Keywords:* localization, on-line. *Cites:* bcr-sp-93, bbfy-olnr-94, brs-plue-93, brs-nugt-91, bc-olaip-93, drw-lrmt-95, gmr-rlptd-92, kp-caasu-93, k-lpmr-94, mawm-ancmr-89, py-spwm-89, sn-anpld-89, st-aelup-85, tpbhss-mbldo-90, yd-cgalr-88, ZZZ.

11352 Kathleen Romanik and Sven Schuierer. Optimal robot localization in trees. In *Abstracts 12th European Workshop Comput. Geom.*, pages 91–93. Universität Münster, 1996. [rs-orlt-96c]

11353 K. Romanik and C. Smith. Testing geometric objects. Technical Report UMIACS-TR-90-69, University of Maryland, Institute for Advanced Computer Studies, May 1990. [rs-tgo-90t] *Keywords:* probing, point probes, testing. *Precedes:* rs-tgo-90i.

11354 K. Romanik and C. Smith. Testing geometric objects. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 14–19, 1990. [rs-tgo-90i] *Keywords:* probing, point probes, testing. *Precedes:* rs-tgo-94. *Cites:* bbehw-clgcv-86, b-dscns-86, cy-sp-87, hw-ensrq-87, s-gp-88, v-tl-84, vc-ucrfe-71, ZZZ.

11355 Kathleen Romanik and Carl Smith. Testing geometric objects. *Comput. Geom. Theory Appl.*, 4:157–176, 1994. [rs-tgo-94] *Keywords:* probing, point probes, testing. *Succeeds:* rs-tgo-90i.

11356 K. Romanik and J. S. Vitter. Using computational learning theory to analyze the testing complexity of program segments. In *Proceedings of the 17th Annual IEEE International Computer Software and Applications Conference*, pages 367–373, November 1993. [rv-uclta-93] *Keywords:* random testing, software complexity, Vapnik-Chervonenkis dimension, pseudo dimension. *Comments:* To appear in Inform. Comput.

K. Romanik. See also [756–758, 2309, 2310, 4474, 4475, 5588].

K. R. Romanik. See also [9910].

11357 B. Romney, C. Godard, M. Goldwasser, and G. Ramkumar. An efficient system for analyzing assembly complexity. Manuscript, Stanford Univ., Stanford, CA, 1994. [rggr-esaac-94]

J. Rompel. See also [1759, 1760].

11358 J. T. Rompel. *Techniques for Computing with Low-Independence Randomness.* Ph.D. thesis, Dept. of EECS, M.I.T., 1990. [r-tclir-90] *Keywords:* doctoral thesis.

A. Roncato. See also [9828].

E. M. Ronchetti. See also [6630].

Didier Roncin. See also [1854].

11359 R. Ronfard and J. R. Rossignac. Triangulating multiply-connected polygons: A simple yet efficient algorithm. *Comput. Graph. Forum*, 13(3):C281–292, 1994. Proc. Eurographics '94. [rr-tmcps-94]

Y. Rong. See also [5122].

11360 C. Ronse. A bibliography on digital and computational convexity. *IEEE Trans. Pattern Anal. Mach. Intell.*, 11:181–190, 1989. [r-bdcc-89] *Keywords:* bibliography. *Abstract:* This bibliography collects over 350 references of books, papers in serial journals, and conference papers, on convexity in relation to computer science. The subject is subdivided into five topics: convexity and straightness in digital images; convex hull algorithms and their complexity; other computational problems related to convexity; miscellaneous applications; general mathematical sources. These references range in time from 1961 to September 1988.

11361 J. Rooney. A survey of representations of spatial rotation about a fixed point. *Environment and Planning B*, 4:185–210, 1977. [r-srsrf-77]

11362 T. Roos. *Dynamic Voronoi diagrams.* Ph.D. thesis, Bayerische Julius-Maximilians-Univ., Würzburg, Germany, September 1991. [r-dvd-91] *Keywords:* doctoral thesis.

11363 T. Roos. k-nearest-neighbor Voronoi diagrams for sets of convex polygons, line segments and points. In *Proc. 15th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 411 of *Lecture Notes Comput. Sci.*, pages 330–340. Springer-Verlag, 1989. [r-knnvd-89]

11364 T. Roos. k-nearest-neighbor Voronoi diagrams for sets of convex polygons, line segments, and points. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [r-knnvd-89c]

11365 T. Roos. Tighter bounds on Voronoi diagrams of moving points. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 358–363, 1993. [r-tbvdm-93] *Cites:* ar-vdmph-92, e-acg-87, fl-vdmpp-91, gs-pmgsc-85, gmr-vdmpp-92, hd-kgde-60, ii-vdmp-90, k-cddvd-80, o-cgc12-91a, r-vdds-90, r-dvd-91, r-vdds-93, ra-mphds-92, a-tddvd-91, s-cvdhd-82, ZZZ.

11366 T. Roos. Voronoi Diagramme. Master's thesis, Universität Würzburg, Würzburg, West Germany, 1988. Diploma Thesis. [r-vd-88] *Keywords:* master thesis.

11367 T. Roos. Voronoi diagrams over dynamic scenes. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 209–213, 1990. [r-vdds-90] *Cites:* agss-ltacv-87, ce-iacko-87, dl-gvdp-78, e-esaa-86, e-acg-87, f-savd-86, gkln-dvd-83, gs-pmgsc-85, hd-kgde-60, l-knnvd-82, n-cgia-88, ps-cgi-85, r-vd-88, r-knnvd-89, sh-cpp-75, y-oavds-87, ZZZ.

11368 T. Roos. Voronoi diagrams over dynamic scenes. *Discrete Appl. Math.*, 43:243–259, 1993. [r-vdds-93] *Succeeds:* r-vdds-90.

11369 T. Roos and G. Albers. Maintaining proximity in higher dimensional spaces. In *Proc. 17th Internat. Sympos. Math. Found. Comput. Sci.*, volume 629 of *Lecture Notes Comput. Sci.*, pages 483–493, August 1992. [ra-mphds-92]

11370 Thomas Roos and Hartmut Noltemeier. Dynamic Voronoi diagrams in motion planning. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 227–236. Springer-Verlag, 1991. [rn-dvdmp-91] *Annote:* 7th Intern. Workshop Comput. Geom.

11371 T. Roos and H. Noltemeier. Dynamic Voronoi diagrams in motion planning. In *Proc. 15th IFIP Conf.*, volume 180 of *Lecture Notes in Control and Information Science*, pages 102–111. Springer-Verlag, 1992. [rn-dvdmp-92]

11372 T. Roos and P. Widmayer. Computing the minimum of the k-level of an arrangement with applications. Report 185, Inst. Inform., Eidgenössische Tech. Hochschule Zürich, Zürich, Switzerland, 1992. [rw-cmkla-92]

11373 T. Roos and P. Widmayer. k-violation linear programming. *Inform. Process. Lett.*, 52:109–114, 1994. [rw-cmkla-94]

Thomas Roos. See also [459, 460, 931, 971, 974, 1688, 6010, 6407, 6408, 10121, 10124].

11374 Waldir L. Roque and Clovis Maliska Jr. Visualization of Vorononi diagrams generated by VORONOI2. In *Abstracts 10th European Workshop Comput. Geom.*, pages 8–11. Universidad de Cantabria, Santander, 1994. [rm-vvdgv-94]

11375 Lluís Ros and Frederico Thomas. Applying delta/star reductions for checking the spatial realizability of line drawings. In *Abstracts 14th European Workshop Comput. Geom.*, pages 127–129. Universitat Polytènica de Catalunya, Barcelona, 1998. [rt-adsrc-98]

C. Rosati. See also [5882].

A. W. Roscoe. See also [8250].

D. J. Rose. See also [8899].

L. L. Rose. See also [2031].

11376 D. Roselle. An algorithmic approach to Davenport–Schinzel sequences. *Utilitas Math.*, 6:91–93, 1974. [r-aadss-74]

11377 D. Roselle and R. Stanton. Results on Davenport–Schinzel sequences. In R. Mullin et al., editors, *Congressus Numer. I, Proc. Louisiana Conf. on Combinatorics, Graph Theory, and Computing*, pages 249–267, 1970. [rs-rdss-70]

11378 D. Roselle and R. Stanton. Some properties of Davenport–Schinzel sequences. *Acta Arithmetica*, 17:355–362, 1971. [rs-spdss-71]

D. Roselle. See also [12458].

S. Roseman. See also [5123].

Adi Rosen. See also [1773].

B. Rosen. See also [555].

J. B. Rosen. See also [13728].

R. H. Rosen. See also [6319].

A. Rosenberg. See also [1932, 8680].

11379 A. L. Rosenberg. Three-dimensional VLSI: a case study. *J. ACM*, 30(3):397–416, 1983. [r-tdvcs-83] *Keywords:* graph drawing, 3D, orthogonal.

A. L. Rosenberg. See also [4725, 7073].

11380 B. Rosenberg and D. J. Landridge. A computational view of perception. *Perception*, 2:415–424, 1973. [rl-cvp-73]

B. Rosenberg. See also [3018–3021].

11381 C. Rosenberg. A lossy image compression algorithm based on nonuniform sampling and interpolation of image intensity surfaces. Master's thesis, Electrical Engineering and Computer Science, Mass. Inst. of Tech., 1990. [r-licab-90] *Keywords:* master thesis.

11382 I. G. Rosenberg and F. Stenger. A lower bound on the angles of triangles constructed by bisecting the longes side. *Math. Comput.*, 29:390–395, 1975. [rs-lbatc-75]

R. C. Rosenberg. See also [7082].

11383 H. Rosenberger. Order k Voronoi diagrams of sites with additive weights in the plane. M.Sc. thesis, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1988. Report UIUCDCS-R-88-1431. [r-okvds-88] *Keywords:* discrete and computational geometry, Voronoi diagrams, order-k, additive weight, combinatorial complexity, plane-sweep. *Precedes:* r-okvds-91.

11384 H. Rosenberger. Order k Voronoi diagrams of sites with additive weights in the plane. *Algorithmica*, 6:153–181, 1991. [r-okvds-91] *Succeeds:* r-okvds-88.

11385 H. Rosenberger. Topological versus geometrical plane-sweep. Manuscript, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1985. [r-tvgps-85]

11386 J. Rosenblatt and P. Seymour. The structure of homometric sets. *SIAM J. Algebraic Discrete Methods*, 3(3):343–350, 1982. [rs-shs-82]

11387 A. Rosenbloom and D. Rappaport. Moldable and castable polygons. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 322–327, 1992. [rr-mcp-92] *Precedes:* rr-mcp-94. *Cites:* cd-icott-87, hs-ompc-91, ll-ccmp-84, ps-cgi-85, ps-tspm-81, crs-mpc-90, ZZZ.

A. Rosenbloom. See also [11044].

11388 A. Rosenfeld. Connectivity in digital pictures. *J. ACM*, 17:146–160, 1970. [r-cdp-70]

11389 A. Rosenfeld. Digital geometry. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, page 73, 1992. [r-dg-92] *Cites:* ZZZ.

11390 A. Rosenfeld. Digital straight line segments. *IEEE Trans. Comput.*, C-23:1264–1269, 1974. [r-dsls-74]

11391 A. Rosenfeld and P. De La Torre. Histogram concavity analysis as an aid in threshold selection. *IEEE Trans. Syst. Man Cybern.*, SMC-13:231–235, 1983. [rd-hcaat-83]

11392 A. Rosenfeld and A. C. Kak. *Digital picture processing*, volume 1–2. Academic Press, New York, NY, 1982. [rk-dpp-82]

11393 A. Rosenfeld and J. L. Pfaltz. Sequential operations in digital picture processing. *J. ACM*, 13:471–494, 1966. [rp-sodpp-66]

11394 A. Rosenfeld, H. Samet, C. Shaffer, and R. E. Webber. Application of hierarchical data structures to geographical information systems. Computer Science TR–1197, University of Maryland, College Park, MD, June 1982. [rssw-ahdsg-82]

11395 A. Rosenfeld, H. Samet, C. Shaffer, and R. E. Webber. Application of hierarchical data structures to geographical information systems: phase ii. Computer Science Department TR–1327, University of Maryland, College Park, MD, September 1983. [rssw-ahdsg-83]

A. Rosenfeld. See also [1338, 1926, 1962, 1972, 4539, 8040–8042, 8104, 11000–11002, 11587–11593, 11596, 11597, 11683, 12018, 13490, 13702, 13703].

11396 B. A. Rosenfeld and N. D. Sergeeva. *Stereographic Projection*. Mir Publishers, Moscow, 1977. [rs-sp-77]

11397 D. J. Rosenkrantz, R. E. Stearns, and P. M. Lewis. An analysis of several heuristics for the traveling salesman problem. *SIAM J. Comput.*, 6:563–581, 1977. [rsl-ashts-77] *Succeeds:* rsl-aatsp-74.

11398 D. J. Rosenkrantz, R. E. Stearns, and P. M. Lewis. Approximate algorithms for the traveling salesperson problem. In *Proc. 15th Annu. IEEE Sympos. Switching Automata Theory*, pages 33–42, 1974. [rsl-aatsp-74] *Precedes:* rsl-ashts-77.

D. J. Rosenkrantz. See also [7211, 9186, 11062, 11063].

11399 P. Rosenstiehl. Planar permutations defined by two intersecting Jordan curves. In *Graph Theory and Combinatorics*, pages 259–271. Academic Press, London, UK, 1984. [r-ppdti-84]

11400 P. Rosenstiehl and R. E. Tarjan. Gauss codes, planar Hamiltonian graphs, and stack-sortable permutations. *J. Algorithms*, 5:375–390, 1984. [rt-gcphg-84]

11401 P. Rosenstiehl and R. E. Tarjan. Rectilinear planar layouts and bipolar orientations of planar graphs. *Discrete Comput. Geom.*, 1(4):343–353, 1986. [rt-rplbo-86] *Keywords:* graph drawing.

P. Rosenstiehl. See also [2350, 4118, 5521–5523, 5526, 5527, 7052, 7053, 9798].

A. Rosenthal. See also [11139, 11141].

C. G. Ross. See also [9360].

R. Ross. See also [11454].

11402 J. Rossignac. *Blending and Offsetting Solid Models*. PhD thesis, Dept. Elect. Engrg., Univ. Rochester, Rochester, NY, July 1985. [r-bosm-85] *Keywords:* doctoral thesis.

11403 J. Rossignac and M. O'Connor. Sgc: A dimension-independent model for pointsets with internal structures and incomplete boundaries. In M. Wozny, J. Turner, and K. Preiss, editors, *Geometric Modeling for Product Engineering*. North-Holland, 1989. [ro-sdimp-89i] *Precedes:* or-sdimp-89t.

11404 J. Rossignac and A. Requicha. Constant radius blending in solid modeling. *Computers in Mechanical Engineering*, 2:655–673, 1984. [rr-crbsm-84]

11405 J. Rossignac and A. Requicha. Offsetting operations in solid modeling. *Comput. Aided Geom. Design*, 3:129–148, 1986. [rr-oosm-86]

J. Rossignac. See also [7921, 10558, 12704, 12832, 12833].

11406 J. R. Rossignac. Considerations on the interactive rendering of four-dimensional volumes. In *CH Volume Visualization Workshop*, pages 67–76, 1989. [r-cirfd-89]

11407 J. R. Rossignac. Csg formulations for identifying and for trimming faces of CSG models. In *CSG'96*. Information Geometers, April 1996. [r-cfitf-96]

11408 J. R. Rossignac and P. Borrel. Multi-resolution 3D approximations for rendering complex scenes. Technical Report RC 17697 (#77951), IBM Research Division, T. J. Watson Research Center, Yorktown Heights, NY 10958, 1992. [rb-mr3da-92]

11409 J. R. Rossignac and A. A. G. Requicha. Piecewise-circular curves for geometric modeling. *IBM J. Res. Develop.*, 31:296–313, 1987. [rr-pccgm-87]

11410 J. R. Rossignac and H. B. Voelcker. Active zones in constructive solid geometry for redundancy and interference detection. Report RC 11991 (#53914), Auto. Res. Sci., IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1986. [rv-azcsg-86] *Keywords:* computer graphics.

11411 J. R. Rossignac and H. B. Voelcker. Active zones in CSG for accelerating boundary evaluation, redundancy evaluation, interference detection, and shading algorithms. Technical Report RC-13490, IBM Thomas J. Watson Research Center, Yorktown Heights, NY 10598, USA, February 1988. [rv-azcab-88] *Comments:* appears in ACM Trans. on Graphics, Jan '89.

J. R. Rossignac. See also [3623, 7029, 10228, 11359].

11412 V. Rosta. Combinatorial face enumeration in convex polytopes. In *Proc. 5th Franco-Japanese Days on Combinatorics and Optimization*, page ??, 1992. [r-cfecp-92]

V. Rosta. See also [5663].

G.-C. Rota. See also [1424, 4396].

11413 Günter Rote. A new metric between polygons, and how to compute it. In *Proc. 19th Internat. Colloq. Automata Lang. Program.*, volume 623 of *Lecture Notes Comput. Sci.*, pages 404–415. Springer-Verlag, 1992. [r-nmbph-92] *Keywords:* bounded Lipschitz distance, Kantorovich Rubinshtein metric, transportation metric. *Abstract:* The bounded Lipschitz distance can be used as a distance measure between polygons or between functions. It has several properties which make it attractive to use from the viewpoint of applications like pattern matching or quality control of woven fabrics. There are several alternative definitions of the metric, some of which are interesting in their own right. The bounded Lipschitz distance is related to the Monge-Kantorovich mass transfer problem, whose history goes back to 18th century work of G. Monge and to L. Kantorovitch. We also give an algorithm for computing the metric, and we discuss possible implementations.

11414 Günter Rote. Computing the minimum Hausdorff distance between two point sets on a line under translation. *Inform. Process. Lett.*, 38(3):123–127, May 1991. [r-cmhdb-91] *Keywords:* pattern recognition, pattern matching. *Cites:* hk-cmhdp-90. *Abstract:* Given two sets of points on a line, we want to translate one of them so that their Hausdorff distance (the maximum of the distances from a point in any of the sets to the nearest point in the other set) is as small as possible. We present an optimal $O(n \log n)$ algorithm for this problem.

11415 Günther Rote. Curves with increasing chords. *Math. Proc. Camb. Phil. Soc.*, 115:1–12, 1994. [r-cic-94]

11416 Günter Rote. Degenerate convex hulls in high dimensions without extra storage. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 26–32, 1992. [r-dchhd-92] *Cites:* af-pachv-91, bcn-drg-89, ck-acp-70, chj-ololv-91, cjr-cdtsp-90, mr-scmfa-80, p-pc-89, s-lpchm-90, sw-cblpr-92, s-fchff-85, ZZZ.

11417 G. Rote. Quadratic convergence of the sandwich algorithms for approximating convex functions and convex figures in the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 120–124, 1990. [r-qcsaa-90]

11418 G. Rote. The convergence rate of the Sandwich algorithm for approximating convex figures in the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 287–290, 1990. [r-crsaa-90] *Precedes:* r-crsaa-92. *Cites:* bhr-saucf-91, c-ocfpl-71, cy-sp-87, e-acg-87, fmrwy-sioas-90, fmrwy-sioas-92, fbr-accab-89, g-acb-83, ii-oaapl-86a, m-jtlfe-62, mv-papcb-75, s-sooau-84, ZZZ.

11419 Günter Rote. The convergence rate of the Sandwich algorithm for approximating convex functions. *Computing*, 48:337–361, 1992. [r-crsaa-92] *Succeeds:* r-crsaa-90. *Cites:* bhr-saucf-91. *Abstract:* The Sandwich algorithm approximates a convex function of one variable over an interval by evaluating the function and its derivative at a sequence of points. The connection of the obtained points is a piecewise linear upper approximation, and the tangents yield a piecewise linear lower approximation. Similarly, a PLANAR CONVEX FIGURE can be approximated by convex polygons. Different versions of the Sandwich algorithm use different rules for selecting the next evaluation point. We consider four natural rules (interval bisection, slope bisection, maximum error rule, and chord rule) and show that the global approximation error with n evaluation points decreases by the order of $O(1/n^2)$, which is optimal.

11420 Günter Rote. The N-line traveling salesman problem. *Networks*, 22:91–108, 1992. [r-nltsp-92] *Keywords:* optimization. *Comments:* replaces the techreport r-nltsp-88. *Annote:* For the 3-line TSP, see ddl-chlts-92. *Abstract:* The special case of the Euclidean traveling salesman problem, where the n given points lie on a small number (N) of parallel lines in the plane, is solved by a dynamic programming approach in $O(n^N)$ time, for fixed N, ...

11421 Günter Rote, C. Schwarz, and J. Snoeyink. Maintaining the approximate width of a set of points in the plane. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 258–263, 1993. [rss-mawsp-93] *Succeeds:* s-sdmwp-92. *Cites:* hs-asdch-90, ht-cws-85, ht-cws-88, j-mwdpp-91, ks-tpscv-93, ks-ccssb-93, m-dea-86, mn-dfc-90, ol-mcp-81, p-ortap-79, s-sdmwp-92, ZZZ. *Abstract:* We maintain the set of points under insertions and deletions of points and we are able to report an approximation of the width of this dynamic point set. Our data structure takes linear space and allows for reporting the approximation with relative accuracy ϵ in $O(sqrt(1/\epsilon) logn)$ time; and the update time is $O(\log^2 n)$. The method uses the tentative prune-and-search strategy of Kirkpatrick and Snoeyink.

11422 Günter Rote and Robert Franz Tichy. Spherical dispersion with an application to polygonal approximation of curves. *Anz. Österreich. Akad. Wiss., Math.-natur. Kl., Abt. II*, 132:3–10, 1995. [rt-sdapa-95] *Abstract:* We describe and analyze a procedure for the polygonal approximation of spatial curves using well-distributed points on the sphere. Here the dispersion of the point set with respect to spherical slices (intersections of two half-spheres) plays a role.

11423 Günter Rote and G. Woeginger. Computing a minimum link path among a set of obstacles in the plane. Manusript, Tech. Univ. Graz, 1989. [rw-cmlps-89]

11424 Günter Rote and G. Woeginger. Counting convex k-gons in planar point sets. *Inform. Process. Lett.*, 41:191–194, 1992. [rw-cckgp-92] *Keywords:* convexity, combinatorics. *Cites:* rwzw-cksck-91. *Annote:* complexity was improved by the techniques of eorw-fmakg-92, see mrsw-ccppp-95.

11425 G. Rote and G. Woeginger. Geometric clusterings. Technical Report B-89-04, Freie Universität Berlin, April 1989. Serie B-Informatik. [rw-gc-89] *Precedes:* crw-gc-90, crw-gc-91.

11426 Günter Rote, G. Woeginger, Binhai Zhu, and Zhengyan Wang. Counting k-subsets and convex k-gons in the plane. *Inform. Process. Lett.*, 38:149–151, 1991. [rwzw-cksck-91] *Annote:* improved by rw-cckgp-92, further improved by the techniques of eorw-fmakg-92, see mrsw-ccppp-95.

Günter Rote. See also [367, 369–372, 375–377, 382, 564–566, 578–580, 2310, 2593, 2595, 2715, 2716, 3498, 3499, 3939, 3940, 4436, 4747, 4748, 4812–4814, 4966, 5330, 5331, 5629, 6545, 6546, 7322–7325, 9741–9743, 10821, 11892, 11893].

B. Roth. See also [994, 995].

D. Roth. See also [3729–3731].

11427 K. F. Roth. On irregularities of distribution. *Mathematica*, 1:73–79, 1954. [r-id-54]

K. F. Roth. See also [6572].

L. Roth. See also [11977].

R. S. Roth. See also [1591, 1592].

11428 S. D. Roth. Ray casting for modeling solids. *Comput. Graph. Image Process.*, 18:109–144, 1982. [r-rcms-82]

T. Roth. See also [8053].

E. E. Rothberg. See also [7575].

11429 Christoph Rothe. Algorithmen in einem optimierten hierarchischen Raumraster. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 21. Universität Siegen, 1990. [r-aohr-90]

B. Rothschild. See also [6229].

11430 B. L. Rothschild and E. G. Straus. On triangulations of the convex hull of n points. *Combinatorica*, 5:167–179, 1985. [rs-tchnp-85]

B. L. Rothschild. See also [6239].

11431 J. J. Rotman. *An Introduction to Algebraic Topology*. Springer-Verlag, New York, NY, 1988. [r-iat-88]

S. Roucos. See also [9134].

11432 J.-P. Roudneff. Arrangements of lines with a minimum number of triangles are simple. *Discrete Comput. Geom.*, 3:97–102, 1988. [r-almnt-88]

11433 C. P. Rourke and B. J. Sanderson. *Introduction to Piecewise-Linear Topology*. Springer-Verlag, 1972. [rs-iplt-72]

C. C. Rousseau. See also [4988].

P. Rousseau. See also [11622].

11434 P. J. Rousseeuw. Least median of squares regression. *J. Amer. Statist. Assoc.*, 79(388):871–880, December 1984. [r-msr-84]

11435 Peter J. Rousseeuw and Mia Hubert. Depth in an arrangement of hyperplanes. Manuscript, Dept. of Mathematics and Computer Science, University of Antwerp, Belgium, May 1998. [rh-dah-98] *Comments:* To appear, Discrete Comput. Geom. *Abstract:* A collection of n hyperplanes in Rp forms a hyperplane arrangement. The depth of any point θ in Rp is the smallest number of hyperplanes intersected by any halfline emanating from θ. For p=2 we prove that there always exists a point θ with depth at least n/3. For higher dimensions we conjecture that the maximal depth is at least n/(p+1). For arrangements in general position, also an upper bound on the maximal depth is established. Finally, we discuss algorithms to compute points with maximal depth.

11436 Peter J. Rousseeuw and Mia Hubert. Regression depth. Manuscript, Dept. of Mathematics and Computer Science, University of Antwerp, Belgium, 1996. [rh-rd-96] *Keywords:* breakdown value, deepest fit, depth envelopes, halfspace depth, robust regression, simplicial depth. *Comments:* to appear, journal ?? *Abstract:* In this paper we introduce a notion of depth in the regression setting. It provides the 'rank' of any line (plane), rather than ranks of observations or residuals. In simple regression we can compute the depth of any line by a fast algorithm. For any bivariate data set Zn of size n there exists a line with depth at least n/3. The largest depth in Zn can be used as a measure of linearity versus convexity. In both simple and multiple regression we introduce the deepest fit, which generalizes the univariate median and is equivariant for monotone transformations of the response. Throughout, the errors may be skewed and heteroskedastic. We also consider depth-based regression quantiles. They estimate the quantiles of y given x, as do the Koenker-Bassett regression quantiles, but with the advantage of being robust to leverage points. We explore the analogies between depth in regression and in location, where Tukey's halfspace depth is a special case of our general definition. Also Liu's simplicial depth can be extended to the regression framework.

11437 P. J. Rousseeuw and A. M. Leroy. *Robust Regression and Outlier Detection*. John Wiley & Sons, New York, 1987. [rl-rrod-87]

11438 P. J. Rousseeuw, N. S. Netanyahu, and D. M. Mount. New statistical and computational results on the repeated median line. In S. Morgenthaler, E. Ronchetti, and W. Stahel, editors, *New Directions in Data Analysis and Robustness*, pages 177–194. Birkhäuser-Verlag, Basel, Switzerland, 1993. [rnm-nscrr-93]

11439 Peter J. Rousseeuw and Ida Ruts. Constructing the bivariate Tukey median. Manuscript, Dept. of Mathematics and Computer Science, University of Antwerp, Belgium, 1997. [rh-dah-97] *Keywords:* halfplane depth, robustness, Tukey depth. *Comments:* Statistica Sinica, to appear. *Abstract:* The halfplane location depth of a point θ in R2 relative to a bivariate data set $X = \{x_1, x_2, ..., x_n\}$ is the minimal number of observations in any closed halfplane that contains θ (Tukey 1975). The halfplane median or Tukey median is the θ with maximal depth k* (Donoho and Gasko 1992). If this θ is not unique, the Tukey median is defined as the center of gravity of the set of points with depth k*. In this paper we construct two algorithms for computing the Tukey median. The first one is relatively straightforward but quite slow, whereas the second (called HALFMED) is much faster. A small simulation study is performed, and some examples are given.

11440 Peter J. Rousseeuw and Anja Struyf. Computing location depth and regression depth in higher dimensions. Manuscript, Dept. of Mathematics and Computer Science, University of Antwerp, Belgium, 1998. [rs-cldrd-98] *Keywords:* coordinate-free, multivariate ranks, robustness. *Comments:* to appear, Statistics and Computing. *Abstract:* The location depth (Tukey 1975) of a point θ relative to a p-dimensional data set Z of size n is defined as the smallest number of data points in a closed halfspace with boundary through θ;. For bivariate data, it can be computed in O(n log n) time (Rousseeuw and Ruts 1996). In this paper we construct an exact algorithm to compute the location depth in three dimensions in O(n2 log n) time. We also give an approximate algorithm to compute the location depth in p dimensions in O(m p3 + m p n) time, where m is the number of p-subsets used.

Recently, Rousseeuw and Hubert (1996) defined the depth of a regression fit. The depth of a hyperplane with coefficients $(\theta_1,...,\theta_p)$ is the smallest number of residuals that need to change sign to make $(\theta_1,...,\theta_p)$ a nonfit. For bivariate data (p=2) this depth can be computed in O(n log n) time as well. We construct an algorithm to compute the regression depth of a plane relative to a three-dimensional data set in $O(n^2 \log n)$ time, and another that deals with p=4 in $O(n^3 \log n)$ time. For data sets with large n and/or p we propose an approximate algorithm that computes the depth of a regression fit in $O(mp^3 + mpn + mn \log n)$ time. For all of these algorithms, actual implementations are made available.

Peter J. Rousseeuw. See also [6630, 7184, 7910, 11488, 12578].

11441 M. Roussille, V. Bruyere, and P. Dufour. Search of repeated factors. To appear. [rbd-srfcw-]

11442 M. Roussille, V. Bruyère, and P. Dufour. Structure detection for polygon composition. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 152–155, 1990. [rbd-sdpc-90] *Cites:* at-iacps-78, as-cvp-86, fw-utpf-81, gjpt-tsp-78, h-oafsp-86, k-dpsc-85, l-cw-83, rbd-srfcw-, t-mdsp-81, ZZZ.

11443 M. Roussille and P. Dufour. Generation of convex polygons with individual angular constraint. *Inform. Process. Lett.*, 24:159–164, 1987. [rd-gcpia-87]

M. Roussopoulos. See also [11445].

11444 N. Roussopoulos, S. Kelley, and F. Vincent. Nearest neighbor queries. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 71–79, 1995. [rkv-nnq-95]

11445 N. Roussopoulos, Y. Kotidis, and M. Roussopoulos. Cubetree: Organization of and bulk incremental updates on the data cube. In *Proc. ACM SIGMOD Conf. on Management of Data*, pages 89–99, 1997. [rkr-cobiu-97]

N. Roussopoulos. See also [5124, 11976].

11446 Jean-Christophe Roux. Curve reconstruction. In Pierre-Jean Laurent, A. Le Méhauté, and L. L. Schumaker, editors, *Curves and Surfaces in Geometric Design*, pages 401–408, Wellesley, MA, 1994. A. K. Peters. [r-cr-94] *Comments:* curve reconstruction from scattered data points in the plane; locally uses best approximating circles; deals with cusps and self-intersections. best circles are formulated in such a way that the solution leads to an eigenvalue problem of a 4×4-matrix. see also the author's 1994 dissertation from Univ. Grenoble.

11447 L. A. Rowe, M. Davis, E. Messinger, C. Meyer, C. Spirakis, and A. Tuan. A browser for directed graphs. *Softw. – Pract. Exp.*, 17(1):61–76, 1987. [rdmmst-bdg-87] *Keywords:* graph drawing.

L. A. Rowe. See also [9546].

N. Rowe. See also [491, 492, 8062, 8063].

11448 Neil C. Rowe. Obtaining optimal mobile-robot paths with non-smooth anisotropic cost functions using qualitative-state reasoning. *Internat. J. Robot. Res.*, 16(3):375–399, June 1997. [r-oomrp-97] *Keywords:* optimal paths, anisotropism, minimum-energy, friction, gravity, qualitative physics, cylinder.

11449 N. C. Rowe. Roads, rivers, and obstacles: optimal two-dimensional path planning around linear features for a mobile agent. *Internat. J. Robot. Res.*, 9:67–73, 1990. [r-rroot-90] *Keywords:* shortest paths.

11450 N. C. Rowe and Y. Kanayama. Near-minimum energy paths on a vertical-axis cone with anisotropic friction and gravity effects. *Internat. J. Robot. Res.*, 13:408–432, 1994. [rk-nmep-94] *Keywords:* optimal paths, minimum-energy, friction, gravity, qualitative physics, cone.

11451 N. C. Rowe and D. H. Lewis. Vehicle path-planning using optics analogs for optimizing visibility and energy cost. In *NASA Conference on Space Telerobotics*, pages IV: 217–226, 1989. [rl-vppuo-89] *Keywords:* weighted regions, optimal paths, three dimensions, minimum-energy, visibility, aircraft.

11452 N. C. Rowe and R. F. Richbourg. A new method for optimal path planning through nonhomogeneous free space. Technical Report NPS52-87-003, Comput. Sci. Dept., Naval Postgraduate School, Monterey, CA, 1987. [rr-nmopp-87] *Keywords:* shortest paths, weights.

11453 N. C. Rowe and R. F. Richbourg. An efficient Snell's law method for optimal-path planning across multiple two-dimensional, irregular, homogeneous-cost regions. *Internat. J. Robot. Res.*, 9:48–66, 1990. [rr-eslmo-90] *Keywords:* shortest paths, weights.

11454 N. C. Rowe and R. Ross. Optimal grid-free path planning across arbitrarily-contoured terrain with anisotropic friction and gravity effects. *IEEE Trans. Robot. Autom.*, 6:540–553, 1990. [rr-ogfpp-90] *Keywords:* optimal paths, anisotropism, minimum-energy, friction, gravity, qualitative physics, polyhedra.

N. C. Rowe. See also [11223, 11224].

11455 Tom Roxborough and Arunabha Sen. Graph clustering using multiway ratio cut. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 291–296. Springer-Verlag, 1997. [rs-gcumr-97] *Keywords:* graph drawing.

M. F. Roy. See also [1495–1499, 2123, 3561, 6783–6786, 10819].

11456 U. Roy, C. R. Liu, and T. C. Woo. Review of dimensioning and tolerancing: representation and processing. *Comput. Aided Design*, 23(7):466–483, 1991. [rlw-rdtrp-91]

11457 U. Roy and X. Zhang. Establishment of a pair of concentric circles with the minimum radial separation for assessing roundness error. *Comput. Aided Design*, 24(3):161–168, 1992. [rz-epccm-92]

A. Royappa. See also [1234, 1277, 1278].

A. V. Royappa. See also [1293].

11458 V. P. Roychowdhury and J. Bruck. On finding non-intersecting paths in grids and its application in reconfiguring VLSI/WSI arrays. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 454–464, 1990. [rb-fnipg-90]

11459 V. P. Roychowdhury, J. Bruck, and T. Kailath. Efficient algorithms for reconfiguration in VLSI/WSI arrays. *IEEE Trans. Comput.*, ??:480–489, 1990. [rbk-earvw-90]

11460 H. Royden. *Real Analysis*. Macmillan, New York, NY, 1968. [r-ra-68]

11461 D. Roytenberg and J.-R. Sack. A simulator for the alex-avx parallel multicomputer. In *Proc. HPCS '96 Conference*, number 48, 1996. [rs-saapm-96]

D. Roytenberg. See also [7237–7239].

11462 C. Rüb. Computing intersections and arrangements for red-blue curve segments in parallel. Technical Report MPI-I-92-108, Max Planck Institut für Informatik, Saarbrücken, Germany, 1992. [r-ciarb-92t] *Precedes:* r-ciarb-92.

11463 C. Rüb. Computing intersections and arrangements for red-blue curve segments in parallel. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 115–120, 1992. [r-ciarb-92] *Succeeds:* r-ciarb-92t. *Cites:* abb-paa-90, acg-cdctd-89, am-dplr-91, ce-oails-88, cct-rpatd-91, g-ilspo-89, g-caop-91, gsg-pmvsp-90, hjw-epcah-90, ms-rcibt-88, r-pazbd-90, r-lsirp-92, r-ciarb-92t, ZZZ.

11464 C. Rüb. Line-segment intersection reporting in parallel. *Algorithmica*, 8:119–144, 1992. [r-lsirp-92]

11465 C. Rüb. Parallel line segment intersection reporting. Manuscript, ??, 1989. [r-plsir-89]

11466 C. Rüb. *Parallele Algorithmen zum Berechnen der Schnittpunkte von Liniensegmenten*. PhD thesis, Univ. Saarbrücken, Saarbrücken, Germany, 1990. [r-pazbd-90] *Keywords:* doctoral thesis.

C. Rüb. See also [6558, 6559].

D. Rubin. See also [9320].

Robert V. Rubin. See also [11162].

11467 S. M. Rubin and T. Whitted. A 3-dimensional representation for fast rendering of complex scenes. *Comput. Graph.*, 14(3):110–116, 1980. Proc. SIGGRAPH '80. [rw-3drfr-80]

S. M. Rubin. See also [11086].

11468 R. Rubinfeld. Designing checkers for programs that run in parallel. Manuscript, 1994. [r-dcptr-94]

R. Rubinfeld. See also [2109, 2110].

F. M. Rubinstein. See also [13384].

J. Rubinstein. See also [9572].

11469 J. H. Rubinstein and D. A. Thomas. The Steiner ratio conjecture for cocircular points. *Discrete Comput. Geom.*, 7:77–86, 1992. [rt-srccp-92]

S. Rubinstein. See also [6714].

J. Rubio. See also [1201].

M. Rucci. See also [3486].

11470 W. Rucklidge. Lower bounds for the complexity of the Hausdorff distance. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 145–150, 1993. [r-lbchd-93] *Cites:* ast-apsgo-92, abb-amps-91, cghkkk-gpmem-93, hks-uevsi-91, ck-igpmp-92, hhk-tirgc-88, r-cmhdb-91, ZZZ.

W. J. Rucklidge. See also [7258].

11471 A. Rudich, D. Zernik, and G. Zodik. Visage — visualization of attribute graphs: A foundation for a parallel programming environment. In J. J. Dongarra and B. Tourancheau, editors, *Environments and Tools for Parallel Scientific Computing*, pages 171–192. North-Holland. [rzz-vvagf-] *Keywords:* graph drawing.

S. Rudich. See also [7731].

11472 M. E. Rudin. An unshellable triangulation of a tetrahedron. *Bull. Amer. Math. Soc.*, 64:90–91, 1958. [r-utt-58] *Keywords:* triangulation, three-dimensional, shellability. *Annote:* An example of a 3D triangulation with 14 points and 41 tetrahedra that cannot be built by sequentially adding tetrahedrons.

11473 W. Rudin. *Principles of Mathematical Analysis*. McGraw-Hill, New York, NY, 3rd edition, 1976. [r-pma-76]

R. Rudolf. See also [2594, 10754].

L. Rudolph. See also [5308, 8376–8378].

T. Rugherford. See also [3521].

W. Rülling. See also [5743, 5744].

Wheeler Ruml. See also [656].

11474 S. M. Rump. Solving nonlinear systems with least significant bit accuracy. *Computing*, 29:183–200, 1982. [r-snsls-82]

11475 S. M. Rump and H. Böhm. Least significant bit evaluation of arithmetic expressions in single-precision. *Computing*, 30(3):189–199, 1983. [rb-lsbea-83]

11476 H. Rumsey, Jr. Sets of visible points. *Duke Math. J.*, 33:263–274, 1966. [r-svp-66]

D. Ruoff. See also [5296].

11477 J. Ruppert. A Delaunay refinement algorithm for quality 2-dimensional mesh generation. *J. Algorithms*, 18:548–585, 1995. [r-draq2d-95]

11478 J. Ruppert. A new and simple algorithm for quality 2-dimensional mesh generation. Report UCB/CSD 92/694, Univ. California, Berkeley, CA, 1992. [r-nsaq2-92]

11479 J. Ruppert. A new and simple algorithm for quality 2-dimensional mesh generation. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 83–92, 1993. [r-nsaq2-93]

11480 J. Ruppert and R. Seidel. Approximating the *d*-dimensional complete Euclidean graph. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 207–210, August 1991. [rs-addce-91] *Cites:* c-tipga-86, dfs-dgaag-90, t-nrtpc-83, k-aceg-88, kg-dtcac-89, m-dsa-84, ps-gs-89, r-css-63, ZZZ.

11481 J. Ruppert and R. Seidel. On the difficulty of tetrahedralizing 3-dimensional nonconvex polyhedra. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 380–392, 1989. [rs-dt3dn-89] *Precedes:* rs-dttdn-92. *Cites:* ae-tpss-87, bd-cdsp-89, c-cgc-79, cp-tncp-89, ctv-flvat-88i, cr-cpih-88, epw-tpstd-86, gj-cigtn-79, o-agta-87, os-snhpd-83, ps-cgi-85, s-udzvd-28, tv-otats-88, h-fssp-81, ZZZ.

11482 J. Ruppert and R. Seidel. On the difficulty of triangulating three-dimensional nonconvex polyhedra. *Discrete Comput. Geom.*, 7:227–253, 1992. [rs-dttdn-92] *Succeeds:* rs-dt3dn-89.

J. Ruppert. See also [1789, 1790, 1822, 9543, 10077].

11483 D. Rus. Coordinated manipulation of objects in a plane. *Algorithmica*, 19(1–2):129–147, September 1997. [r-cmop-97]

11484 D. Rus. Dexterous rotations of polygons. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 147–151, 1990. [r-drp-90] *Precedes:* r-drp-91. *Cites:* b-sgtfp-88, b-igs-85, b-edrhu-87, c-rgfm-85, e-mpu-84, kkmy-qstam-89, m-mgpo-82, ms-rhmm-85, mss-esmpg-87, ms-sdsgi-89, n-ssfcg-86, p-mh-85, y-gt-68, ZZZ.

11485 D. Rus. On dexterous rotations of polygons. Technical Report TR 91-1258, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, December 1991. [r-drp-91] *Succeeds:* r-drp-90.

11486 J. A. Rush. Sphere packing and coding theory. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 50, pages 917–932. CRC Press LLC, Boca Raton, FL, 1997. [r-spct-97]

H. Rushmeir. See also [1843].

F. Ruskey. See also [3426, 3427, 9018].

Tony Ruso. See also [12232].

A. Russel. See also [1579].

R. A. Rutenbar. See also [2725].

11487 D. Rutovitz. An algorithm for in-line generation of a convex cover. *Comput. Graph. Image Process.*, 4:74–78, 1975. [r-algcc-75]

11488 Ida Ruts and Peter J. Rousseeuw. Computing depth contours of bivariate point clouds. *Computational Statistics and Data Analysis*, 23:153–168, 1996. [rr-cdcbp-96] *Keywords:* k-sets, classification, graphical display, ranks, robustness. *Abstract:* In this paper we construct an exact algorithm for computing depth contours of a bivariate data set. For this we use the halfspace depth introduced by Tukey. The depth contours form a nested collection of convex sets. The deeper the contour, the more robust it is with respect to outliers in the point cloud. The proposed algorithm has been implemented in a program called ISODEPTH, which needs little computation time and is illustrated on some real data examples. Finally, it is shown how depth contours can be used to construct robustified versions of classification techniques based on convex hulls.

Ida Ruts. See also [11439].

11489 K. Ryall, J. Marks, and S. Shieber. An interactive system for drawing graphs. In S. North, editor, *Graph Drawing (Proc. GD '96)*, volume 1190 of *Lecture Notes Comput. Sci.*, pages 387–393. Springer-Verlag, 1997. [rms-isdg-97] *Keywords:* graph drawing, constraints, interactive.

Kathy Ryall. See also [656].

J. Ryan. See also [3597, 3598].

A. G. Ryman. See also [3510, 3511].

B. Rystedt. See also [10183].

W. Rytter. See also [5931].

11490 A. S.-Arcilla, J. Hauser, P. R. Eiseman, and J. F. Thompson, editors. *Numerical Grid Generation in Computational Fluid Dynamics and Related Fields*. North-Holland, New York, New York, 1991. [ahet-nggcf-91]

11491 A. Saalfeld. Canonical cyclic orderings for point sets in the plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 32–35, 1990. [s-ccops-90] *Cites:* ahu-dsa-83, e-acg-87, gj-cigtn-79, k-ss-65, ps-cgi-85, ZZZ.

11492 A. Saalfeld. Delaunay edge refinements. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 33–36, 1991. [s-der-91] *Cites:* c-cdt-87, ZZZ.

11493 A. Saalfeld. Divide-and-conquer in early algebraic topology: the Mayer-Vietoris exact homology sequence revisited. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 11, 1989. [s-dceat-89]

11494 A. Saalfeld. Joint triangulations and triangulation maps. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 195–204, 1987. [s-jttm-87] *Cites:* c-tpc-79, gp-ms-83, ghlst-ltavs-86, l-aat-75, ps-cgi-85, wg-plrsm-85, w-tachm-83, ZZZ.

11495 A. Saalfeld. Map generalization as a graph drawing problem. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 444–451. Springer-Verlag, 1995. [s-mggdp-95] *Keywords:* graph drawing, cartography, planar.

A. Saalfeld. See also [4214, 7764, 9913].

Thomas Saaty. See also [5819].

11496 G. Sabidussi. Graph multiplication. *Math. Z.*, 72:446–457, 1960. [s-gm-60]

11497 G. Sabidussi. Graphs with a given group and given graph theoretical properties. *Canad. J. Math.*, 9:515–525, 1957. [s-ggggg-57]

11498 G. Sabidussi. On the minimum order of graphs with a given automorphism group. *Monatsh. Math.*, 63:124–127, 1959. [s-mogga-59]

11499 G. Sabidussi. The composition of graphs. *Duke Math. J.*, 26:693–696, 1959. [s-cg-59]

M. Sabin. See also [4382].

11500 M. A. Sabin. Contouring—A review of methods for scattered data. In K. W. Brodlie, editor, *Mathematical Methods in Computer Graphics and Design*, pages 105–121. Academic Press, New York, 1980. [s-crmsd-80] *Annote:* Suggests best method is Delaunay triangulation with linear or C^1 interpolation on triangles.

11501 M. A. Sabin. Non-rectangular surface patches suitable for inclusion in a b-spline surface. In *Eurographics*, 1983. [s-nrsps-83]

M. A. Sabin. See also [10855].

H. Sachs. See also [2661].

J. Sack. See also [4257–4259].

11502 J.-R. Sack. A simple hidden-line algorithm for rectilinear polygons. In *Proc. 21st Allerton Conf. Commun. Control Comput.*, pages 437–446, 1983. [s-shlar-83] *Keywords:* computer graphics, visibility, convex hull, hidden line/surface elimination, polygons, two-dimensional.

11503 J.-R. Sack. An $O(n \log n)$ algorithm for decomposing rectilinear polygons into convex quadrilaterals. In *Proc. 20th Allerton Conf. Commun. Control Comput.*, pages 64–75, 1982. [s-oadrp-82] *Keywords:* decomposition, partition, visibility, shape, polygons, two-dimensional, convex.

11504 J.-R. Sack. *Rectilinear computational geometry*. Ph.D. thesis, School Comput. Sci., Carleton Univ., Ottawa, ON, 1984. Report SCS-TR-54. [s-rcg-84] *Keywords:* computer graphics, decomposition, partition, visibility, shape, convex hull, hidden line/surface elimination, polygons, two-dimensional, convex, doctoral thesis.

11505 J.-R. Sack. Report on 3rd Symposium on Computational Geometry, 1987. *Bull. EATCS*, 33:165–170, 1987. [s-r3scg-87]

11506 J.-R. Sack, N. Santoro, and J. Urrutia. Containment of elementary geometric objects. *Congr. Numer.*, 45:139–146, 1984. [ssu-cego-84] *Keywords:* polygons, triangles, rectangles, two-dimensional, domination.

11507 J.-R. Sack and Th. Strothotte. A characterization of heaps and its applications. *Inform. Comput.*, 86(1):69–86, 1990. [ss-chia-90]

11508 J.-R. Sack and Subhash Suri. An optimal algorithm for detecting weak visibility of a polygon. Report SCS-TR-114, School Comput. Sci., Carleton Univ., Ottawa, ON, 1986. [ss-oadwv-86] *Keywords:* computer graphics, visibility, hidden line/surface elimination, polygons, two-dimensional.

11509 J.-R. Sack and Subhash Suri. An optimal algorithm for detecting weak visibility of a polygon. In R. Cori and M. Wirsing, editors, *Proc. 5th Sympos. Theoret. Aspects Comput. Sci.*, volume 294 of *Lecture Notes Comput. Sci.*, pages 312–321, 1988. [ss-oadwv-88]

11510 J.-R. Sack and Subhash Suri. An optimal algorithm for detecting weak visibility of a polygon. *IEEE Trans. Comput.*, 39(10):1213–1219, 1990. [ss-oadwv-90] *Keywords:* computer graphics, visibility, hidden line/surface elimination, polygons, two-dimensional. *Succeeds:* ss-oadwv-86.

11511 J.-R. Sack and G. T. Toussaint. A linear-time algorithm for decomposing rectilinear polygons into convex quadrilaterals. In *Proc. 19th Allerton Conf. Commun. Control Comput.*, pages 21–30, 1981. [st-ltadr-81] *Keywords:* decomposition, partition, visibility, shape, polygons, two-dimensional, convex.

11512 J.-R. Sack and G. T. Toussaint. Guard placement in rectilinear polygons. In G. T. Toussaint, editor, *Computational Morphology*, pages 153–175. North-Holland, Amsterdam, Netherlands, 1988. [st-gprp-88] *Keywords:* decomposition, covering, partition, visibility, shape, polygons, two-dimensional, convex.

11513 J.-R. Sack and G. T. Toussaint. Separability of pairs of polygons through single translations. *Robotica*, 5:55–63, 1987. [st-sppts-87] *Keywords:* robotics, motion planning, decomposition, partition, separation, path planning, polygons, two-dimensional.

11514 J.-R. Sack and J. Urrutia, editors. *Handbook of Computational Geometry*. North-Holland, Amsterdam, 2000. [su-hcg-00] *Annote:* A collection of 22 survey articles: as-dssga-00, as-aa-00,ag-dgsmi-00, ac-dpcg-00, ak-vd-00, bp-mg-00, dmp-acggi-00, hd-mgvia-00, e-sts-00, gr-gds-00, k-pd-00, msd-ldp-00, m-dcg-00, s-rpigc-00, m-gspno-00, m-racg-00, nw-sdscd-00, rs-pcgau-00, ags-vp-00, s-cppcg-00, t-gd-00, u-agip-00.

J.-R. Sack. See also [412, 472, 473, 1061–1064, 1520, 1521, 3796, 3797, 3861–3863, 3890, 3902, 3903, 3906–3909, 3927–3935, 4058, 4181, 4469, 4968–4971, 5230, 6708, 7166, 7237–7240, 7974, 8202, 8312, 8485–8487, 8705, 8706, 8753–8755, 8860–8863, 9108, 9109, 10213, 10217–10219, 11461, 12575, 12742, 13038].

11515 E. Sacks and L. Joskowicz. Automated modeling and kinematic simulation of mechanisms. *Comput. Aided Design*, 25(2), 1993. [sj-amksm-93]

11516 E. Sacks and L. Joskowicz. Computational kinematic analysis of higher pairs with multiple contacts. *ASME J. Mech. Design*, ??, 1995. To appear. [sj-ckahp-95]

11517 E. Sacks and L. Joskowicz. Configuration space computation for mechanism design. In *Proc. IEEE Internat. Conf. Robot. Autom.*, 1994. [sj-cscmd-94]

Elisha Sacks. See also [7620–7622].

Vera Sacristán. See also [38–40, 378, 763, 764, 2063, 2941, 6072].

11518 E. A. Sadek. A scheme for the automatic generation of triangular finite elements. *Internat. J. Numer. Methods Eng.*, 15:1813–1822, 1980. [s-sagtf-80] *Annote:* Triangulation of a region, no internal points specified. Builds triangles around corners and then proceeds along edges to cut off a layer and then repeats. when subdividing a quadrilateral suggests that with larger value of $R = \frac{a}{b} + \frac{b_1/b_2}{a_1/a_2}$ (a and b are lengths of diagonals which cut each other into $a_1 \geq a_2$ and $b_1 \geq b_2$).

11519 S. E. O. Saeed, A. de Pennington, and J. R. Dodsworth. An efficient 2*D* solid offsetting algorithm. Technical report, Dept. of Mechanical Engineering, U. of Leeds, Leeds, UK, 1988. [spd-e2dso-88]

11520 S. E. O. Saeed, A. de Pennington, and J. R. Dodsworth. Offsetting in geometric modeling. *Comput. Aided Design*, 20(2):67–74, March 1988. [spd-ogm-88]

11521 S. Safavian and D. Landgrebe. A survey of decision tree classifier methodology. *IEEE Trans. Syst. Man Cybern.*, 21(3):660–674, 1991. [sl-sdtcm-91]

Ido Safruit. See also [10530].

11522 H. Sagan. *Space-filling curves*. Springer-Verlag, New York, 1994. [s-sfc-94]

11523 J. Sage. Artificial neural system implementations using CCD and NMOS technologies. In *Proc. Workshop on Artificial Neural Systems*, pages 72–84. Jet Propulsion Laboratory, 1987. [s-ansiu-87]

11524 J. Sage, K. Thompson, and R. Withers. An artificial neural network integrated circuit based on NMOS/CCD principles. In J. Denker, editor, *Proc. AIP Conference: Neural Networks for Computing*, volume 151, pages 381–385. American Institute of Physics, 1986. [stw-annic-86]

Amit Sahai. See also [1824, 1825].

11525 G. Sahar and J. Hollerbach. Planning of minimum-time trajectories for robot arms. In *Proc. IEEE Internat. Conf. Robot. Autom.*, 1985. [sh-pmttr-85]

11526 G. Sahar and J. M. Hollerbach. Planning of minimum-time trajectories for robot arms. Technical Report A. I. Memo No. 804, Massachusetts Inst. Tech., Cambridge, MA, November 1984. [sh-pmttr-84]

A. Sahay. See also [3647, 7848].

Sahni. See also [10021].

S. Sahni. See also [1928, 7123–7125, 10064–10066, 10956, 13666].

J. Saia. See also [3100, 9851].

Isaac Saias. See also [9921].

R. Saigal. See also [100].

A. Saint-Paul. See also [712].

11527 S. Sairam, R. Tamassia, and J. S. Vitter. A divide and conquer approach to shortest paths in planar layered digraphs. In *Proc. 4th IEEE Symposium on Parallel and Distributed Processing*, pages 176–183, 1992. [stv-dcasp-92] *Precedes:* stv-dcasp-.

11528 S. Sairam, R. Tamassia, and J. S. Vitter. A divide and conquer approach to shortest paths in planar layered digraphs. *Algorithmica*, ??, to appear. Preprint: Technical Report CS-92-15, Dept. of Computer Science, Brown Univ. (1992). [stv-dcasp-] *Succeeds:* stv-dcasp-92.

11529 S. Sairam, J. S. Vitter, and R. Tamassia. A complexity theoretic approach to incremental computation. In *Proc. 10th Sympos. Theoret. Aspects Comput. Sci.*, volume 665 of *Lecture Notes Comput. Sci.*, pages 640–649. Springer-Verlag, 1993. [svt-ctaic-93] *Keywords:* dynamic computation, complexity theory. *Precedes:* msvt-cmic-94.

S. Sairam. See also [3428, 8144, 9657].

N. Saito. See also [411, 3195].

S. Saito. See also [5664–5667].

11530 M. Sakamoto and M. Takagi. Patterns of weighted Voronoi tesselations. *Science and Form*, 3:103–111, 1988. [st-pwvt-88]

N. R. Sakevile Hamilton. See also [2586].

C. M. Sakkas. See also [9544].

11531 B. Sakoda. Parallel construction of polygonal boundaries from given vertices on a raster. Technical Report CS81 1-21, Dept. Comput. Sci., Pennsylvania State Univ., 1981. [s-pcpbg-81]

Michael Saks. See also [1773, 2777, 8868, 8871].

11532 Michael E. Saks. Slicing the hypercube. In K. Walker, editor, *Surveys in Combinatorics*, volume 187 of *London Mathematical Society Lecture Notes Series*, pages 211–256. Cambridge University Press, 1993. [s-sh-93]

Hiroshi Sakurai. See also [12148].

11533 B. E. A. Saleh. Optical information processing and the human visual system. In *Applications of Optical Fourier Transforms*, pages 431–463. 1982. [s-oiphv-82]

David Salesin. See also [2785, 6417–6419, 11999].

11534 S. Salinger. Strukture igenschaften von Bereichsräumen endlicher VC-Dimension. Masters thesis, Fachbereich Mathematik, Freie Univ. Berlin, Berlin, Germany, 1996. [s-sbevc-96] *Keywords:* masters thesis.

11535 J. Salisbury. Design and control of an articulated hand. In *Proc. 1st Intl. Sympos. Design and Synthesis*, 1984. [s-dcah-84]

J. K. Salisbury. See also [9236].

11536 G. T. Sallee. Invertible relations on polytopes. *Discrete Comput. Geom.*, 2:395–399, 1987. [s-irp-87]

11537 G. T. Sallee. Stretching chords of space curves. *Geom. Dedicata*, 2:311–315, 1973. [s-scsp-73]

H. Salmen. See also [9809].

11538 G. Salmon. *Lessons Introductory to the Modern Higher Algebra.* Chelsea Publishing Company, New York, NY, 1985. [s-limha-85]

J. Salmon. See also [5976, 6037].

11539 K. B. Salomon. An efficient point-in-polygon algorithm. *Comput. Geosci.*, 4:173–178, 1978. [s-eppa-78]

11540 J. Salowe. L_∞ interdistance selection by parametric search. *Inform. Process. Lett.*, 30:9–14, 1989. [s-lisps-89]

11541 J. Salowe. Parametric search. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 37, pages 683–698. CRC Press LLC, Boca Raton, FL, 1997. [s-ps-97]

11542 J. Salowe. *Selection problems in computational geometry.* Ph.D. thesis, Dept. Comput. Sci., Rutgers Univ., New Brunswick, NJ, 1987. [s-spcg-87] *Keywords:* doctoral thesis.

J. Salowe. See also [3453, 3454, 3770, 6177].

11543 J. S. Salowe. Constructing multidimensional spanner graphs. *Internat. J. Comput. Geom. Appl.*, 1(2):99–107, 1991. [s-cmsg-91] *Keywords:* distance, minimum spanning tree, spanning graph, sparse.

11544 J. S. Salowe. Construction of multidimensional spanner graphs, with applications to minimum spanning trees. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 256–261, 1991. [s-cmsga-91] *Keywords:* proximity, minimum spanning tree. *Cites:* aesw-emstb-90, addj-gsswg-90, c-tipga-86, c-fetaa-84, dj-wtacg-89, dfs-dgaag-90, gbt-srtgp-84, ggst-eamst-86, k-aceg-88, kg-dtcac-89, ll-tapga-89, sh-cpp-75, v-mstkd-88, v-oaann-89, y-cmstk-82, ZZZ.

11545 J. S. Salowe. Enumerating interdistances in space. *Internat. J. Comput. Geom. Appl.*, 2:49–59, 1992. [s-eis-92] *Keywords:* distance, fixed-radius near neighbors, parametric search, selection.

11546 J. S. Salowe. Euclidean spanner graphs with degree four. *Discrete Appl. Math.*, 54:55–66, 1994. [s-esgdf-94]

11547 J. S. Salowe. On Euclidean spanner graphs with small degree. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 186–191, 1992. [s-esgsd-92] *Cites:* de-eaahc-84, dfs-dgaag-90, sv-hsiub-89, v-sgagc-91, ZZZ.

11548 J. S. Salowe. Selecting the kth largest-area convex polygon. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 243–250. Springer-Verlag, 1989. [s-sklac-89]

11549 J. S. Salowe. Shallow interdistance selection and interdistance enumeration. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 117–128. Springer-Verlag, 1991. [s-sisie-91] *Keywords:* proximity, distance.

11550 J. S. Salowe and D. M. Warme. An exact rectilinear Steiner tree algorithm. In *Proc. IEEE Inernat. Conf. Comput. Design*, pages 472–475, October 1993. [sw-ersta-93]

11551 J. S. Salowe and D. M. Warme. Thirty-five point rectilinear Steiner minimal trees in a day. *Networks*, 25:69–87, 1995. [sw-tfprs-95]

J. S. Salowe. See also [903, 3436, 11215–11219, 11310, 11311].

E. Saltel. See also [2284, 5852].

11552 G. Salton. *Automatic Text Processing.* Addison-Wesley, Reading, MA, 1989. [s-atp-89]

S. Saluja. See also [2833, 2834, 5910–5913, 5921, 5922, 6479].

C. Salveter. See also [9115].

S. C. Salveter. See also [9116].

B. Salvy. See also [5319].

S. Salza. See also [1867, 1868].

B. Salzberg. See also [5053, 8956].

11553 S. Salzberg, A. Delcher, D. Heath, and S. Kasif. Learning with a helpful teacher. Technical report, Dept. of Comp. Sci., Johns Hopkins Univ, Baltimore, MD, 1990. [sdhk-lht-90]

11554 S. Salzberg, A. Delcher, S. Heath, and S. Kasif. Learning with a helpful teacher. In *Proc. 12th Internat. Joint Conf. Artif. Intell.*, 1991. To appear. [sdhk-lht-91]

Steven Salzberg. See also [756–758, 3562, 9990, 11349, 11350].

D. Salzman. See also [6643].

Sumitro Samaddar. See also [5505, 5510, 5511].

11555 K. Sambandan, K. Kedem, and K. Wang. Generalized planar sweeping of polygons. Technical Report TR 89-1062, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, December 1989. [skw-gpsp-89]

11556 M. Sambridge, J. Braun, and H. McQueen. Geophysical parameterization and interpolation of irregular data using natural neighbours. *Geophys. J. Int.*, 122:837–857, 1995. [sbm-gpiid-95] *Keywords:* natural neighbour interpolation, irregular parameterization. *Annote:* Presents details of algorithms for nn-interpolation of irregular data, including first derivatives. Tutorial style intended to introduce concepts and applications of natural neighbours to geophysicists.

M. Sambridge. See also [2409].

M. S. Sambridge. See also [2410].

11557 H. Samet. A quadtree medial axis transform. *Commun. ACM*, 26:680–693, 1983. [s-qmat-83]

11558 H. Samet. A review of hierarchical representations of shape and some applications. In C. Arcelli, L. P. Cordella, and G. Sanniti di Baja, editors, *Visual Form Analysis and Recognition*, pages 451–467, New York, 1992. Plenum Press. [s-rhrss-92]

11559 H. Samet. A top–down quadtree traversal algorithm. *IEEE Trans. Pattern Anal. Mach. Intell.*, 7(1):94–98, January 1985. [s-tdqta-85]

11560 H. Samet. Algorithms for the conversion of quadtrees to rasters. *Comput. Vision Graph. Image Process.*, 26(1):1–16, April 1984. [s-acqr-84]

11561 H. Samet. An algorithm for converting rasters to quadtrees. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-3:93–95, 1981. [s-acrq-81]

11562 H. Samet. An overview of quadtrees, octrees, and related hierarchical data structures. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 51–68. Springer-Verlag, Berlin, West Germany, 1988. [s-oqorh-88] *Keywords:* data structuring, quad trees, oct trees, survey paper.

11563 H. Samet. *Applications of Spatial Data Structures: Computer Graphics, Image Processing, and GIS.* Addison-Wesley, Reading, MA, 1990. [s-asdsc-90] *ISBN:* 0-201-50300-X. *Keywords:* octrees.

11564 H. Samet. Computing perimeters of images represented by quadtrees. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-3:686–687, 1981. [s-cpirq-81]

11565 H. Samet. Connected component labeling using quad trees. *J. ACM*, 28:487–501, 1981. [s-ccluq-81]

11566 H. Samet. Data structures for quadtree approximation and compression. *Commun. ACM*, 27:973–993, 1984. [s-dsqac-84]

11567 H. Samet. Deletion in two-dimensional quad trees. *Commun. ACM*, 23:703–710, 1980. [s-dtdqt-80]

11568 H. Samet. Distance transform for images represented by quadtrees. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-4:298–303, 1982. [s-dtirq-82]

11569 H. Samet. Hierarchical data structures for spatial reasoning. In L. F. Pau, editor, *Mapping and Spatial Modelling for Navigation*, pages 41–58, Berlin, Germany, 1990. Springer-Verlag. [s-hdssr-90]

11570 H. Samet. Hierarchical data structures for three-dimensional data. In R. Vinken, editor, *From Geoscientific Map Series to Geo-Information Systems*, volume 122 of *Geologisches Jahrbuch A*, pages 45–58. ??, Hannover, Germany, 1992. [s-hdstd-92]

11571 H. Samet. Hierarchical representations of collections of small rectangles. *ACM Comput. Surv.*, 20(4):271–309, December 1988. [s-hrcsr-88]

11572 H. Samet. Hierarchical spatial data structures. In A. Buchmann, O. Günther, T. R. Smith, and Y. F. Wang, editors, *Design and Implementation of Large Spatial Databases: First Symposium*, pages 193–212, July 1989. [s-hsds-89]

11573 H. Samet. Implementing ray tracing with octrees and neighbor finding. *Computers & Graphics*, 13(4):445–460, 1989. (also University of Maryland Computer Science TR–2204). [s-irton-89]

11574 H. Samet. Neighbor finding in images represented by octrees. *Comput. Vision Graph. Image Process.*, 46(3):367–386, June 1989. [s-nfiro-89]

11575 H. Samet. Neighbor finding techniques for images represented by quadtrees. *Comput. Graph. Image Process.*, 18:37–57, 1982. [s-nftir-82] *Annote:* also Proceedings of Pattern Recognition and Image Processing 81, Dallas, August 1981, 68–74.

11576 H. Samet. Reconstruction of quadtrees from quadtree medial axis transforms. *Comput. Vision Graph. Image Process.*, 29(3):311–328, March 1985. [s-rqqma-85]

11577 H. Samet. Region representation: quadtree-to-raster conversion. Report TR-768, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1979. [s-rrqrc-79]

11578 H. Samet. Region representation: quadtrees from binary arrays. *Comput. Graph. Image Process.*, 13:88–93, 1980. [s-rrqba-80]

11579 H. Samet. Region representation: quadtrees from boundary codes. *Commun. ACM*, 23:163–170, 1980. [s-rrqbc-80]

11580 H. Samet. Region representation: raster-to-quadtree conversion. Report TR-766, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1979. [s-rrrqc-79]

11581 H. Samet. Representaciones especiales mediante quadtrees (translated by j. a. cebrian). *Boleti'n del Asociacio'n Espan ola de Sistemas de Informacio'n Geogra'fica*, 6:10–12, May 1994. [s-remqt-94]

11582 H. Samet. Spatial data structures. In W. Kim, editor, *Modern Database Systems, The Object Model, Interoperability and Beyond*, pages 361–385. ACM Press and Addison-Wesley, 1995. [s-sds-95]

11583 H. Samet. *Spatial Data Structures: Quadtrees, Octrees, and Other Hierarchical Methods*. Addison-Wesley, Reading, MA, 1989. [s-sdsqo-89]

11584 H. Samet. *The Design and Analysis of Spatial Data Structures*. Addison-Wesley, Reading, MA, 1990. [s-dasds-90] *ISBN:* 0-201-50255-0. *Keywords:* octrees.

11585 H. Samet. The quadtree and related hierarchical data structures. *ACM Comput. Surv.*, 16(2), June 1984. [s-qrhds-84]

11586 H. Samet and W. G. Aref. Spatial data models and query processing. In W. Kim, editor, *Modern Database Systems, The Object Model, Interoperability and Beyond*, pages 338–360. ACM Press and Addison-Wesley, 1995. [sa-sdmqp-95]

11587 H. Samet and A. Rosenfeld. Quadtree representations of binary images. In *Proc. 5th IEEE Internat. Conf. Pattern Recogn.*, pages 815–818, December 1980. [sr-qrbi-80]

11588 H. Samet, A. Rosenfeld, C. Shaffer, and R. E. Webber. Quadtree region representation in cartography: Experimental results. In *Proceedings of the CVPR83 Conference*, pages 176–177, June 1983. [sw-qrrce-83]

11589 H. Samet, A. Rosenfeld, and C. A. Shaffer. Use of hierarchical data structures in geographical information systems. In *ssdh84*, pages 392–411, August 1984. [srs-uhdsg-84]

11590 H. Samet, A. Rosenfeld, C. A. Shaffer, R. C. Nelson, and Y. G. Huang. Application of hierarchical data structures to geographic information systems: phase iii. Computer Science Department TR–1457, University of Maryland, College Park, MD, November 1984. [srsnh-ahdsg-84]

11591 H. Samet, A. Rosenfeld, C. A. Shaffer, R. C. Nelson, Y. G. Huang, and K. Fujimura. Application of hierarchical data structures to geographic information systems: phase iv. Computer Science Department TR–1578, University of Maryland, College Park, MD, December 1985. [srsnhf-ahdsg-85]

11592 H. Samet, A. Rosenfeld, C. A. Shaffer, and R. E. Webber. A geographic information system using quadtrees. *Pattern Recogn.*, 17(6):647–656, November/December 1984. [srsw-gisuq-84]

11593 H. Samet, A. Rosenfeld, C. A. Shaffer, and R. E. Webber. Quadtree region representation in cartography: experimental results. *IEEE Trans. Syst. Man Cybern.*, 13(6):1148–1154, November/December 1983. [srsw-qrrce-83]

11594 H. Samet, C. Shaffer, and R. E. Webber. Digitizing the plane with cells of non-uniform size. Report ??, Dept. Comput. Sci., Univ. Maryland, Baltimore, MD, 1985. [ssw-dpcnu-85]

11595 H. Samet and C. A. Shaffer. A model for the analysis of neighbor finding in pointer–based quadtrees. *IEEE Trans. Pattern Anal. Mach. Intell.*, 7(6):717–720, November 1985. [ss-manfp-85]

11596 H. Samet, C. A. Shaffer, R. C. Nelson, Y. Huang, K. Fujimura, and A. Rosenfeld. Recent developments in quadtree-based geographic information systems. In *ssdh86*, pages 15–32, July 1986. [ssnhfr-rdqbg-86]

11597 H. Samet, C. A. Shaffer, R. C. Nelson, Y. G. Huang, K. Fujimura, and A. Rosenfeld. Recent developments in linear quadtree–based geographic information systems. *Image Vision Comput.*, 5(3):187–197, August 1987. [ssnhfr-rdlqb-87]

11598 H. Samet, C. A. Shaffer, and R. E. Webber. The segment quadtree: a linear quadtree–based representation for linear features. In F. J. Peters, L. R. A. Kessener, and M. L. P. van Lierop, editors, *Data Structures for Raster Graphics*, pages 91–123. Springer-Verlag, Berlin, West Germany, 1986. [ssw-sqlqb-86] *Annote:* also Proceedings of Computer Vision and Pattern Recognition 85, San Francisco, June 1985, 385–389.

11599 H. Samet and M. Tamminen. A general approach to connected component labeling of images. Computer Science Department TR–1649, University of Maryland, College Park, MD, August 1986. [st-gaccl-86] *Annote:* also Proceedings of Computer Vision and Pattern Recognition 86, Miami Beach, June 1986, 312–318.

11600 H. Samet and M. Tamminen. An improved approach to connected component labeling of images. In *Proceedings of the CVPR86 Conference*, pages 312–318, June 1986. [st-iaccl-86]

11601 H. Samet and M. Tamminen. Approximating CSG trees of moving objects. *Visual Comput.*, 6(4):182–209, August 1990. (also University of Maryland Computer Science TR–1472). [st-actmo-90]

11602 H. Samet and M. Tamminen. Bintrees, CSG trees, and time. *Comput. Graph.*, 19(3):121–130, July 1985. Proc. SIGGRAPH '85. [st-bctt-85]

11603 H. Samet and M. Tamminen. Computing geometric properties of images represented by linear quadtrees. *IEEE Trans. Pattern Anal. Mach. Intell.*, 7(2):229–24, March 1985. (also University of Maryland Computer Science TR–1359). [st-cgpir-85]

11604 H. Samet and M. Tamminen. Efficient component labeling of images of arbitrary dimension represented by linear bintrees. *IEEE Trans. Pattern Anal. Mach. Intell.*, 10(4):579–586, July 1988. [st-eclia-88]

11605 H. Samet and M. Tamminen. Experiences with new image component algorithms. In K. Bo and H. A. Tucker, editors, *Proceedings of the EUROGRAPHICS'84 Conference*, pages 239–249, Amsterdam, 1984. North-Holland. [st-enica-84]

11606 Hanan Samet and Robert E. Webber. A comparison of the space requirements of multi-dimensional quadtree-based file structures. *Visual Comput.*, 5(6):349–359, December 1989. [sw-csrmd-89] *Keywords:* image databases, quadtrees, octrees, image compression.

11607 H. Samet and R. E. Webber. Data structures to support Bézier-based modeling. *Comput. Aided Design*, 23(3):162–176, April 1991. [sw-dssbb-91]

11608 H. Samet and R. E. Webber. Hierarchical data structure. In *Proceedings of the Second International Electronic Image Week*, pages 577–584, April 1986. [sw-hds-86]

11609 H. Samet and R. E. Webber. Hierarchical data structures and algorithms for computer graphics, part I: fundamentals. *IEEE Comput. Graph. Appl.*, 8(5):48–68, May 1988. [sw-hdsac1-88] *Precedes:* sw-hdsac2-88.

11610 H. Samet and R. E. Webber. Hierarchical data structures and algorithms for computer graphics, part II: applications. *IEEE Comput. Graph. Appl.*, 8(4):59–75, July 1988. [sw-hdsac2-88] *Keywords:* computer graphics — Imaging Techniques; computer programming — Algorithms; CSG; data processing; Data Structures; hidden-surface algorithms; octree; parallel and perspective projection methods; quadtree; ray tracing; surfaces — Computer Simulation. *Succeeds:* sw-hdsac1-88.

11611 H. Samet and R. E. Webber. On encoding boundaries with quadtrees. Computer Science TR–1162, University of Maryland, College Park, MD, February 1982. [sw-ebq-82]

11612 H. Samet and R. E. Webber. On encoding boundaries with quadtrees. *IEEE Trans. Pattern Anal. Mach. Intell.*, 6(3):365–369, May 1984. [sw-ebq-84] *Abstract:* efficient algorithms for boundary and superimposing two maps encoded as line quadtrees.

11613 H. Samet and R. E. Webber. Storing a collection of polygons using quadtrees. *ACM Trans. Graph.*, 4(3):182–222, July 1985. [sw-scpuq-85]

11614 H. Samet and R. E. Webber. Volume representation. In A. Kaufman, editor, *Volume Visualization*, pages 19–22, Washington, DC, 1991. IEEE Computer Society Press. [sw-vr-91]

H. Samet. See also [688–690, 730–745, 2131, 2377, 4230–4232, 4539, 5034, 5645–5651, 6958, 6993–7001, 8237, 8839, 8840, 10096–10098, 11001, 11002, 11394, 11395, 12004–12008, 12233, 12778, 13415].

J. Sampson. See also [3201].

11615 Pierre Samuel. *Projective Geometry*. Springer-Verlag, New York, 1988. [s-pg-88]

P. Samuel. See also [13860, 13861].

R. Samuel. See also [2837].

T. Sancha. See also [10116].

11616 N. K. Sancheti and S. S. Keerthi. Computation of certain measures of proximity between convex polytopes : A complexity viewpoint. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 2508–2513, 1992. [sk-ccmpc-92]

N. K. Sancheti. See also [7957].

J. S. Sandberg. See also [8897].

C. Sander. See also [13295].

11617 G. Sander. A fast heuristic for hierarchical Manhattan layout. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 447–458. Springer-Verlag, 1996. [s-fhhml-96] *Keywords:* graph drawing, system.

11618 G. Sander. Graph drawing tools and related work. manuscript, Universität des Saarlandes, Saarbrüken, Germany, 1996. Available at http://www.cs.uni-sb.de/RW/users/sander/html/gstools.html. [s-gdtrw-96] *URL:* http://www.cs.uni-sb.de/RW/users/sander/html/gstools.html. *Keywords:* graph drawing.

11619 G. Sander. Graph layout through the VCG tool. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 194–205. Springer-Verlag, 1995. [s-gltvt-95] *Keywords:* graph drawing, system, layered.

11620 L. Sander. The design of robust primitives for geometric algorithms: with applications to line segment intersection and planar convex hull algorithms. Master's thesis, Dept. Comput. Sci., McGill Univ., Montreal, PQ, 1990. [s-drpga-90] *Keywords:* master thesis.

P. Sander. See also [1198].

D. P. Sanders. See also [11307].

A. C. Sanderson. See also [7067, 7068, 10244, 10734–10737].

B. J. Sanderson. See also [11433].

M. B. Sandler. See also [1604].

?? Sands. See also [5229].

A. L. Sangiovanni-Vincentelli. See also [12158].

G. Sangudi. See also [8054].

11621 J. R. Sangwine-Yager. Mixed volumes. In *Handbook of Convex Geometry*, volume A, pages 43–71. North-Holland, 1993. [s-mv-93]

P. V. Sankar. See also [5219, 5220].

11622 D. Sankoff and P. Rousseau. Locating the vertices of a Steiner tree in an arbitrary metric space. *Math. Program.*, 9:240–246, 1975. [sr-lvsta-75]

11623 M. F. Sanner. *??* PhD thesis, UHA, France, 1992. [s--92] *Keywords:* doctoral thesis.

11624 Michel F. Sanner, Arthur J. Olson, and Jean-Claude Spehner. Fast and robust computation of molecular surfaces. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C6–C7, 1995. [sos-frcms-95] *Keywords:* molecules, biology, visualization. *Cites:* lr-ipses-71, r-avpps-77, c-amsc-83, b–94, p–92, ea–93, c–93, s–90, v-hga-94, c–85, s–92, ho-smhsr-94, em-tdas-94, bh-hofca-86, do–93, ZZZ.

G. Sanniti di Baja. See also [727, 728].

11625 C. Sansoni. Visual analysis: A new probabilistic technique to obtain landscape visibility. *Comput. Aided Design*, 28(4):289–299, April 1996. [s-vanpt-96]

11626 L. Santaló. *Integral Probability and Geometric Probability*, volume 1 of *Encyclopedia of Mathematics and its Applications*. Addison-Wesley, 1979. [s-ipgp-79]

11627 L. A. Santaló. A theorem on sets of parallelepipeds with parallel edges. *Publ. Inst. Mat. Univ. Nac. Litoral*, 2:49–60, 1940. [s-tsppe-40]

11628 L. A. Santaló. *Integral geometry 4: on the kinematic measure in the plane*, volume 11 of *Abh. Math. Senn.*, pages 222–236. Hamburg Univ., 1936. [s-ig4km-36]

11629 L. A. Santaló. *Integral geometry 5: on the kinematic measure in space*, volume 357 of *Actualités scientifiques et industrielles*. Hermann, Paris, France, 1936. [s-ig5km-36]

11630 L. A. Santaló. *Integral Geometry and Geometric Probability*. Addison-Wesley, Reading, MA, 1976. [s-iggp-76]

11631 L. A. Santaló. *Introduction to integral geometry*, volume 1198 of *Actualités scientifiques et industrielles*. Hermann, Paris, France, 1953. [s-iig-53]

11632 N. Santoro, J. B. Sidney, S. J. Sidney, and J. Urrutia. Geometric containment and partial orders. *SIAM J. Discrete Math.*, 2(2):245–254, 1989. [sssu-gcpo-89]

11633 N. Santoro, J. B. Sidney, S. J. Sidney, and J. Urrutia. Geometric containment and vector dominance. *Theoret. Comput. Sci.*, 53:345–352, 1987. [sssu-gcvd-87] *Succeeds:* sssu-gcinr-84.

11634 N. Santoro, J. B. Sidney, S. J. Sidney, and J. Urrutia. Geometric containment is not reducible to pareto dominance. Report SCS-TR-37, School Comput. Sci., Carleton Univ., Ottawa, ON, 1984. [sssu-gcinr-84] *Precedes:* sssu-gcvd-87.

N. Santoro. See also [412, 1064, 3684, 3685, 3908, 3909, 3931–3934, 11506].

E. Santos. See also [3647, 7848].

11635 Francisco Santos. A point configuration whose space of triangulations is disconnected. *J. Amer. Math. Soc.*, 13(3):611–637, 2000. [s-pcstd-00] *Comments:* Example in R^6 is not in general position.

11636 Francisco Santos. Applications of the Cayley trick to triangulations of polytopes. In *Abstracts 17th European Workshop Comput. Geom.*, pages 150–153. Freie Universität Berlin, 2001. [s-acttp-01]

11637 Francisco Santos. Bistellar flips in triangulations of point configurations. In *Abstracts 14th European Workshop Comput. Geom.*, pages 131–133. Universitat Polytènica de Catalunya, Barcelona, 1998. [s-bftpc-98]

11638 F. Santos. Codifying the topology of graph embeddings on a surface. In *Abstracts 11th European Workshop Comput. Geom.*, pages 57–59. Universität Linz, 1995. [s-ctges-95]

11639 F. Santos. Non-realizable oriented matroids coming from Delaunay triangulations for strictly convex matrics. in preparation. [s-nromd-]

11640 F. Santos. On Delaunay oriented matroids. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 195–200, 1994. [s-dom-94] *Keywords:* convex distance. *Cites:* bv-om-78, b-vdch-79, cd-vdbcd-85, cmrs-tspvd-93, iklm-cdf3s-93, k-cavd-89, m-dmpcg-90, m-ddvec-92, s-nromd-, sh-cpp-75, blwsz-om-93, cl-hcdc-88, ZZZ.

11641 Francisco Santos. On Delaunay oriented matroids for convex distance functions. In *Abstracts 10th European Workshop Comput. Geom.*, pages 20–24. Universidad de Cantabria, Santander, 1994. [s-domcd-94]

11642 Francisco Santos. Triangulations with very few geometric bistellar neighbors. *Discrete Comput. Geom.*, 23(1):15–33, 2000. [s-tvfgb-00]

F. Santos. See also [2121, 3533, 3534, 3553, 7309, 7310, 8948, 9339].

G. Santucci. See also [4130].

J. L. C. Sanz. See also [2073, 3664].

11643 C. Saona-Vázquez, I. Navazo, and P. Brunet. The visibility octree: A data structure for 3d navigation. *Comput. & Graphics*, 23(5):635–643, October 1999. [snb-vods3-99]

11644 Nickolas Sapidis and Renato Perucchio. Delaunay triangulation of arbitrarily shaped planar domains. *Comput. Aided Geom. Design*, 8(6):421–437, December 1991. [sp-dtasp-91] *Keywords:* Delaunay triangulation, planar domains, computer aided geometric design, computational geometry. *Abstract:* An algorithm is presented for constructing a Domain Delaunay triangulation (DDT) of an arbitrarily shaped, multiply-connected (manifold or nonmanifold), planar domain. DDT preserves the boundary of the given region and has properties identical to those of the standard Delaunay triangulation. Construction of this triangulation involves operations (node refinement, triangulation extraction) that are based solely on properties of the standard Delaunay diagram. Examples are included that demonstrate the validity of the algorithm. (Author abstract) 22 Refs.

11645 N. S. Sapidis. *Domain Tetrahedrization of Curved Polyhedra Defined in a Solid Modeling System*. PhD thesis, Dept. of Mech. Engg., University of Rochester, Rochester, NY 14627, USA, 1992. [s-dtcpd-92] *Keywords:* doctoral thesis.

11646 N. S. Sapidis and R. Perucchio. Domain Delaunay tetrahedrization of solid models. *Internat. J. Comput. Geom. Appl.*, 1(3):299–325, 1991. [sp-ddtsm-91] *Keywords:* tetrahedrization, Delaunay triangulation, solid modeling, topological validity.

11647 N. S. Sapidis and R. Perucchio. Solid/solid classification operations for recursive spatial decomposition and domain triangulation of solid models. *Comput. Aided Design*, 24(10):517–529, October 1992. [sp-sscor-92]

11648 G. Sapiro, R. Kimmel, D. Shaked, B. B. Kimia, and A. M. Bruckstein. Implementing continuous-scale morphology via curve evolution. Technical Report CIS 9302, Technion IIT, Haifa, Israel, January 1993. [skskb-icsmc-93]

G. Sapiro. See also [8059].

H. Saran. See also [9881–9884, 10051].

M. Sardas. See also [6688].

11649 V. Sarin and S. Kapoor. Algorithms for relative neighbourhood graphs and Voronoi diagrams in simple polygons. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 292–298, 1992. [sk-arngv-92] *Cites:* c-cdt-87, et-crnds-88, ghlst-ltavs-86, km-eaesp-88, ps-cgi-85, s-rngam-83, t-rngfp-80, ws-oacdt-87, ZZZ.

11650 M. Sarkar and M. H. Brown. Graphical fisheye views. *Commun. ACM*, 37(12):73–84, 1994. [sb-gfv-94] *Keywords:* graph drawing, fisheye view, system.

11651 M. Sarkar and Marc H. Brown. Graphical fisheye views of graphs. Technical Report CS-91-61, Department of Computer Science, Brown University, 1991. [sb-gfvg-91] *Keywords:* graph drawing.

11652 Manojit Sarkar, Scott S. Snibbe, Oren J. Tversky, and Steven P. Reiss. Stretching the rubber sheet: a metaphor for viewing large layouts on small screens. *Proc. ACM UIST*, ??:81–91, November 1993. [sstr-srsmv-93]

Manojit Sarkar. See also [11165].

11653 K. Sarkaria. A generalized van Kampen-Flores theorem. *Proc. Amer. Math. Soc.*, 11:559–565, 1991. [s-gvkft-91]

11654 K. Sarkaria. Shifting and embeddability of simplicial complexes. Technical Report 91/51, Max-Planck Institut für Mathematik, Bonn, 1992. [s-sesc-92] *Comments:* Proves that a simplicial comples on n vertices topologically embeddable in d-space has $O(n^{\lceil d/2 \rceil})$ simplices. Vast generalization of Upper Bound Theorem etc.

11655 S. E. Sarma. The crossing function and its application to zig-zag tool paths. *Comput. Aided Design*, 31:881–890, 1999. [s-cfazz-99]

11656 N. Sarnak and R. E. Tarjan. Planar point location using persistent search trees. *Commun. ACM*, 29(7):669–679, July 1986. [st-pplup-86]

N. Sarnak. See also [4426, 4427, 5713].

P. Sarnak. See also [9011, 9012].

Sarofim. See also [7134].

11657 M. Sarrafzadeh and D. T. Lee. Restricted track assignment with applications. *Internat. J. Comput. Geom. Appl.*, 4:53–68, 1994. [sl-rtaa-94] *Keywords:* track assignment, circular arc model, NP-hardness, approximation algorithm.

11658 M. Sarrafzadeh, D. Wagner, F. Wagner, and K. Weihe. Wiring knock-knee layouts: A global approach. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 388–399. Springer-Verlag, 1992. [swww-wkklg-92]

11659 M. Sarrafzadeh, D. Wagner, F. Wagner, and K. Weihe. Wiring knock-knee layouts: A global approach. *IEEE Trans. Comput.*, 43:581–589, 1994. [swww-wkklg-94]

11660 M. Sarrafzadeh and C. K. Wong. Hierarchical Steiner tree construction in uniform orientations. Unpublished manuscript. [sw-hstcu-]

M. Sarrafzadeh. See also [2025, 8625, 8978, 9476, 13827].

11661 R. Sarraga. g^1 interpolation of generally unrestrictedcubic bezier curves. *Comput. Aided Geom. Design*, ??(4):23–39, 1987. [s-igubc-87]

T. Sarson. See also [5734].

B. Sarter. See also [5593].

O. Sasson. See also [8872].

S. Sastry. See also [1228].

S. Shankar Sastry. See also [9987].

M. Sata. See also [3709].

H. Sato. See also [13741].

M. Sato. See also [946, 10249, 10250].

Shin'ichi Satoh. See also [7866].

11662 N. Sauer. On the density of families of sets. *J. Combin. Theory Ser. A*, 13:145–147, 1972. [s-dfs-72]

11663 P. Sauer. On the recognition of digital circles in linear time. *Comput. Geom. Theory Appl.*, 2(5):287–302, March 1993. [s-rdclt-93]

G. de Saussure. See also [6042].

11664 J. E. Savage. Heuristics for level graph embeddings. In *Proc. Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, pages 307–318, Linz, Austria, 1983. Trauner Verlag. [s-hlge-83] *Keywords:* graph drawing.

J. E. Savage. See also [6691].

K. A. Savastyanov. See also [8253].

11665 W. J. Savitch. Relationships between nondeterministic and deterministic tape complexities. *J. Comput. Syst. Sci.*, 4(2):177–192, 1970. [s-rbndt-70]

I. N. Savvides. See also [2348].

H. Sawhney. See also [5336].

H. S. Sawhney. See also [326].

11666 D. G. Sawker, G. R. Shevare, and S. P. Koruthu. Contour plotting for scattered data. *Computers and Graphics*, 11(2):101–104, 1987. [ssk-cpsd-87] *Annote:* Usual triangulation, optimization, linear interpolation. Wrinkles: data is shelled, successive convex hulls are formed. Switching DT between hulls only. A (pointless?) subdivision stage is added.

J. Saxe. See also [288, 289, 6420].

11667 J. B. Saxe. *Decomposable searching problems and circuit optimization by retiming: two studies in general transformations of computational structures.* Ph.D. thesis, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1985. Report CMU-CS-85-162. [s-dspco-85] *Keywords:* doctoral thesis.

11668 J. B. Saxe. Embeddability of weighted graphs in k-space is strongly NP-hard. In *Proc. 17th Allerton Conf. Commun. Control Comput.*, pages 480–489, 1979. [s-ewgks-79]

11669 J. B. Saxe. On the number of range queries in k-space. *Discrete Appl. Math.*, 1:217–225, 1979. [s-nrqks-79]

11670 J. B. Saxe. Two papers on graph embedding problems. Technical Report CMU-CS-80-102, Dept. Comput. Sci., Carnegie Mellon Univ., Pittsburgh, PA, 1980. [s-tpgep-80]

11671 J. B. Saxe and J. L. Bentley. Transforming static data structures to dynamic structures. In *Proc. 20th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 148–168, 1979. [sb-tsdsd-79] *Precedes:* bs-dsp1s-80.

J. B. Saxe. See also [1651–1653].

11672 Sanjeev Saxena, P. C. P. Bhatt, and V. C. Prasad. Efficient VLSI parallel algorithm for Delaunay triangulation on orthogonal tree network in two and three dimensions. *IEEE Trans. Comput.*, 39(3):400–404, March 1990. [sbp-evpad-90] *Keywords:* computational geometry, parallel algorithms, triangulation, VLSI complexity. *Annote:* See correction in 40:1 (1991) p122. Uses circumcircle algorithm in parallel starting with edge to nearest neighbour. Circumcircle test is $|a^2 + b^2 - c^2|/4a^2b^2$. *Abstract:* An algorithm with worst case time complexity O(log**2N) in two dimensions and O(m**1**/**2log N) in three dimensions with N input points and m as the number of tetrahedra in triangulation is given. Its AT**2 VLSI complexity on Thompson's logarithmic delay model is O(N**2log**6N) in two dimensions and O(m**2Nlog**4 N) in three dimensions. 19 Refs.

11673 G. Sazaklis, E. M. Arkin, J. S. B. Mitchell, and S. S. Skiena. Geometric decision trees for optical character recognition. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 394–396, 1997. [sams-gdtoc-97] *Cites:* agmmps-ppdtg-93, ammrs-dtgm-93, bfos-crt-84, c-opcrt-91, -eera-57, fkmprs-lofp-94, msy-hrord-92, myy-rmrhc-84, n-sapr-68, rs-tgo-94, sl-sdtcm-91, ZZZ.

11674 G. Sazaklis, Esther M. Arkin, Joseph S. B. Mitchell, and Steven S. Skiena. Probe trees for touching character recognition. In *Proc. 1998 International Conference on Imaging Science, Systems and Technology*, pages 282–289, July 1998. [sams-pttcr-98] *Keywords:* geometric decision trees, optical character recognition, text processing.

11675 M. Sbert. An integral geometry based method for fast form-factor computation. In R. J. Hubbold and R. Joan, editors, *Proc. Eurographics '93*, pages 409–420, 1993. [s-igbmf-93]

M. Sbert. See also [2765].

11676 H. E. Scarf. Some remarks on Lenstra's algorithm. Manuscript, ??, ?? [s-srla-??]

H. E. Scarf. See also [3521, 8990].

11677 L. Scarlatos. *Spatial data representations for rapid visualization and analysis.* Ph.D. thesis, Department of Computer Science, State University of New York at Stony Brook, Stony Brook, NY 11794-4400, 1993. [s-sdrrv-93] *Keywords:* doctoral thesis.

11678 Lori Scarlatos and Theo Pavlidis. Adaptive hierarchical triangulation. In *Proc. 10th Internat. Sympos. Comput.-Assist. Cartog.*, volume 6 of *Technical Papers 1991 ACSM-ASPRS Annual Convention*, pages 234–246, 1991. [sp-aht-91] *Annote:* Hierarchical triangulation to represent surface at different levels of detail. Triangles are split in one of different ways, depending on how it deviates from underlying surface. This tends to avoid skinny triangles, are require a less deep hierarchy.

11679 Lori Scarlatos and Theo Pavlidis. Hierarchical triangulation using cartographics coherence. *CVGIP: Graph. Models Image Process.*, 54(2):147–161, March 1992. [sp-htucc-92] *Annote:* Triangles where there are large deviations from the surface are split (preferably along an edge) into 2 3 or 4 triangles each. Uses average "sliveriness" (P^2/A) to measure mesh quality.

11680 Lori Scarlatos and Theo Pavlidis. Hierarchical triangulation using terrain features. In *Proceedings of the 1st 1990 IEEE Conference on Visualization, Visualization '90*, pages 168–175, IEEE Service Center, Piscataway, NJ, USA (IEEE cat n 90CH2914-0), 1990. IEEE. [sp-htutf-90] *Keywords:* hierarchical triangulation, terrain features, digital elevation models, visualization. *Abstract:* A hierarchical triangulation built from a digital elevation model in grid form is described. The authors present an algorithm that produces a hierarchy of triangulations in which each level of the hierarchy corresponds to a guaranteed level of accuracy. The number of very thin triangles (slivers) is significantly reduced. Such triangles produced undesirable effects in animation. In addition the number of levels of the triangulated irregular network (TIN) tree is reduced. This speeds up searching within the data structure. Tests on data with digital elevation input have confirmed the theoretical expectations. On eight such sets the average sliveriness with the method was between 1/5 and 1/10 of old triangulations and number of levels was about one third. There was an increase in the number of descendants at each level, but the total number of triangles was also lower. 20 Refs.

11681 L. Scarlatos and T. Pavlidis. Optimizing triangulation by curvature equalization. In *Proceedings of the 3rd 1992 IEEE Conference on Visualization, Visualization '92*, pages 333–339. IEEE, 1992. [sp-otce-92] *Keywords:* hierarchical triangulation, terrain features, digital elevation models, visualization.

Riccardo Scateni. See also [9825].

11682 B. Schachter. Decomposition of polygons into convex sets. *IEEE Trans. Comput.*, C-27(11):1078–1082, 1978. [s-dpcs-78] *Annote:* Cuts polygon along Delaunay edges at reflex angles. $O(n)$ process to find De's at a given reflex vertex - picks one or two to eliminate reflex. $O(mn)$.

11683 B. Schachter, A. Rosenfeld, and L. S. David. Random mosaic models for textures. *IEEE Trans. Syst. Man Cybern.*, 8(9):694–702, 1978. [srd-rmmt-78]

B. Schachter. See also [349].

B. J. Schachter. See also [8626].

H. Schaeben. See also [1073].

D. A. Schaefer. See also [10914].

11684 D. H. Schaefer. The PMMP - a pyramid of MPP processing elements. To appear. [s-ppmpe-]

M. Schaeffer. See also [7236].

11685 H. M. Schaettler. On the optimality of bang-bang trajectories in R^3. *Bull. Amer. Math. Soc.*, 18(1):113–116, 1987. [s-obbtr-87]

A. Schäffer. See also [10700].

11686 A. A. Schäffer. Trees for multidimensional search problems. M.S. thesis, Carnegie-Mellon Univ., Pittsburgh, PA, 1983. [s-tmsp-83] *Keywords:* master thesis.

11687 A. A. Schäffer and C. J. Van Wyk. Convex hulls of piecewise-smooth Jordan curves. *J. Algorithms*, 8:66–94, 1987. [sv-chpsj-87]

A. A. Schäffer. See also [1102, 8287].

11688 M. Schäffter. Drawing graphs on rectangular grids. *Discrete Appl. Math.*, 63:75–89, 1995. [s-dgrg-95] *Keywords:* graph drawing, orthogonal, grid.

11689 P. Schapira. Operations on constructible functions. Report 88-2, Departement de mathematique et informatique, Universite Paris-Nord, 93430 Villetaneuse, France, 1988. [s-ocf-91b] *Comments:* Presents an equivalent of kinetic framework, grs-kfcg-83, in 2 and higher dimensions.

Daniel Scharstein. See also [4176–4178].

11690 D. Schattschneider and M. Senechal. Tilings. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 3, pages 43–62. CRC Press LLC, Boca Raton, FL, 1997. [ss-t-97]

B. Schaudt. See also [4434].

11691 B. F. Schaudt. *Multiplicative Weighted Crystal Growth Voronoi Diagrams*. PhD thesis, Dartmouth College, 1991. [s-mwcgv-91] *URL:* Inpreparation. *Keywords:* doctoral thesis.

11692 B. F. Schaudt and R. L. Drysdale. Higher-dimensional Voronoi diagrams for convex distance functions. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 274–279, 1992. [sd-hdvdc-92] *Cites:* a-vdsfg-91, cd-vdbcd-85, c-ochan-91, d-pacdt-90, e-acg-87, gs-pmgsc-85, l-tdvdl-80, lw-vdllm-80, ph-chfsp-77, rs-tchnp-85, sdt-opsal-91, ZZZ.

11693 B. F. Schaudt and R. L. Drysdale. Multiplicatively weighted crystal growth Voronoi diagrams. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 214–223, 1991. [sd-mwcgv-91] *Keywords:* Voronoi diagrams. *Cites:* ae-oacwv-84, a-pdpaa-87, a-vds-88, bsh-sgfgt-84, cd-vdbcd-85, f-savd-87, ft-dmtf-87, ft-csmet-88, gb-msp-78, g-nivpo-71, ghj-gpma-67, gs-cdtp-78, g-dg-63, g-ims-72, hj-gifdg-68, hl-ius-79, l-cspc-72, mhm-cacjm-80, pftv-nr-86, ps-cgi-85, sb-ina-80, s-mwcgv-91, th-gmt1m-80, wt-fcwvd-90, ZZZ.

B. F. Schaudt. See also [8381].

11694 G. Schaufler and W. Stuerzlinger. Generating multiple levels of detail for polygonal geometry models. In *Virtual Environments*, pages 53–62, January 1995. [ss-gmldp-95] *Keywords:* surface simplification.

K. E. Schauser. See also [3647, 7848].

11695 C. F. Scheepers. Polygon shading on vector type devices. *Quaestiones Informaticae*, 5(2):46–55, October 1987. [s-psvtd-87]

11696 Robert W. Scheifler and Jim Gettys. The X window system. *ACM Trans. Graph.*, 5(2):79–109, 1986. [sg-xws-86] *Keywords:* virtual terminals, window managers.

E. R. Scheinerman. See also [2446, 12797].

R. H. Schelp. See also [4988].

11697 W. Schempp. Computational signal geometry. Report ??, Lehrstuhl Math. I, Univ. Siegen, Siegen, West Germany, 1985. [s-csg-85]

H. Scherga. See also [5983].

11698 I. D. Scherson and E. Caspary. Data structures and the time complexity of ray tracing. *Visual Comput.*, 3:201–213, 1987. [sc-dstcr-87]

11699 P. Scheuermann and M. Ouksel. Multidimensional *b*-trees for associative searching in database systems. Report 80-12-DBM-05, Dept. Elect. Engrg. Comput. Sci., Northwestern Univ., Evanston, IL, 1980. [so-mbtas-80]

P. Scheuermann. See also [10454].

11700 C. Schevon. *Algorithms for geodesics on polytopes*. PhD thesis, Johns Hopkins University, 1989. [s-agp-89] *Keywords:* polytopes, shortest paths, diameter.

11701 C. Schevon and J. O'Rourke. A conjecture on random unfoldings. Technical Report JHU-87/20, Johns Hopkins Univ., Baltimore, MD, July 1987. [so-cru-87] *Keywords:* polytopes, unfoldings.

11702 C. Schevon and J. O'Rourke. An algorithm for finding edge sequences on a polytope. Technical Report JHU-89/03, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, February 1989. [so-afesp-89] *Keywords:* polytopes, shortest paths, edge sequences.

11703 C. Schevon and J. O'Rourke. The number of maximal edge sequences on a convex polytope. In *Proc. 26th Allerton Conf. Commun. Control Comput.*, pages 49–57, October 1988. [so-nmesc-88] *Keywords:* shortest paths, polytopes.

C. Schevon. See also [138, 139, 10404–10406].

11704 C. A. Schevon and J. S. Vitter. A parallel algorithm for recognizing unordered depth-first search. *Inform. Process. Lett.*, ??:105–110, June 24, 1988. [sv-parud-88]

Catherine A. Schevon. See also [140].

11705 Baruch Schieber. Computing a minimum-weight k-link path in graphs with the concave Monge property. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 405–411, 1995. [s-cmwkl-95] *Keywords:* largest inscribed k-gon, smallest k-gon from set of n halfplanes, polygon containment, matrix searching.

11706 B. Schieber and U. Vishkin. On finding lowest common ancestors: Simplification and parallelization. In *Proc. 3rd Aegean Workshop Computing*, volume 319 of *Lecture Notes Comput. Sci.*, pages 111–123. Springer-Verlag, 1988. [sv-flcas-88]

B. Schieber. See also [122, 123, 274, 284, 285, 309, 310, 549, 1768, 1828, 1829, 2098–2100, 8496, 8498, 9171, 9182].

S. M. Schieber. See also [4796].

B. Schiff. See also [11239].

D. Schikore. See also [1252, 1279, 1280, 1838, 1839, 8339].

D. R. Schikore. See also [1292, 1841].

D. G. Schiller. See also [3396].

11707 R. J. Schilling. *Fundamentals of Robotics, Analysis and Control*. Prentice Hall, Englewood Cliffs, NJ, 1990. [s-frac-90]

W. Schilling. See also [6516].

T. Schilz. See also [9468, 9469, 9471].

11708 P. H. Schimpf, D. R. Haynor, and Y. Kim. Automated meshing of complex 3-d domains from classified images. In *Proc. 4th International Meshing Roundtable*, pages 193–204, Albuquerque, NM, 1995. Sandia National Laboratories. [shk-amc3d-95]

R. Schindler. See also [11760].

11709 W. Schindler. Equivariant mappings: a new approach in stochastic simulations. *Comput. Geom. Theory Appl.*, 4:327–343, 1994. [s-emnas-94]

W. Schindler. See also [2286].

A. Schinzel. See also [3809].

11710 Haijo Schipper. Determining contractability of curves. In *Abstracts 8th European Workshop Comput. Geom.*, page 31. Utrecht University, 1992. [s-dcc-92c]

11711 H. Schipper. Determining contractibility of curves. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 358–367, 1992. [s-dcc-92] *Cites:* d-uudg-12, d-tdkaz-12, h-cit-79, hs-aacsl-91, hs-cmlpg-91, my-chthu-88, s-tacg-90, s-ctcgt-80, v-kfdp-89, vy-cccs-90, ZZZ.

11712 H. Schipper. Generating triangulations of 2-manifolds. Report CS-9008, Dept. Comput. Sci., Univ. Groningen, Groningen, Netherlands, 1990. [s-gt2m-90]

11713 Haijo Schipper. Generating triangulations of 2-manifolds. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 237–248. Springer-Verlag, 1991. [s-gt2m-91] *Keywords:* topology. *Annote:* 7th Intern. Workshop Comput. Geom. *Abstract:* In this paper we will show how for a given triangulation T of a 2-manifold M a minimal triangulation $T_{\min}$ of M and a sequence S of vertex-splittings can be calculated such that performing S on $T_{\min}$ gives T. Our method will work in either $O(n \log n)$ time and linear space or in linear time if $O(n^2)$ space is available, where n is the number of vertices of T.

11714 H. Schipper. The word problem: a geometric approach. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 59–65, 1992. [s-wpga-92] *Cites:* d-uudg-12, d-tdkaz-12, g-dawp-60, h-cit-79, hs-aacsl-91, hs-cmlpg-91, my-chthu-88, s-tacg-90, s-dcc-92, s-ctcgt-80, v-kfdp-89, vy-cccs-90, ZZZ.

11715 H. Schipper and M. H. Overmars. Dynamic partition trees. Report RUU-CS-89-25, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1989. [so-dpt-89] *Precedes:* so-dpt-90.

11716 H. Schipper and M. H. Overmars. Dynamic partition trees. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 404–417. Springer-Verlag, 1990. [so-dpt-90] *Succeeds:* so-dpt-89.

11717 H. Schipper and M. H. Overmars. Dynamic partition trees. *BIT*, 31:421–436, 1991. [so-dpt-91] *Succeeds:* so-dpt-90.

H. Schipper. See also [4109, 10461, 10496].

11718 S. Schirra. A case study on the cost of geometric computing. In M. T. Goodrich and C. C. McGeoch, editors, *Algorithm Engineering and Experimentation (Proc. ALENEX '99)*, volume 1619 of *Lecture Notes Comput. Sci.*, pages 156–176. Springer-Verlag, 1999. [s-cscgc-99]

11719 S. Schirra. Approximate algorithms for approximate congruence. Report A-21/90, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1990. [s-aaac-90]

11720 S. Schirra. Approximate decision algorithms for approximate congruence. *Inform. Process. Lett.*, 43:29–34, 1992. [s-adaac-92]

11721 S. Schirra. *Approximative Bewegungsplanungsverfahren*. Ph.D. thesis, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1992. [s-ab-92] *Keywords:* doctoral thesis.

11722 S. Schirra. Moving a disc between polygons. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 395–396, 1993. [s-mdbp-93] *Keywords:* video review. *Cites:* egs-oplms-86, ht-fafnc-84, nm-lledt-90, oy-rmpmd-85, r-mdbp-91, y-oavds-87, ZZZ.

11723 Stefan Schirra. Robustness and precision issues in geometric computation. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, chapter 14, pages 597–632. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [s-rpigc-00] *Annote:* Chapter 14 of su-hcg-00.

11724 S. Schirra. Über die Bitkomplexität der ϵ-Kongruenz. Master's thesis, Fachbereich Informatik, Universität des Saarlandes, 1988. [s-udbde-88] *Keywords:* master thesis.

11725 *The CGAL Reference Manual*, 1999. Release 2.0. [svy-crm-99] *URL:* http://www.cs.uu.nl/CGAL/.

S. Schirra. See also [576, 577, 605, 1728, 1729, 2609–2611, 2614–2617, 3165, 4030–4032, 5100–5102, 6773–6775, 8364, 9453, 9454, 9468–9471, 11910].

M. Schiwietz. See also [8348].

M. Schkolnick. See also [1645].

11726 John Schlag. Fast embossing effects on raster image data. In Paul Heckbert, editor, *Graphics Gems IV*, pages 433–437. Academic Press, Boston, MA, 1994. [s-feeri-94] *Keywords:* bump mapping, texture, image filter, paint program, shading. *Annote:* Presents a simple, fast technique that interprets an image as a height field or bump map, and then shades it, yielding an embossing effect. Contains C code.

11727 M. Schlag, F. Luccio, P. Maestrini, D. T. Lee, and C. K. Wong. A visibility problem in VLSI layout compaction. In Franco P. Preparata, editor, *VLSI Theory*, volume 2 of *Adv. Comput. Res.*, pages 259–282. JAI Press, Greenwich, Conn., 1984. [slmlw-vpvlc-84] *Keywords:* graph drawing.

M. Schlag. See also [662].

M. D. F. Schlag. See also [13558, 13717].

M. Schlenkrich. See also [6778].

11728 Christophe Schlick. A fast alternative to Phong's specular model. In Paul Heckbert, editor, *Graphics Gems IV*, pages 385–387. Academic Press, Boston, MA, 1994. [s-fapsm-94] *Keywords:* Phong illumination, specular reflection, exponentiation. *Annote:* Describes a simple approximation to Phong's specular reflection formula that does not require exponentiation or table lookup.

11729 Christophe Schlick. Fast alternatives to Perlin's bias and gain functions. In Paul Heckbert, editor, *Graphics Gems IV*, pages 401–403. Academic Press, Boston, MA, 1994. [s-fapbg-94] *Keywords:* hypertexture, texture synthesis. *Annote:* Gives a simple approximation to some formulas that are commonly used in procedural texture synthesis and volume synthesis.

11730 Christophe Schlick. High dynamic range pixels. In Paul Heckbert, editor, *Graphics Gems IV*, pages 422–429. Academic Press, Boston, MA, 1994. [s-hdrp-94] *Keywords:* quantization, dynamic range. *Annote:* Proposes a pixel encoding technique that allows color images with high dynamic range to be stored using only 24 bits per pixel. Contains C code.

11731 D. Schmalstieg and R. F. Tobler. Fast projected area computation for three-dimensional bounding boxes. *J. Graphics Tools*, 4(2):37–43, 1999. [st-fpact-99]

Edward Schmeichel. See also [6569].

E. F. Schmeichel. See also [6570].

J. H. Schmerl. See also [1382].

11732 F. Schmid. Symbolische Lösungen und Term-Ersetzungssysteme in der projektiven und affinen Geometrie. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [s-sltep-89]

B. K. Schmidt. See also [9321].

11733 J. P. Schmidt, A. Siegel, and A. Srinivasan. Chernoff-Hoeffding bounds for applications with limited idependence. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 331–340, 1993. [sss-chbal-93]

P. H. Schmidt. See also [513].

11734 P.-M. Schmidt. Counting and generating circular sequences of finite planar point sets. *Algorithms Rev.*, 2(3):139–151, 1992. [s-cgcsf-92]

11735 Peter-Michael Schmidt. On the number of permutations of point sets generated by plane sweeps and sphere sweeps. In *Abstracts 10th European Workshop Comput. Geom.*, pages 41–44. Universidad de Cantabria, Santander, 1994. [s-nppsg-94]

Peter-Michael Schmidt. See also [2013–2016].

11736 W. M. Schmidt. Integer points on curves and surfaces. *Monatsh. Math.*, 99:45–72, 1985. [s-ipcs-85]

11737 W. M. Schmidt. Irregularities of distribution vii. *Acta Arithmetica*, 21:45–50, 1972. [s-id7-72]

W. M. Schmidt. See also [5341].

11738 A. Schmitt. On the time and space complexity of certain exact hidden line algorithms. Report 24/81, Fakultät Inform., Univ. Karlsruhe, Karlsruhe, West Germany, 1981. [s-tscce-81]

11739 A. Schmitt. Reporting geometric inclusions with an application to the hidden line problem. Report 18/81, Univ. Karlsruhe, Karlsruhe, West Germany, 1981. [s-rgiah-81]

11740 A. Schmitt. Time and space bounds for hidden line and hidden surface algorithms. In *Proc. Eurographics 81*, pages 43–56, Amsterdam, Netherlands, 1981. North-Holland. [s-tsbhl-81]

11741 A. Schmitt, O. Deussen, and M. Kreeb. *Einführung in graphisch-geometrische Algorithmen*. B. G. Teubner, Stuttgart, 1996. [sdk-egga-96] *Keywords:* textbook, in German.

11742 A. Schmitt and H. Müller, editors. *Abstracts 3rd Intern. Workshop Comput. Geom.* Universität Karlsruhe, 1985. [sm-iwcg-85]

11743 A. Schmitt, H. Müller, and W. Leister. Ray tracing algorithms: theory and practice. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 997–1030. Springer-Verlag, 1988. [sml-rtatp-88] *Keywords:* ray tracing, implementing algorithms, survey paper.

11744 D. Schmitt and J.-C. Spehner. On Delaunay and Voronoi diagrams of order k in the plane. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 29–32, 1991. [ss-dvdok-91] *Cites:* agss-ltacv-89, a-ndrcv-90, bt-hrodt-86, bdt-dchov-90, ce-iacko-87, e-esaa-86, eos-calha-86, es-cvdpu-90, l-knnvd-82, sh-cpp-75, ZZZ.

11745 D. Schmitt and J.-C. Spehner. On equiangularity of Delaunay diagrams in every dimension. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 346–351, 1993. [ss-edded-93] *Cites:* a-vdsfg-91, e-acg-87, ms-getcc-88, ps-cgi-85, r-odtr-91, s-let-78, ZZZ.

Dominique Schmitt. See also [82].

11746 F. Schmitt and B. Gholizadeh. Adaptive polyhedral approximation of digitized surfaces. In *Proc. SPIE Conf. on Comput. Vision ind Robots*, volume 595, pages 167–171, 1985. [sg-apads-85]

F. Schmitt. See also [506].

11747 F. J. Schmitt, B. A. Barsky, and W. Du. An adaptive subdivision method for surface-fitting from sampled data. *Comput. Graph.*, 20(4):179–188, 1986. Proc. SIGGRAPH '86. [sbd-asmsf-86]

11748 Michel Schmitt. Some examples of algorithms analysis in computational geometry by means of mathematical morphological techniques. In J.-D. Boissonnat and J.-P. Laumond, editors, *Proc. of the Workshop on Geometry and Robotics*, volume 391 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1989. [s-seaac-89]

M. Schmitt. See also [8561].

11749 P. Schmitt. Disks with special properties of densest packings. *Discrete Comput. Geom.*, 6:181–190, 1991. [s-dspdp-91]

11750 P. Schmitt. σ-morphic sets of prototiles. *Discrete Comput. Geom.*, 2:271–295, 1987. [s-smsp-87]

11751 H. Schneider and G. P. Barker. *Matrices and Linear Algebra*. Dover Publ., 1989. [sb-mla-89]

11752 R. Schneider. *Convex bodies: The Brunn-Minkowski theory*, volume 44 of *Encyclopedia of Mathematics and its Applications*. Cambridge University Press, 1993. [s-cbbmt-93]

11753 R. Schneider. Discrete aspects of stochastic geometry. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 9, pages 167–184. CRC Press LLC, Boca Raton, FL, 1997. [s-dasg-97]

11754 R. Schneider. Krümmungsschwerpunkte konvexer Körper. *Abh. Math. Sem. Hamburg*, 37:112–132, 1972. [s-kkk-72]

11755 R. Schneider. Random approximation of convex sets. *Microscopy*, 151:211–227, 1988. [s-racs-88]

11756 R. Schneider. Tessellations generated by hyperplanes. *Discrete Comput. Geom.*, 2:223–232, 1987. [s-tgh-87]

11757 Ralf Schneider and Hans-Peter Kriegel. The TR*-tree: A new representation of polygonal objects supporting spatial queries and operations. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 249–263. Springer-Verlag, 1991. [sk-ttnrp-91] *Annote:* 7th Intern. Workshop Comput. Geom.

R. Schneider. See also [104, 1566, 2047, 8346].

11758 Robert Schneiders. Automatic generation of hexahedral finite element meshes. In *Proc. 4th International Meshing Roundtable*, pages 103–114, Albuquerque, NM, 1995. Sandia National Laboratories. [s-aghfe-95]

11759 R. Schneiders. Open problem. [s-op-] *URL:* http://www-users.informatik.rwth-aachen.de/~roberts/open.html.

11760 R. Schneiders, R. Schindler, and F. Weiler. Octree-based generation of hexahedral element meshes. In *Proc. 5th International Meshing Roundtable*, pages 205–215, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [ssw-obghe-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

M. Schneier. See also [7077].

G. Schnitger. See also [1780].

11761 W. Schnyder. Embedding planar graphs on the grid. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 138–148, 1990. [s-epgg-90] *Keywords:* graph drawing.

11762 W. Schnyder. Planar graphs and poset dimension. *Order*, 5:323–343, 1989. [s-pgpd-89] *Keywords:* graph drawing, convex polytope, order dimension.

11763 W. Schnyder and W. T. Trotter. Convex embeddings of 3-connected plane graphs. *Abstracts of the AMS*, 13(5):502, 1992. [st-ce3cp-92] *Keywords:* graph drawing, planar, convex, straight-line.

11764 T. Schöbel. A new parsing strategy for context free grammars. *Algorithms Rev.*, 2(2):63–76, 1991. [s-npscf-91]

11765 A. H. Schoen. A defect-correction algorithm for minimizing the volume of a simple polyhedron which circumscribes a sphere. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 159–168, 1986. [s-dcamv-86] *Cites:* bh-vpius-70, bs-dcmta-84, g-ipp-35, gp-taafp-86, g-cp-67, k-vmafs-72, l-rmctf-82, mks-eapuc-77, m-aludk-97, s-pur-22, s-uipkp-27, wwv-oasdt-85, ZZZ.

11766 I. J. Schoenberg and S. K. Zaremba. On Cauchy's lemma concerning convex polygons. *Canad. J. Math.*, 19:1062–1077, 1967. [sz-clccp-67]

B. Scholten. See also [10497, 10498].

11767 H. J. Scholten and J. C. H. Stillwell, editors. *Geographical Information Systems for Urban and Regional Planning*. Kluwer Academic Publishers, the Netherlands, 1990. [ss-gisur-90]

11768 H. W. Scholten and M. H. Overmars. General methods for adding range restrictions to decomposable searching problems. *J. Symbolic Comput.*, 7:1–10, 1989. [so-gmarr-89]

11769 E. Schömer. *Interaktive Montagesimulation mit Kollisionserkennung*. PhD thesis, Universität des Saarlandes, Saarbrücken, Germanyy, 1994. [s-immk-94] *Keywords:* doctoral thesis.

11770 E. Schömer, J. Sellen, M. Teichmann, and C. Yap. Efficient algorithms for the smallest enclosing cylinder problem. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 264–269, 1996. [ssty-easec-96]

11771 Elmar Schömer, Jurgen Sellen, Marek Teichmann, and Chee Yap. Smallest enclosing cylinders. Technical Report, Courant Institute, New York University, 1996. [ssty-sec-96t] *URL:* http://www.cs.nyu.edu.

11772 Elmar Schömer, Jurgen Sellen, Marek Teichmann, and Chee Yap. Smallest enclosing cylinders. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages C13–C14, 1996. [ssty-sec-96] *Cites:* agr-pahdc-94, am-rsss-94, m-apcad-83, ptvf-nrc-88, ssty-sec-96t, y-ecgtm-95, ZZZ.

11773 E. Schömer, J. Sellen, M. Teichmann, and C. K. Yap. Smallest enclosing cylinders. *Algorithmica*, 27(2):170–186, 2000. [ssty-sec-00]

11774 Elmar Schömer, Jürgen Sellen, and Markus Welsch. Exact geometric collision detection. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 211–216, 1995. [ssw-egcd-95]

11775 E. Schömer and C. Thiel. Efficient collision detection for moving polyhedra. Report MPI-I-94-147, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [st-ecdmp-94]

11776 Elmar Schömer and Christian Thiel. Efficient collision detection for moving polyhedra. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 51–60, 1995. [st-ecdmp-95] *Keywords:* intersection detection, linearization, range queries, parametric search, Plucker coordinates. *Cites:* am-rsss-92, am-rsps-92, apszsha-93, b-idss-79, dk-ladsc-85, c-dcbp-84, dk-dsppu-90, dhks-isccd-90, k-nrdsc-92, m-rsehc-91, m-apcad-83, n-flsah-85, p-crz-91, p-innpl-92, p-rst3s-93, ps-cgi-85, s-immk-94, us-hmsss-92, yy-gaddg-85, ZZZ.

11777 Elmar Schömer and Christian Thiel. Subquadratic algorithms for the general collision detection problem. In *Abstracts 12th European Workshop Comput. Geom.*, pages 95–101. Universität Münster, 1996. [st-sagcd-96]

E. Schömer. See also [2772, 2773, 2775, 4622, 5361–5364].

E. Schonberg. See also [1491, 7689].

11778 A. Schönhage. The fundamental theorem of algebra in terms of computational complexity. Technical report, Univ. Tübingen, 1982. [s-ftatc-82]

11779 A. Schönhage, M. Paterson, and N. Pipinger. Finding the median. *J. Comput. Syst. Sci.*, 13:184–199, 1976. [spp-fm-76]

11780 E. Schönhardt. Über die Zerlegung von Dreieckspolyedern in Tetraeder. *Math. Ann.*, 98:309–312, 1928. [s-udzvd-28]

11781 S. Schönherr. Berechnung kleinster Ellipsoide um Punktmengen. Master's thesis, Free University Berlin, Berlin, Germany, 1994. Diploma Thesis. [s-bkeup-94] *Keywords:* master thesis.

S. Schönherr. See also [5100–5102, 5812–5814].

11782 Anneke A. Schoone and J. van Leeuwen. Triangulating a star-shaped polygon. Report RUU-CS-80-3, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1980. [sl-tssp-80]

Anneke A. Schoone. See also [8662].

11783 Peter Schorn. Accuracy and degeneracy in geometric computation. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 22. Universität Siegen, 1990. [s-adgc-90]

11784 P. Schorn. Accurate and efficient algorithms for proximity problems. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 24–27, 1990. [s-aeapp-90] *Cites:* gy-frcg-86, h-pargc-89, hns-psscp-88, hns-arsa2-92, m-vigau-88t, m-dpggt-89, gss-egbra-89, ZZZ.

11785 P. Schorn. An object-oriented workbench for experimental geometric computation. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 172–175, 1990. [s-ooweg-90] *Cites:* f-savd-87, g-pacpa-88, hns-psscp-88, mn-lledt-89, ps-cgi-85, r-pa-76, ZZZ.

11786 Peter Schorn. Implementing the XYZ GeoBench: A programming environment for geometric algorithms. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 187–202. Springer-Verlag, 1991. [s-ixgpe-91] *Annote:* 7th Intern. Workshop Comput. Geom.

11787 P. Schorn. *Robust algorithms in a program library for geometric computation*. Ph.D. thesis, ETH Zürich, Switzerland, 1991. Report 9519. [s-raplg-91t] *Keywords:* doctoral thesis. *Precedes:* s-raplg-91.

11788 P. Schorn. *Robust Algorithms in a Program Library for Geometric Computation*, volume 32 of *Informatik-Dissertationen ETH Zürich*. Verlag der Fachvereine, Zürich, 1991. [s-raplg-91] *Succeeds:* s-raplg-91t.

11789 Peter Schorn and Frederick Fisher. Testing the convexity of a polygon. In Paul Heckbert, editor, *Graphics Gems IV*, pages 7–15. Academic Press, Boston, MA, 1994. [sf-tcp-94] *Keywords:* computational geometry, concave polygon. *Annote:* Gives an algorithm and code to determine if a polygon is convex, nonconvex (concave but not convex), or non-simple (self-intersecting). For many polygon operations, faster algorithms can be used if the polygon is known to be convex. This is true when scan converting a polygon and when determining if a point is inside a polygon, for instance. Contains C code.

P. Schorn. See also [6932–6936, 10146, 10147].

A. Schorr. See also [12077, 12078].

René Schott. See also [1218, 2187–2191].

11790 Schrader. Approximations of clustering and subgraph problems on trees. *Discrete Appl. Math.*, 6, 1983. [s-acspt-83]

11791 O. Schramm. How to cage an egg. Technical Report, Univ. of California, San Diego, 1990. [s-hce-90] *Keywords:* circumscribe, inscribe, packing, circle packing, convex, Cauchy Lemma, rigidity.

11792 O. Schramm. Packing two-dimensional bodies with prescribed combinatorics and applications to the construction of conformal and quasiconformal mappings. Technical Report, Univ. of California, San Diego, ?? [s-ptdbp-??]

R. Schreiber. See also [6629].

11793 Thomas Schreiber. A Voronoi diagram based adaptive k-means-type clustering algorithm for multidimensional weighted data. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 265–275. Springer-Verlag, 1991. [s-vdbak-91] *Annote:* 7th Intern. Workshop Comput. Geom.

11794 Thomas Schreiber. Polyhedral approximation of 3d objects from scattered boundary points. In *Abstracts 13th European Workshop Comput. Geom.*, pages 43–44. Universität Würzburg, 1997. [s-pa3do-97]

11795 A. Schrijver. Disjoint homotopic paths and trees in a planar graph. *Discrete Comput. Geom.*, 6:527–574, 1991. [s-dhptp-91]

11796 A. Schrijver. Packing and covering of crossing families of cuts. Technical report, Instituut voor Actuariaat en Econometrie, Amsterdam, Holland, ?? [s-pccfc-??]

11797 A. Schrijver. *Theory of Linear and Integer Programming.* Wiley-Interscience, New York, NY, 1986. [s-tlip-86]

A. Schrijver. See also [6327–6329].

H. Schröder. See also [5081].

11798 P. Schröder and P. Hanrahan. On the form factor between two polygons. *Comput. Graph.*, ??:163–164, 1993. Proc. SIGGRAPH '93. [sh-ffbtp-93]

P. Schröder. See also [8582].

William Schroeder. See also [3182].

11799 W. J. Schroeder and M. S. Shephard. A combined octree Delaunay method for fully-automatic 3-D mesh generation. *Internat. J. Numer. Methods Eng.*, 29(1):37–55, 1990. [ss-codmf-90] *Annote:* Basically octree is used to generate nodes and Delaunay triangulation of these nodes is created.

11800 W. J. Schroeder and M. S. Shephard. Geometry-based fully-automatic mesh generation and the Delaunay triangulation. *Internat. J. Numer. Methods Eng.*, 26(11):2503–2515, 1988. [ss-gbfam-88] *Annote:* Adds extra points to satisfy constrained edges.

11801 W. J. Schroeder and M. S. Shephard. $O(N)$ algorithm to automatically generate geometric triangulations satisfying the Delaunay circumsphere criteria. *Eng. Comput. (USA)*, 5(3–4):177–193, 1989. [ss-oaagg-89] *Keywords:* geometric triangulations, Delaunay circumsphere criteria. *Annote:* Generates points in an octree. *Abstract:* This paper presents an algorithm for the generation of Delaunay triangulations for general nonmanifold geometric models. Octree concepts are used for point placement and providing the linear, with respect to the number of elements, growth rate of the algorithm. Compatibility and classification procedures are used in conjunction with point injection procedures to ensure that the final Delaunay triangulation is a geometric triangulation of the domain of interest. (Author abstract) 23 Refs.

11802 W. J. Schroeder, J. A. Zarge, and W. E. Lorensen. Decimation of triangle meshes. *Comput. Graph.*, 26(2):65–70, 1992. Proc. SIGGRAPH '92. [szl-dtm-92] *Keywords:* geometric modeling, medical imaging, terrain modeling, volume modeling.

11803 P. Schroeter and J. Bigün. Hierarchical image segmentation by multi-dimensional clustering and orientation-adaptive boundary refinement. *Pattern Recogn.*, 28(5):695–709, 1995. [sb-hismd-94] *Keywords:* hierarchical image segmentation, multi-dimensional clustering.

11804 H. Schubert. Bestimmung der Primfaktorzerlegung von Verkettungen. *Mathematische Zeitschrift*, 76:116–148, 1961. [s-bdpvv-61]

L. Schubert. See also [13349].

S. R. Schubert. See also [1489].

11805 Sven Schuierer. A general theory of visibility. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 23. Universität Siegen, 1990. [s-agtv-90]

11806 S. Schuierer. An $o(\log\log n)$ time algorithm to compute the kernel of a polygon. *Nordic J. Comput.*, 1:458–474, 1994. [s-otack-94]

11807 S. Schuierer. An optimal data structure for shortest rectilinear path queries in a simple rectilinear polygon. *Internat. J. Comput. Geom. Appl.*, 6:205–226, 1996. [s-odssr-96] *Succeeds:* s-rpqsr-93.

11808 Sven Schuierer. Computing the geodesic L_1-diameter of a simple rectilinear polygon in parallel. In *Abstracts 10th European Workshop Comput. Geom.*, page 72. Universidad de Cantabria, Santander, 1994. [s-cglds-94] *Cites:* hs-msspm-93, psr-cgcsp-89, ZZZ.

11809 Sven Schuierer. Computing the L_1-diameter and center of a simple polygon. In *Abstracts 8th European Workshop Comput. Geom.*, pages 73–76. Utrecht University, 1992. [s-cldcs-92]

11810 Sven Schuierer. Efficient robot self-localization in simple polygons. In *Abstracts 13th European Workshop Comput. Geom.*, pages 20–22. Universität Würzburg, 1997. [s-ersls-97] *Cites:* drw-lrmt-95, gmr-rlptd-92 , ZZZ.

11811 S. Schuierer. Lower bounds in online geometric searching. In *11th International Symposium on Fundamentals of Computation Theory*, volume 1279 of *Lecture Notes Comput. Sci.*, pages 429–440. Springer-Verlag, 1997. [s-lbogs-97]

11812 S. Schuierer. Lower bounds in on-line geometric searching. *Comput. Geom. Theory Appl.*, 18:37–53, 2001. [s-lbogs-01]

11813 S. Schuierer. *On Generalized Visibility.* PhD thesis, Universität Freiburg, 1991. [s-gv-91] *Keywords:* doctoral thesis.

11814 Sven Schuierer. On–line searching in geometric trees. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 135–140, 1997. [s-olsgt-97]

11815 S. Schuierer. Rectilinear path queries in a simple rectilinear polygon. In *Proc. 10th Sympos. Theoret. Aspects Comput. Sci.*, volume 665 of *Lecture Notes Comput. Sci.*, pages 282–293. Springer-Verlag, 1993. [s-rpqsr-93] *Precedes:* s-odssr-96.

11816 Sven Schuierer. Searching on m bounded rays optimally. Technical Report 112, Institut für Informatik, Universität Freiburg, Germany, 1998. [s-smbr-98]

11817 S. Schuierer, G. Rawlings, and D. Wood. A general theory of visibility. Technical Report, Dept. Comput. Sci., Univ. Waterloo, 1989. In preparation. [srw-gtv-89]

11818 Sven Schuierer, Gregory J. E. Rawlins, and Derick Wood. A generalization of staircase visibility. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 277–287. Springer-Verlag, 1991. [srw-gsv-91] *Annote:* 7th Intern. Workshop Comput. Geom.

11819 S. Schuierer, G. J. E. Rawlins, and D. Wood. A generalization of staircase visibility. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 96–99, August 1991. [srw-gsv-cccg-91] *Cites:* cg-opapp-88, cr-uaopc-89, lp-oafkp-79, mrs-copsp-88, rw-cgro-88, rw-ocfoc-87, ZZZ.

11820 S. Schuierer, G. J. E. Rawlins, and D. Wood. Towards a general theory of visibility. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 354–357, 1990. [srw-tgtv-90] *Cites:* b-cvdks-82, cr-cpih-88, ghlst-ltavs-87, h-etdf-63, j-pacca-82, k-mchco-86, l-htac-51, lp-fatsd-81, r-erog-87, s-ecsas-85, sw-oaccs-84, t-cvor-88, t-ghtt-88, v-lcls-65, ZZZ.

11821 Sven Schuierer and Ines Semrau. An optimal strategy for searching in unknown streets. In *Proc. 16th Sympos. Theoret. Aspects Comput. Sci.*, volume 1563 of *Lecture Notes Comput. Sci.*, pages 121–131. Springer-Verlag, 1999. [ss-ossus-99] *Succeeds:* ss-oss-98.

11822 Sven Schuierer and Ines Semrau. Eine optimale Suchstrategie für Straßen. Technical Report 97, Institut für Informatik, Universität Freiburg, Germany, 1998. [ss-oss-98] *URL:* http://www.informatik.uni-freiburg.de/tr/1998/Report97/. *Precedes:* ss-ossus-99.

11823 S. Schuierer and D. Wood. Generalized kernels of polygons with holes. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 222–227, 1993. [sw-gkph-93] *Cites:* be-nlcha-84, cg-opapp-88, cr-uaopc-89, gn-mcgop-90, gy-fchsp-83, k-mchco-86, l-fchsp-83, lp-oafkp-79, ma-lafch-79, mrs-copsp-88, mrs-pgocc-88, ow-rv-88, rw-cgro-88, r-erog-87, rw-ocig-88, rc-csopm-87, s-gv-91, srw-gsv-cccg-91, ce-oails-88, mow-vv-87, nllw-xchsx-83, rw-ocfoc-87, wy-ocsp-88, ZZZ.

11824 S. Schuierer and D. Wood. Staircase visibility and computation of kernels. *Algorithmica*, 14:1–26, 1995. [sw-svck-95]

Sven Schuierer. See also [461, 2458, 3785, 6624, 6625, 6638, 7319, 8965–8975, 10154–10157, 10429, 10430, 11351, 11352].

11825 L. J. Schulman. An equipartition of planar sets. *Discrete Comput. Geom.*, 9:257–266, 1993. [s-eps-93]

L. J. Schulman. See also [844, 845].

11826 E. Schulte. Symmetry of polytopes and polyhedra. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 16, pages 311–330. CRC Press LLC, Boca Raton, FL, 1997. [s-spp-97]

11827 E. Schulte. Tilings. In P. M. Gruber and J. M. Wills, editors, *Handbook of convex geometry*. North-Holland, Amsterdam, Netherlands, 1993. [s-t-93]

11828 E. Schulte and J. M. Wills. Geometric realizations for Dyck's regular map on a surface of genus 3. *Discrete Comput. Geom.*, 1:141–153, 1986. [sw-grdrm-86]

E. Schulte. See also [2416].

K. Schulten. See also [9217].

Christof Schultz. See also [4804].

G. Schumacher. See also [5272].

11829 R. A. Schumacker, R. Brand, M. Gilliland, and W. Sharp. Study for applying computer-generated images to visual simulation. Technical Report AFHRL–TR–69–14, U.S. Air Force Human Resources Laboratory, 1969. [sbgs-sacgi-69]

R. A. Schumacker. See also [12677].

11830 L. Schumaker. *Spline functions, basic theory*. Wiley-Interscience, New York, NY, 1981. [s-sfbt-81]

L. Schumaker. See also [10937].

11831 L. L. Schumaker. Bounds on the dimension of spaces of multivariate piecewise polynomials. *Rocky Mountain J. Math.*, 14(1):251–264, 1984. [s-bdsmp-84]

11832 L. L. Schumaker. Computing optimal triangulations using simulated annealing. *Comput. Aided Geom. Design*, 10(3–4):329–345, August 1993. [s-cotus-93]

11833 L. L. Schumaker. Fitting surfaces to scattered data. In G. G. Lorentz, C. K. Chui, and L. L. Schumaker, editors, *Approximation Theory II*, pages 203–268. Academic Press, 1976. [s-fssd-76]

11834 L. L. Schumaker. Reconstructing 3-d objects from cross-sections. In W. Dahmen, M. Gasca, and C. A. Micchelli, editors, *Computation of curves and surfaces*, pages 275–309. Kluwer Academic Publishers, 1989. [s-r3doc-89]

11835 L. L. Schumaker. Triangulation methods. In C. K. Chui, L. L. Schumaker, and F. I. Utreras, editors, *Topics in Multivariate Approximation*, pages 219–232. Academic Press, New York, 1987. [s-tm-87]

11836 L. L. Schumaker. Triangulations in cagd. *IEEE Comput. Graph. Appl.*, ??:47–552, January 1993. [s-tc-93]

L. L. Schumaker. See also [3407, 8449].

11837 A. Schur. Über die Schwarzche Extremaleigenschaft des Kreises unter den Kurven konstantes Krümmung. *Math. Ann.*, 83:143–148, 1921. [s-usedkkk-21]

11838 I. Schur. *Über eine Klasse von Matrizen, die sich einer gegebenen Matrix zuordnen lassen*. PhD thesis, ??, Berlin, 1901. [s-uekvm-01] *Keywords:* doctoral thesis.

11839 A. W. Schurle. *Topics in topology*. North-Holland, New York, NY, 1979. [s-tt-79]

G. L. Schussman. See also [5937].

11840 A. Schwartz and C. Stanton. Analyzing surfaces: the truth about elimination theory. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 348–353, 1987. [ss-astae-87] *Cites:* b-iha-07, gsa-vetii-84, g-cvrtp-81, hm-im-77, hp-mag-52, hh-qbs-86, k-eag-77, m-ssr-79, mt-cmcag-84, s-limha-85, sg-agcag-86, s-bag-77, s-agtd-34, w-rfeb-, w-ma-53, w-ac-62, ZZZ.

11841 E. L. Schwartz. Spatial mapping in primate sensory projection; analytic structure and relevance in perception. *Biological Cybernetics*, 25:181–194, 1977. [s-smpsp-77]

11842 E. L. Schwartz. The development of specific visual projections in the monkey and the goldfish: outline of a geometric theory of receptotopic structure. *J. Theoret. Biol.*, 69:655–685, 1977. [s-dsvpm-77]

11843 E. L. Schwartz, D. N. Grece, and G. Bonmassar. Space-variant active vision: Definition, overview and examples. *Neural Networks*, 8(7-8):1297–1308, 1995. [sgb-svavd-95]

11844 E. L. Schwartz, A. Shaw, and E. Wolfson. A numerical solution to the generalized map-maker's problem: Flattening nonconvex poleyderal surfaces. Technical report, Dept. of Computer Science, Courant Institute of Mathematical Sciences, 1987. [ssw-nsgmm-87] *Precedes:* ssw-nsgmm-89.

11845 E. L. Schwartz, A. Shaw, and E. Wolfson. A numerical solution to the generalized map-maker's problem: Flattening nonconvex poleyderal surfaces. *IEEE Trans. Pattern Anal. Mach. Intell.*, 11(9):1005–1008, 1989. [ssw-nsgmm-89] *Succeeds:* ssw-nsgmm-87.

11846 E. L. Schwartz and E. Wolfson. On the map makers problem: computing an optimal quasi-isometry from an arbitrary polyhedron to the plane. Report ??, Courant Inst. Math. Sci., New York Univ., New York, NY, 1985. [sw-mmpco-85]

E. L. Schwartz. See also [11338, 13332, 13654, 13655].

11847 J. Schwartz. Fast probabilistic algorithms for verification of polynomial identities. *J. ACM*, 4:701–717, 1980. [s-fpavp-80]

11848 J. Schwartz and C. Yap. On the "piano movers" problem II: general techniques for computing topological properties of real algebraic manifolds. Technical Report 41, Dept. Comput. Sci., New York Univ., 1982. [ss-pmp2g-82]

11849 J. T. Schwartz. Algebraic techniques for dealing with the geometry of intersecting surfaces in n dimensions, 1985. Invited talk at 1st Annu. ACM Sympos. Comput. Geom. [s-atdgi-85]

11850 J. T. Schwartz. Finding the minimum distance between two convex polygons. *Inform. Process. Lett.*, 13:168–170, 1981. [s-fmdbt-81]

11851 J. T. Schwartz. *Nonlinear Functional Analysis*. Gordon and Breach Science Publishers, New York, 1969. [s-nfa-69]

11852 J. T. Schwartz and Micha Sharir. A survey of motion planning and related geometric algorithms. *Artif. Intell.*, 37:157–169, 1988. [ss-smprg-88] *Keywords:* motion planning, robotics, survey paper. *Succeeds:* ss-mprga-86. *Precedes:* ss-smprg-89.

11853 J. T. Schwartz and Micha Sharir. A survey of motion planning and related geometric algorithms. In D. Kapur and J. Mundy, editors, *Geometric Reasoning*, pages 157–169. MIT Press, Cambridge, MA, 1989. [ss-smprg-89] *Keywords:* motion planning, robotics, survey paper. *Succeeds:* ss-smprg-88.

11854 J. T. Schwartz and Micha Sharir. Algorithmic motion planning in robotics. In J. van Leeuwen, editor, *Algorithms and Complexity*, volume A of *Handbook of Theoretical Computer Science*, pages 391–430. Elsevier, Amsterdam, 1990. [ss-ampr-90] *Keywords:* motion planning, robotics, survey paper. *Succeeds:* s-ampr-89.

11855 J. T. Schwartz and Micha Sharir. Efficient motion planning algorithms in environments of bounded local complexity. Report 164, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, 1985. [ss-empae-85]

11856 J. T. Schwartz and Micha Sharir. Finding effective "force targets" for two-dimensional multifinger frictional grips. In *Proc. 25th Allerton Conf. Commun. Control Comput.*, pages 843–848, 1987. [ss-feftt-87]

11857 J. T. Schwartz and Micha Sharir. Finding effective "force targets" for two-dimensional multifinger frictional grips. *Algorithmica*, 8:1–20, 1992. [ss-feftt-92] *Succeeds:* ss-feftt-87.

11858 J. T. Schwartz and Micha Sharir. Identification of partially obscured objects in two dimensions by matching of noisy "characteristic curves". *Internat. J. Robot. Res.*, 6(2):29–44, 1987. [ss-ipoot-87] *Keywords:* computer vision, curves, matchings, two-dimensional.

11859 J. T. Schwartz and Micha Sharir. Mathematical problems and training in robotics. *Notices Amer. Math. Soc.*, 30:478–481, 1983. [ss-mptr-83] *Keywords:* survey paper, robotics.

11860 J. T. Schwartz and Micha Sharir. Motion planning and related geometric algorithms in robotics. In *Proc. Internat. Congress Math.*, volume 2, pages 1594–1611, 1986. [ss-mprga-86] *Keywords:* motion planning, robotics, survey paper. *Precedes:* ss-smprg-88.

11861 J. T. Schwartz and Micha Sharir. On the bivariate function minimization problem and its applications to motion planning. In *Proc. 14th Int. Colloq. Aut. Lang. Prog.*, pages 357–363, 1987. [ss-bfmpi-87]

11862 J. T. Schwartz and Micha Sharir. On the "piano movers" problem I: The case of a two-dimensional rigid polygonal body moving amidst polygonal barriers. *Commun. Pure Appl. Math.*, 36:345–398, 1983. [ss-pmp1c-83] *Keywords:* motion planning.

11863 J. T. Schwartz and Micha Sharir. On the "piano movers" problem II: General techniques for computing topological properties of real algebraic manifolds. *Adv. Appl. Math.*, 4:298–351, 1983. [ss-pmp2g-83] *Keywords:* motion planning, algebraic geometry.

11864 J. T. Schwartz and M. Sharir. On the "piano movers" problem III: coordinating the motion of several independent bodies: the special case of circular bodies amidst polygonal barriers. Technical Report 52, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, 1982. [ss-pmp3c-82]

11865 J. T. Schwartz and Micha Sharir. On the "piano movers" problem III: coordinating the motion of several independent bodies: the special case of circular bodies moving amidst polygonal barriers. *Internat. J. Robot. Res.*, 2(3):46–75, 1983. [ss-pmp3c-83] *Keywords:* motion planning.

11866 J. T. Schwartz and Micha Sharir. On the "piano movers" problem V: the case of a rod moving in three-dimensional space amidst polyhedral obstacles. *Commun. Pure Appl. Math.*, 37:815–848, 1984. [ss-pmp5c-84] *Keywords:* motion planning, three-dimensional.

11867 J. T. Schwartz and Micha Sharir. On the two-dimensional Davenport-Schinzel problem. *J. Symbolic Comput.*, 10:371–393, 1990. [ss-tddsp-90] *Keywords:* Davenport-Schinzel sequences, upper/lower envelope. *Succeeds:* s-tddsp-85.

11868 J. T. Schwartz and Micha Sharir. Some remarks on robot vision. Report TR119, Comput. Sci. Div., New York Univ., New York, NY, 1984. [ss-srrv-84] *Keywords:* computer vision.

11869 J. T. Schwartz and Micha Sharir. Some remarks on robot vision. In *Trans. 3rd Army Conf. Applied Math. and Computing*, pages 1–36, 1985. [ss-srrv-85] *Keywords:* computer vision. *Succeeds:* ss-srrv-84.

11870 J. T. Schwartz, Micha Sharir, and A. Siegel. An efficient algorithm for finding connected components in a binary image. Report TR 154, Comput. Sci. Div., New York Univ., New York, NY, 1985. [sss-eafcc-85] *Keywords:* image processing.

11871 Jacob T. Schwartz and Chee-Keng Yap, editors. *Algorithmic and Geometric Aspects of Robotics*, volume 1 of *Advances in Robotics*. Lawrence Erlbaum Associates, Hillsdale, New Jersey, 1987. [sy-agar-87]

J. T. Schwartz. See also [1491, 2621, 4742, 7097–7100, 7689, 8459, 9684, 10226].

S. C. Schwartz. See also [13828].

11872 C. Schwarz. *Data structures and algorithms for the dynamic closest pair problem*. Ph.D. thesis, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1993. [s-dsadc-93] *Keywords:* doctoral thesis.

11873 C. Schwarz. Semi-dynamic maintenance of the width of a planar point set. Report MPI-I-92-153, Max-Planck-Institut Inform., Saarbrücken, Germany, December 1992. [s-sdmwp-92] *Precedes:* rss-mawsp-93,s-sdmwp-93.

11874 Christian Schwarz. Semi-dynamic maintenance of the width of a planar point set. In *Abstracts 9th European Workshop Comput. Geom.*, pages 6–9. FernUniversität Hagen, 1993. [s-sdmwp-93] *Succeeds:* s-sdmwp-92.

11875 C. Schwarz and M. Smid. An $O(n \log n \log \log n)$ algorithm for the on-line closest pair problem. Report MPI-I-91-107, Max-Planck-Institut Inform., Saarbrücken, Germany, 1991. [ss-oaolc-91] *Precedes:* ss-oaolc-92.

11876 C. Schwarz and M. Smid. An $O(n \log n \log \log n)$ algorithm for the on-line closest pair problem. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 280–285, 1992. [ss-oaolc-92] *Succeeds:* ss-oaolc-91.

11877 C. Schwarz, M. Smid, and J. Snoeyink. An optimal algorithm for the on-line closest pair problem. Report MPI-I-91-123, Max-Planck-Institut Inform., Saarbrücken, Germany, 1991. [sss-oaolc-91] *Precedes:* sss-oaolc-92.

11878 C. Schwarz, M. Smid, and J. Snoeyink. An optimal algorithm for the on-line closest-pair problem. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 330–336, 1992. [sss-oaolc-92] *Succeeds:* sss-oaolc-91. *Cites:* bs-dcms-76, c-tpca-82, dd-ekdnp-91, ghlst-ltavs-87, o-ddds-83, ps-cgi-85, s-sisie-91, ss-oaolc-92, sh-cpp-75, s-mmdpsl-91a, s-drpla-91, s-mmdpsp-91t, s-ntsdc-90, v-oaann-89, ZZZ.

11879 C. Schwarz, M. Smid, and J. Snoeyink. An optimal algorithm for the on-line closest-pair problem. *Algorithmica*, 12:18–29, 1994. [sss-oaolc-94]

11880 Christian Schwarz, Jürgen Teich, Alek Vainshtein, Emo Welzl, and Brian L. Evans. Minimal enclosing parallelogram with application. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C34–C35, 1995. [stvwe-mepa-95] *Keywords: Cites:* acy-macp-85, da-frkec-84, ets-adtdr-94, fs-dmaer-75, oamb-oafme-86, stwe-fmep-94, v-fmep-90, ZZZ.

11881 C. Schwarz, J. Teich, Emo Welzl, and B. Evans. On finding a minimal enclosing parallelogram. Report TR-94-036, International Computer Science Institute, Berkeley, 1994. [stwe-fmep-94]

C. Schwarz. See also [3793–3795, 5054, 6046–6051, 6061, 11421].

11882 H. R. Schwarz. *Numerical Analysis: A Comprehensive Introduction*. B. G. Teubner, Stuttgart, 1989. [s-naci-89]

J. S. Schwarz. See also [1306].

E. Schwarzenecker. See also [8390].

11883 Otfried Schwarzkopf. Computing convolutions on mesh-like structures. In *??*, page ?? IEEE Computer Society, 1993. [s-ccmls-93]

11884 O. Schwarzkopf. *Dynamic Maintenance of Convex Polytopes and Related Structures*. Ph.D. thesis, Fachbereich Mathematik, Freie Universität Berlin, Berlin, Germany, June 1992. [s-dmcpr-92] *Keywords:* doctoral thesis. *Succeeds:* s-dmgsm-91, s-rscp-92.

11885 O. Schwarzkopf. Dynamic maintenance of geometric structures made easy. In *Proc. 32nd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 197–206, 1991. [s-dmgsm-91] *Precedes:* s-dmcpr-92.

11886 O. Schwarzkopf. On the post office problem. Manuscript, ??, 1991. [s-pop-91]

11887 O. Schwarzkopf. Parallel computation of discrete Voronoi diagrams. In *Proc. 6th Sympos. Theoret. Aspects Comput. Sci.*, volume 349 of *Lecture Notes Comput. Sci.*, pages 193–204. Springer-Verlag, 1989. [s-pcdvd-89] *Precedes:* s-pcdt-91.

11888 O. Schwarzkopf. Parallel computation of distance transforms. *Algorithmica*, 6:685–697, 1991. [s-pcdt-91]

11889 O. Schwarzkopf. Randomized incremental algorithms in a dynamic setting. Technical Report, Freie Universität Berlin, Berlin, Germany, 1991. To appear. [s-riads-91]

11890 O. Schwarzkopf. Ray shooting in convex polytopes. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 286–295, 1992. [s-rscp-92] *Precedes:* s-dmcpr-92. *Cites:* aesw-emstb-90, am-dhsrr-91, am-rsps-92, bc-hhihr-92, bdsty-arsol-92, bdt-riach-, cegs-sessr-89, cf-plhur-94, c-hsh-85, c-narsc-87, c-racpq-88, cms-frric-92i, cs-arscg-89, dmt-fddtl-92, e-acg-87, gks-ricdv-92, m-ept-91, m-rph-91, m-fppa1-88, m-rmstd-91, m-rmstf-91, m-rmstl-91, s-dmgsm-91, s-sdlpc-91, s-sfira-91, ZZZ.

11891 Otfried Schwarzkopf. The extendible drawing editor Ipe. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C10–C11, 1995. [s-edei-95] *Keywords:* Latex, figure drawing, xfig, idraw. *Cites:* ZZZ.

11892 O. Schwarzkopf, U. Fuchs, Günter Rote, and Emo Welzl. Approximation of convex figures by pairs of rectangles. In *Proc. 7th Sympos. Theoret. Aspects Comput. Sci.*, volume 415 of *Lecture Notes Comput. Sci.*, pages 240–249. Springer-Verlag, 1990. [sfrw-acfpr-90] *Precedes:* sfrw-acfpr-98.

11893 O. Schwarzkopf, U. Fuchs, Günter Rote, and Emo Welzl. Approximation of convex figures by pairs of rectangles. *Comput. Geom. Theory Appl.*, 10:77–87, 1998. [sfrw-acfpr-98] *Succeeds:* sfrw-acfpr-90. *Cites:* ks-tpscf-95. *Abstract:* We consider the problem of approximating a convex figure in the plane by a pair (r, R) of homothetic (i. e., similar and parallel) rectangles with r contained in C and R containing C. We show the existence of such pairs where the sides of the outer rectangle have length at most double the length of the inner rectangle, thereby solving a problem posed by Pólya and Szegő. If the n vertices of a convex polygon C are given as a sorted array, such an approximating pair of rectangles can be computed in time $O(log^2 n)$.

11894 Otfried Schwarzkopf and Micha Sharir. Vertical decomposition of a single cell in a three-dimensional arrangement of surfaces and its applications. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 20–29, 1996. [ss-vdsct-96] *Cites:* ass-oleia-96, ass-sulbl-89, as-tsbac-90, as-car-94, as-tmp3s-94, bds-lric-95, cegs-sessr-89, cegsw-ccbac-90, cs-arscg-89, hs-nblet-94, hs-atubs-95, hs-nqbmp-93, hs-atarr-95, hs-ndssg-86, s-ksacs-91, s-atubl-94, sa-dsstg-95, t-ntasa-95, ZZZ.

11895 Otfried Schwarzkopf and Micha Sharir. Vertical decomposition of a single cell in a three-dimensional arrangement of surfaces and its applications. *Discrete Comput. Geom.*, 18:269–288, 1997. [ss-vdsct-97]

11896 Otfried Schwarzkopf and Jules Vleugels. Range searching in low-density environments. In *Abstracts 12th European Workshop Comput. Geom.*, page 3. Universität Münster, 1996. [sv-rslde-96c] *Cites:* ZZZ.

11897 Otfried Schwarzkopf and Jules Vleugels. Range searching in low-density environments. *Inform. Process. Lett.*, 60:121–127, 1996. [sv-rslde-96]

O. Schwarzkopf. See also [106, 157, 158, 163, 164, 210, 211, 220–223, 335, 598, 1112–1114, 1690–1692, 1694–1696, 1705, 1706, 1725–1727, 1730, 1736, 1737, 1745, 1746, 1749, 1750, 9301–9306, 9969, 10460, 13484].

A. Schweikard. See also [13628].

J. Schweitzer. See also [7115].

11898 J. Schwerdt. Das Diameterproblem einer bewegten Punktemenge: eine Implementierung mit Hilfe von parametric search. Master's thesis, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1996. [s-ddbpi-96] *Keywords:* masters thesis.

11899 J. Schwerdt. *Entwurf von Optimierungsalgorithmen für geometrische Probleme im Bereich Rapid Prototyping und Manufacturing*. Ph.D. thesis, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 2001. [s-eogpb-01] *Keywords:* doctoral thesis.

11900 J. Schwerdt and M. Smid. Computing the width of a three-dimensional point set: documentation. Report 4, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1999. [ss-cwtdp-99]

11901 J. Schwerdt, M. Smid, M. C. Hong, and R. Janardan. Computing an optimal hatching direction in layered manufacturing. Report 3, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 2001. [sshj-cohdl-01]

11902 J. Schwerdt, M. Smid, R. Janardan, and E. Johnson. Protecting critical facets in layered manufacturing: implementation and experimental results. Report 6, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 2000. [ssjj-pcflm-00t]

11903 J. Schwerdt, M. Smid, R. Janardan, and E. Johnson. Protecting critical facets in layered manufacturing: implementation and experimental results. In *Proc. 2nd Workshop on Algorithm Engineering and Experiments*, pages 43–57, 2000. [ssjj-pcflm-00i]

11904 J. Schwerdt, M. Smid, R. Janardan, E. Johnson, and J. Majhi. Protecting critical facets in layered manufacturing. *Comput. Geom. Theory Appl.*, 16:187–210, 2000. [ssjjm-pcflm-00]

11905 J. Schwerdt, M. Smid, R. Janardan, E. Johnson, and J. Majhi. Protecting facets in layered manufacturing. Report 10, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1999. [ssjjm-pflm-99t]

11906 J. Schwerdt, M. Smid, R. Janardan, E. Johnson, and J. Majhi. Protecting facets in layered manufacturing. In *Proc. 19th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1738 of *Lecture Notes Comput. Sci.*, pages 281–292. Springer-Verlag, 1999. [ssjjm-pflm-99i]

11907 J. Schwerdt, M. Smid, J. Majhi, and R. Janardan. Computing the width of a three-dimensional point set: an experimental study. Report 18, Department of Computer Science, University of Magdeburg, Magdeburg, Germany, 1998. [ssmj-cwtdp-98t] *Succeeds:* ssmj-cwtdp-98i.

11908 J. Schwerdt, M. Smid, J. Majhi, and R. Janardan. Computing the width of a three-dimensional point set: an experimental study. In *Proc. 2nd Workshop on Algorithm Engineering*, pages 62–73, August 1998. [ssmj-cwtdp-98i]

11909 J. Schwerdt, M. Smid, J. Majhi, and R. Janardan. Computing the width of a three-dimensional point set: an experimental study. *ACM Journal of Experimental Algorithmics*, 4, 1999. Article 8. [ssmj-cwtdp-99]

11910 J. Schwerdt, M. Smid, and S. Schirra. Computing the minimum diameter for moving points: an exact implementation using parametric search. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 466–468, 1997. [sss-cmdmp-97] *Cites:* ast-apsgo-94, bfms-secsb-97, bkmnsu-egcl-95, bms-lcrn-96, fgkss-ckbgc-96, gjs-facpp-96, m-apcad-83, nu-lmum-95, mn-lpcgc-95, ps-cgi-85, s-ddbpi-96, ZZZ.

J. Schwerdt. See also [7069, 7075, 7339, 7340, 9124, 9125, 9130, 9131].

J. L. Schwing. See also [1919–1921, 8826, 8910, 10262].

Roberto Scopigno. See also [3312–3317, 9825].

A. Scott. See also [13414].

11911 D. Scott and S. Iyenger. Tid - Translation invariant data structure of storing images. *Commun. ACM*, 29:418–428, 1986. [si-ttids-86]

K. J. Scott. See also [3382].

W. D. Scott. See also [9105].

W. B. Seals. See also [10784].

Carlos Seara. See also [788, 7221, 7231].

K. H. Sears. See also [9568].

11912 T. J. Sebok, L. E. Roemer, and G. S. Malindzak. An algorithm for line intersection detection. *Pattern Recogn.*, 13:159–166, 1981. [srm-alid-81]

11913 S. Sechrest and D. P. Greenberg. A visible polygon reconstruction algorithm. *ACM Trans. Graph.*, 1:25–42, 1982. [sg-vpra-82]

11914 T. Sederberg. Piecewise algebraic surface patches. *Comput. Aided Geom. Design*, 2:53–59, 1985. [s-pasp-85]

11915 T. Sederberg, P. Gao, G. Wang, and H. Mu. 2-d shape blending: an intrinsic solution to the vertex path problem. *Comput Graph.*, 27:15–18, 1993. Proc. SIGGRAPH '93. [sgwm-2dsbi-93]

11916 T. Sederberg and R. Goldman. Algebraic geometry for computer-aided geometric design. *IEEE Comput. Graph. Appl.*, ??:52–59, June 1986. [sg-agcag-86]

11917 T. Sederberg and E. Greenwood. A physically based approach to 2-d shape blending. *Comput. Graph.*, 26:25–34, 1992. Proc. SIGGRAPH '92. [sg-pba2d-92]

11918 T. Sederberg and J. Snively. Parameterization of cubic algebraic surfaces. In R. Martin, editor, *The Mathematics of Surfaces II*. Oxford University Press, 1987. [ss-pcas-87]

T. Sederberg. See also [6036, 8194].

11919 T. W. Sederberg and D. C. Anderson. Implicit representation of parametric curves and surfaces. *Comput. Vision Graph. Image Process.*, ??, 1984. [sa-irpcs-84]

T. W. Sederberg. See also [3271, 6034, 7074, 7905]

11920 R. Sedgewick. *Algorithms*. Addison-Wesley, Reading, MA, 1st edition, 1983. [s-a-83] *Keywords:* book, convex hull. *Annote:* Chapter 25 treats convex hull.

11921 R. Sedgewick. *Algorithms*. Addison-Wesley, Reading, Mass., 2nd edition, 1988. [s-a-88]

11922 R. Sedgewick. *Algorithms in C*. Addison-Wesley, Reading, Mass., 1988. [s-ac-90]

11923 R. Sedgewick. *Algorithms in C++*. Addison-Wesley, Reading, MA, 1992. [s-ac-92]

11924 R. Sedgewick and J. S. Vitter. Shortest paths in Euclidean graphs. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 417–424, 1984. [sv-speg-84] *Precedes:* sv-speg-86.

11925 R. Sedgewick and J. S. Vitter. Shortest paths in Euclidean graphs. *Algorithmica*, 1:31–48, 1986. [sv-speg-86] *Succeeds:* sv-speg-84.

R. Sedgewick. See also [2521, 6052, 6421, 8900].

E. Sedgwick. See also [1810].

11926 B. Seeger and H.-P. Kriegel. The buddy-tree: An efficient and robust access method for spatial data base systems. In *Proc. 16th VLDB Conference*, pages 590–601, 1990. [sk-btera-90]

B. Seeger. See also [1566, 2449, 8349].

Michael Seel. See also [2612, 2613, 6887, 9453, 9454, 9468–9471, 9477].

11927 Jochen Seemann. Extending the sugiyama algorithm for drawing UML class diagrams: Towards automatic layout of object-oriented software diagrams. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 415–424. Springer-Verlag, 1997. [s-esadu-97] *Keywords:* graph drawing.

J. B. Seery. See also [8379].

J. E. Seery. See also [2366].

11928 M. Segal. A programming language for geometry applications. Report ??, Dept. Elect. Engrg. Comput. Sci., Univ. California Berkeley, Berkeley, CA, 1985. [s-plga-85]

11929 M. Segal. Partitioning intersecting polyhedra into non-intersecting parts. In Preparation. [s-pipni-]

11930 M. Segal. Using tolerances to guarantee valid polyhedral modeling results. *Comput. Graph.*, 24(4):105–114, August 1990. [s-utgvp-90] *Precedes:* ss-ccsm-85, ss-mtgdn-89.

11931 M. Segal and K. Kedem. Enclosing k points in the smallest axis parallel rectangle. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 20–25, 1996. [sk-ekpsa-96]

11932 M. Segal and K. Kedem. Enclosing k points in the smallest axis parallel rectangle. *Inform. Process. Lett.*, 65:95–99, 1998. [sk-ekpsa-98]

11933 M. Segal and C. H. Sequin. Partitioning polyhedral objects into nonintersecting parts. *IEEE Comput. Graph. Appl.*, 8(1):53–67, January 1988. [ss-pponp-88]

Micheal Segal. See also [1600, 1887, 1888, 1890, 7892–7894, 7896].

11934 M. G. Segal and C. H. Sequin. Consistent calculations for solids modelling. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 29–38, 1985. [ss-ccsm-85] *Precedes:* ss-mtgdn-89. *Cites:* beh-gms-79, t-smcua-80, r-rrstm-80, gl-mc-83, ns-picg-79, w-at-42, hg-rshsa-77, sw-vfror-85, s-pipni-, ZZZ.

11935 M. G. Segal and C. H. Sequin. Maintaining topology in geometric descriptions with numerical uncertainty. Technical Report 89/450, Comput. Sci. Div., Univ. California, Berkeley, CA, 1989. [ss-mtgdn-89] *Succeeds:* ss-ccsm-85. *Precedes:* s-utgvp-90.

11936 H.-P. Seidel. Polar forms and triangular B-spline surfaces. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*, pages 235–286. World Scientific, Singapore, 1992. [s-pftbs-92] *Keywords:* survey paper, polar forms, triangular Bezier/B-spline surface patches. *Precedes:* s-pftbs-95.

11937 Hans-Peter Seidel. Polar forms and triangular B-spline surfaces. In Ding-Zhu Du and Frank Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 299–350. World Scientific, Singapore, 2nd edition, 1995. [s-pftbs-95] *Keywords:* survey paper, polar forms, triangular Bezier/B-spline surface patches. *Succeeds:* s-pftbs-92.

H.-P. Seidel. See also [2668, 6779, 8228].

11938 R. Seidel. A convex hull algorithm optimal for point sets in even dimensions. M.Sc. thesis, Dept. Comput. Sci., Univ. British Columbia, Vancouver, BC, 1981. Report 81/14. [s-chaop-81] *Keywords:* convex hull, d-dimensional, incrementation, incidence graph, polyhedra.

11939 R. Seidel. A method for proving lower bounds for certain geometric problems. Technical Report 84-592, ??, February 1984. [s-mplbc-84]

11940 R. Seidel. A method for proving lower bounds for certain geometric problems. In G. T. Toussaint, editor, *Computational Geometry*, pages 319–334. North-Holland, Amsterdam, Netherlands, 1985. [s-mplbc-85] *Keywords:* point location, triangulation, convex hull, geometric transformations, lower bounds.

11941 R. Seidel. A simple and fast incremental randomized algorithm for computing trapezoidal decompositions and for triangulating polygons. Technical Report B 90-07, Freie Universität Berlin, Berlin, Germany, October 1990. [s-sfira-90]

11942 R. Seidel. A simple and fast incremental randomized algorithm for computing trapezoidal decompositions and for triangulating polygons. *Comput. Geom. Theory Appl.*, 1(1):51–64, 1991. [s-sfira-91]

11943 R. Seidel. Backwards analysis of randomized geometric algorithms. Manuscript, ALCOM Summerschool on efficient algorithms design, Århus, Denmark, 1991. [s-barga-91] *Precedes:* s-barga-93, s-barg-92.

11944 R. Seidel. Backwards analysis of randomized geometric algorithms. Report TR-92-014, Computer Science Division, University of California, Berkeley, February 1992. [s-barg-92] *Succeeds:* s-barga-91. *Precedes:* s-barga-93.

11945 R. Seidel. Backwards analysis of randomized geometric algorithms. In J. Pach, editor, *New Trends in Discrete and Computational Geometry*, volume 10 of *Algorithms and Combinatorics*, pages 37–68. Springer-Verlag, 1993. [s-barga-93] *Keywords:* survey paper, randomized algorithms, backwards analysis, Delaunay triangulation, segment intersection, convex hull, quicksort, linear programming. *Succeeds:* s-barg-92, s-barga-91.

11946 R. Seidel. Constrained Delaunay triangulations and Voronoi diagrams with obstacles. Technical Report 260, IIG-TU Graz, Austria, 1988. [s-cdtvd-88] *Precedes:* s-cdtvd-89. *Annote:* Plane sweep algorithm.

11947 R. Seidel. Constrained Delaunay triangulations and Voronoi diagrams with obstacles. *Computer Science Division*, ??, June 1989. UC Berkeley. [s-cdtvd-89] *Succeeds:* s-cdtvd-88.

11948 R. Seidel. Constructing higher-dimensional convex hulls at logarithmic cost per face. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 404–413, 1986. [s-chdch-86] *Keywords:* convex hull, incidence graph, polyhedra, linear programming, d-dimensional, output dependent.

11949 R. Seidel. Convex hull computations. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 19, pages 361–376. CRC Press LLC, Boca Raton, FL, 1997. [s-chc-97]

11950 R. Seidel. Exact upper bounds for the number of faces in d-dimensional Voronoi diagrams. In P. Gritzman and B. Sturmfels, editors, *Applied Geometry and Discrete Mathematics: The Victor Klee Festschrift*, volume 4 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 517–530. AMS Press, Providence, RI, 1991. [s-eubnf-91]

11951 R. Seidel. Linear programming and convex hulls made easy. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 211–215, 1990. [s-lpchm-90] *Precedes:* s-sdlpc-91. *Cites:* ck-acp-70, c-lpot-86, c-lvali-89, cs-arscg-89, d-ltatt-84, df-rafdl-87, e-acg-87, g-eadch-72, k-chahd-81, m-ltalp-83, m-lpltw-84, ph-chfsp-77, s-chaop-81, s-chdch-86, s-fchff-85, ZZZ.

11952 R. Seidel. On the all-pairs-shortest-path problem. In *Proc. 24th Annu. ACM Sympos. Theory Comput.*, pages 745–749, 1992. [s-apspp-92]

11953 Raimund Seidel. On the exact query complexity of planar point location. In *Abstracts 14th European Workshop Comput. Geom.*, pages 7–8. Universitat Polytènica de Catalunya, Barcelona, 1998. [s-eqcpp-98] *Cites:* ZZZ.

11954 R. Seidel. On the number of faces in higher-dimensional Voronoi diagrams. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 181–185, 1987. [s-nfhdv-87] *Keywords:* d-dimensional, Voronoi diagrams, combinatorial geometry, polyhedra. *Cites:* bl-psmcf-81, b-vdch-79, ms-cpubc-71, p-kpudz-82, s-cvdhd-82, ZZZ.

11955 R. Seidel. On the size of closest-point Voronoi diagrams. Report F94, Inst. Informationsverarb., Tech. Univ. Graz, Graz, Austria, 1982. [s-scpvd-82] *Keywords:* Voronoi diagrams, lower bounds, polyhedra. *Precedes:* s-cvdhd-82.

11956 R. Seidel. *Output-size sensitive algorithms for constructive problems in computational geometry*. Ph.D. thesis, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1986. Technical Report TR 86-784. [s-ossac-86] *Keywords:* doctoral thesis, convex hull, incidence graph, divide-and-conquer, plane-sweep, domination, intersection, d-dimensional, output dependent. *Comments:* UMI AAC87-08959, 148 pp.

11957 R. Seidel. Small-dimensional linear programming and convex hulls made easy. *Discrete Comput. Geom.*, 6:423–434, 1991. [s-sdlpc-91] *Succeeds:* s-lpchm-90.

11958 Raimund Seidel. Teaching computational geometry. In *Proc. 5th Canad. Conf. Comput. Geom.*, page 272, 1993. [s-tcg-93]

11959 R. Seidel. The complexity of Voronoi diagrams in higher dimensions. In *Proc. 20th Allerton Conf. Commun. Control Comput.*, pages 94–95, 1982. [s-cvdhd-82] *Keywords:* Voronoi diagrams, lower bounds, polyhedra. *Succeeds:* s-scpvd-82.

11960 R. Seidel. The nature and meaning of perturbations in geometric computing. Manuscript, ??, 1994. [s-nmpgc-94t]

11961 R. Seidel. The nature and meaning of perturbations in geometric computing. In *Proc. 11th Sympos. Theoret. Aspects Comput. Sci.*, volume 775 of *Lecture Notes Comput. Sci.*, pages 3–17. Springer-Verlag, 1994. [s-nmpgc-94]

11962 R. Seidel. The nature and meaning of perturbations in geometric computing. *Discrete Comput. Geom.*, 19:1–17, 1998. [s-nmpgc-98]

11963 R. Seidel. The upper bound theorem for polytopes: an easy proof of its asymptotic version. *Comput. Geom. Theory Appl.*, 5:115–116, 1995. [s-ubtpe-95]

11964 R. Seidel and C. R. Aragon. Randomized search trees. *Algorithmica*, 16:464–497, 1996. [sa-rst-96]

R. Seidel. See also [90, 573, 687, 723, 861, 1143, 1153, 2966, 2970–2973, 3365–3367, 4693–4698, 4718, 4731–4733, 4738, 4739, 4749–4753, 4904, 5019–5021, 5941, 6136, 6422, 6423, 8091–8094, 8179, 8705, 8706, 9307, 9308, 9373, 9468, 9469, 9471, 11480–11482].

11965 A. Seidenberg. A new decision method for elementary algebra. *Annals Math.*, 60:365–374, 1954. [s-ndmea-54]

11966 H. Seifert and W. Threlfall. *Lehrbuch der Topologie*. Chelsea Publishing Company, 1947. [st-ldt-47]

11967 H. Seifert and W. Threlfall. *Variationsrechnung im Grossen*. B. G. Teubner, Berlin, 1938. [st-vig-38]

11968 A. Seigel and D. Dolev. The separation for general single-layer wiring barriers. In *Proc. of the CMU Conference on VLSI*, pages 143–152, 1981. [sd-sgslw-81]

Hiroshi Sekigawa. See also [6956].

T. Sekiguchi. See also [7376].

11969 K. Sekitani and Y. Yamamoto. A recursive algorithm for finding the minimum norm point in a polytope and a pair of closest points in two polytopes. *Math. Program. Ser. A*, 61(2):233–249, 1993. [sy-rafmn-93]

11970 S. Z. Selim and M. A. Ismail. k-means-type algorithm: A generalized convergence theorem and characterization. *IEEE Trans. Pattern Anal. Mach. Intell.*, ??:81–87, 1984. [si-kmtag-84]

S. M. Selkow. See also [9986].

Joan Antoni Sellarès. See also [3475].

11971 Jürgen Sellen. Approximation and decision algorithms for curvature-constrained path planning: A state-space approach. In *Proc. 3rd Workshop Algorithmic Found. Robot.*, page to appear, 1998. [s-adacc-98]

11972 J. Sellen. Direction weighted shortest path planning. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1970–1975, 1995. [s-dwspp-95]

11973 J. Sellen. Lower bounds for geometrical and physical problems. *SIAM J. Comput.*, 25:1231–1253, 1996. [s-lbgpp-96]

11974 J. Sellen. Planning paths of minimal curvature. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1976–1982, 1995. [s-ppmc-95] *Comments:* also contains an interesting algorithm for the Fortune-Wilfong problem, to find a minimal-length curvature-constrained path in a polygonal environment.

11975 J. Sellen, J. Choi, and C.-K. Yap. Precision-sensitive Euclidean shortest path in 3-space. *SIAM J. Comput.*, 29:1577–1595, 2000. [scy-psesp-00]

Jürgen Sellen. See also [3238–3240, 5361–5364, 7136, 11770–11774].

11976 T. Sellis, N. Roussopoulos, and C. Faloutsos. The R^+-tree: A dynamic index for multi-dimensional objects. In *Proc. 13th VLDB Conference*, pages 507–517, 1987. [srf-rtdim-87]

T. Sellis. See also [5124, 12546].

K. A. Semendjajew. See also [2488].

11977 J. Semple and L. Roth. *Introduction to Algebraic Geometry*. Clarendon Press, 1949. [sr-iag-49]

11978 I. Semrau. Analyse und experimentelle Untersuchung von Strategien zum Finden eines Ziels in Straßenpolygonen. Diploma thesis, FernUniversität Hagen, 1996. [s-aeusf-96] *Keywords:* master thesis.

Ines Semrau. See also [7319, 11821, 11822].

Arunabha Sen. See also [11455].

11979 P. K. Sen. Estimates of the regression coefficient based on kendall's tau. *J. Amer. Statist. Assoc.*, 63:1379–1389, 1968. [s-ercbk-68]

11980 S. Sen. A deterministic poly(log log n) time optimal CRCW PRAM algorithm for linear programming in fixed dimension. Technical Report 95-08, Dept. of Computer Science, University of Newcastle, 1995. [s-dplto-95]

11981 S. Sen. Fractional cascading simplified. In *Proc. 3rd Scand. Workshop Algorithm Theory*, volume 621 of *Lecture Notes Comput. Sci.*, pages 212–220. Springer-Verlag, 1992. [s-fcs-92]

11982 S. Sen. Lower bounds for algebraic decision trees, complexity of convex hulls and related problems. In *Proc. 14th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, 1994. [s-lbadt-94]

11983 S. Sen. Maintaining arrangements for point location. Technical Memo, Bell Lab. [s-mapl-]

11984 S. Sen. Parallel multidimensional search using approximation algorithms: with applications to linear-programming and related problems. In *Proc. 8th ACM Sympos. Paral. Algorithms and Architectures*, pages 251–260, 1996. [s-pmsua-96] *Keywords:* parallel computations, linear programming.

11985 S. Sen. Some observations on skip lists. ?? [s-sosl-]

11986 S. Sen. Tight bounds for some problems in computational geometry: the complete sub-logarithmic parallel time range. Report MPI-I-93-129, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [s-tbspc-93]

S. Sen. See also [159, 224, 300, 1963, 6455, 9171, 9970, 9971, 10969, 11118–11127].

11987 M. Senechal. Crystals and quasicrystals. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 51, pages 933–950. CRC Press LLC, Boca Raton, FL, 1997. [s-cq-97]

11988 M. Senechal. Orderly dispositions in space. IMA Preprint Series 406, Inst. Math. Appl., Univ. Minnesota, Minneapolis, MN, 1988. [s-ods-88]

11989 M. Senechal. Tiling the torus and other space forms. *Discrete Comput. Geom.*, 3:55–72, 1988. [s-ttosf-88]

M. Senechal. See also [11690].

C. Séquin. See also [5674, 9383].

11990 C. H. Séquin and P. R. Wensley. Visible feature return at object resolution. *IEEE Comput. Graph. Appl.*, ??, 1985. To be published. [sw-vfror-85]

C. H. Séquin. See also [10117, 11933–11935, 12158, 12860].

N. D. Sergeeva. See also [11396].

11991 B. Serpette, J. Vuillemin, and J. C. Herv'e. BigNum: a portable and efficient package for arbitrary-precision arithmetic. Technical report, INRIA, May 1989. [svh-bpepa-89]

11992 J. Serra. *Image Analysis and Mathematical Morphology*. Academic Press, London, UK, 1982. [s-iamm-82]

11993 J. Serra, editor. *Image Analysis and Mathematical Morphology, volume 2: Theoretical Advances*. Academic Press, New York, 1988. [s-iamm-88]

O. Serra. See also [29, 30].

N. Serrano. See also [5751].

11994 M. Servit. Heuristic algorithms for rectilinear Steiner trees. *Digital Processes*, 7:21–32, 1981. [s-harst-81]

S. Seshadri. See also [4248].

Manoj Seshan. See also [5499].

11995 J. A. Sethian. *Level Set Methods*. Cambridge University Press, 1996. [s-lsm-96]

11996 J. A. Sethian. *Level set methods and fast marching methods*. Cambridge, 1999. [s-lsmfm-01]

J. A. Sethian. See also [8060].

S. V. Sevastjanov. See also [1121].

11997 K. Sevcik and N. Koudas. Filter trees for managing spatial data over a range of size granularities. In *Proc. 22nd VLDB Conference*, pages 16–27, 1996. [sk-ftmsd-96]

K. C. Sevcik. See also [8289, 8785, 10142, 10143].

S. Sevec. See also [7633].

11998 Michael Sever. Delaunay partitioning in three dimensions and semiconductor models. *COMPEL: The International Journal for Computation and Mathematics in Electrical and Electronic Engineering*, 5(2):75–93, June 1986. [s-dptds-86] *Keywords:* Delaunay partitioning, semiconductor models, scharfetter-gummel discretization, Voronoi cross-sections. *Annote:* Incremental algorithm in 3D. First take a surrounding tetra. Connect new point to all points of tetra whose c-sphere it lies in. Delete edges that are only in bad tetrahedra. Yet another proof. *Abstract:* An algorithm for Delaunay partitioning in three dimensions is given, and its use in numerical semiconductor models is examined. In particular, tetrahedral elements are found to be compatible with the Scharfetter-Gummel discretization of the stationary continuity equations associated with such models, using the Voronoi cross-sections for each edge in the obtained network. For tetrahedral elements, however, the Voronoi cross-sections do not coincide with those previously shown to be compatible with the Scharfetter-Gummel method. (Author abstract) 16 refs.

D. Severance. See also [4843].

F. E. Sevilgen. See also [612].

M. J. Sewell. See also [3308].

P. Seymour. See also [550, 4241, 11307, 11386].

P. D. Seymour. See also [11308].

11999 Jonathan Shade, Dani Lischinski, David Salesin, Tony DeRose, and John Snyder. Hierarchical image caching for accelerated walkthroughs of complex environments. In *Proc. SIGGRAPH '96*, In *Comput. Graph.* Proceedings, Annual Conference Series, pages 75–82. ACM SIGGRAPH, Addison-Wesley, 1996. [slsds-hicaw-96]

12000 I. R. Shafarevich. *Basic Algebraic Geometry*. Springer, Berlin, 2 edition, 1977. [s-bag-77] *ISBN:* 3-540-08264-6. *Annote:* Part I. Algebraic varieties in a projective space I. Fundamental concepts II. Local properties III. Divisors and differential forms IV. Intersection indices Part II. Schemes and varieties V. Schemes VI. Varieties Part III. Algebraic varieties over the field of complex numbers and complex analytic manifolds VII. Topology of algebraic varieties VIII. Complex analytic manifolds IX. Uniformization Bibliography Historical sketch.

I. R. Shafarevich. See also [10152].

12001 J. Shafer, R. Agrawal, and M. Mehta. Sprint: A scalable parallel classifier for data mining. In *Proceedings of the International Conference on Very Large Databases*, pages 544–555. Morgan Kauffman, 1996. [sa-sprint-96]

12002 L. Shafer and W. Steiger. Randomizing optimal geometric algorithms. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 133–138, 1993. [ss-roga-93] *Precedes:* ss-roga-95. *Cites:* b-chfsp-78, csss-otass-89, e-nchap-77, e-acg-87, fr-etbs-75, ks-upcha-86, ls-otahs-90, lms-hscr-92, lms-ahsc-94, m-roass-91, mt-uchap-85, mt-uchap-85, fr-aasfs-75, gs-cchsp-79, ol-fcbch-80, ZZZ.

12003 L. Shafer and W. Steiger. Randomizing optimal geometric algorithms. Technical Report 94-22, DIMACS, 1995. [ss-roga-95] *Succeeds:* ss-roga-93.

C. Shaffer. See also [11394, 11395, 11588, 11594].

12004 C. A. Shaffer and H. Samet. An algorithm to expand regions represented by linear quadtrees. *Image Vision Comput.*, 6(3):162–168, August 1988. [ss-aerrl-88]

12005 C. A. Shaffer and H. Samet. An in-core hierarchical data structure organization for a geographic database. Computer Science Department TR 1886, University of Maryland, College Park, MD, July 1987. [ss-chdso-87]

12006 C. A. Shaffer and H. Samet. Optimal quadtree construction algorithms. *Comput. Vision Graph. Image Process.*, 37(3):402–419, March 1987. [ss-oqca-87]

12007 C. A. Shaffer and H. Samet. Set operations for unaligned linear quadtrees. *Comput. Vision Graph. Image Process.*, 50(1):29–4, April 1990. (also Virginia Polytechnic Institute and State University Computer Science TR 88–31). [ss-soulq-90]

12008 C. A. Shaffer, H. Samet, and R. C. Nelson. QUILT: a geographic information system based on quadtrees. *Internat. J. Geogr. Inform. Syst.*, 4(2):103–131, April 1990. [ssn-qgisb-90] *Annote:* also University of Maryland Computer Science TR-1885.1.

C. A. Shaffer. See also [690, 11589–11593, 11595–11598].

U. Shaft. See also [6041].

M. Shah. See also [11005].

12009 Nimish R. Shah. Homeomorphic meshes in $\Re^3$. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 25–30, 1995. [s-hmr-95]

N. R. Shah. See also [4110, 4754–4757].

12010 Hamid Shahnasser, Ward Morgan, and A. Raghuram. Dynamic date structure suitable for adaptive mesh refinement in finite element method. *Finite Elements in Analysis and Design*, 4(3):237–247, November 1988. [smr-ddssa-88] *Keywords:* dynamic data structure, mesh refinement. *Annote:* Claims that minimizing sum of the minimum angles is equal to the DT. (Not true). Claims that sum of opposite angles is cheapest way to implement DT test. Lists Pascal code. Data structure is list of triangles, with pointers to adjacent triangles. Inside flip insertion. *Abstract:* This paper describes a dynamic data structure and its implementation, used for an optimum mesh generator. The implementation of this mesh generator was a part of a software package implemented to solve electromagnetic field problems using the finite element method. This mesh generator takes advantage of the Delaunay algorithm, which maximizes the summation of the smallest angles in all triangles and thus creates a mesh that is proved to be an optimum mesh for use in the finite element method. The dynamic data structure is explained and the source code is reviewed. The programs have been written in Pascal programming language. (Author abstract) 8 Refs.

H. Shahnasser. See also [2769].

12011 Farhad Shahrokhi, Ondrej Sýkora, László A. Székely, and Imrich Vrt'o. Bipartite crossing numbers of meshes and hypercubes. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 37–46. Springer-Verlag, 1997. [sssv-bcnmh-97] *Keywords:* graph drawing.

12012 F. Shahrokhi, L. A. Székely, O. Sýkora, and I. Vrt'o. Drawings of graphs on surfaces with few crossings. *Algorithmica*, 16:118–131, 1996. (special issue on Graph Drawing, edited by G. Di Battista and R. Tamassia). [sssv-dgsfc-96] *Keywords:* graph drawing, 3D, topological graph theory.

12013 F. Shahrokhi, L. A. Székely, and I. Vrt'o. Crossing numbers of graphs, lower bound techniques and algorithms: a survey. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 131–142. Springer-Verlag, 1995. [ssv-cnglb-95] *Keywords:* graph drawing, planarization, crossing number, survey.

F. Shahrokhi. See also [10531, 10532].

12014 A. V. Shaidenko. Some characteristic properties of the ellipsoid. *Sibirsk Mat. Z.*, 21:232–234, 240, 1980. In Russian. [s-scpe-80]

D. Shaked. See also [11648].

D. Shallcross. See also [3521].

A. Shamir. See also [5069, 5231, 8865, 8866].

E. Shamir. See also [1122].

12015 R. Shamir. Probabilistic analysis in linear programming. *Statistical Science*, 8:57–64, 1993. [s-palp-93]

12016 R. Shamir. The efficiency of the simplex method: a survey. *Manage. Sci.*, 33:301–334, 1987. [s-esms-87] *Keywords:* linear programming, Monte Carlo.

12017 R. Shamir and B. Dietrich. Characterization and algorithms for greedily solvable transportation problems. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 358–366, 1990. [sd-cagst-90]

R. Shamir. See also [96, 101, 102].

12018 M. Shamos, H. Freeman, R. Franklin, and A. Rosenfeld. ?? In G. Dutton, editor, *Harvard Papers on Geographical Information Systems*, page ?? Addison-Wesley, Reading, MA, 1978. [sffr-hpgis-78] *Keywords:* complexity theory, design of algorithms, data structuring, cartography, searching, probing, divide-and-conquer, dynamizing data structures, triangulation, polygonal chains.

12019 M. I. Shamos. *Computational Geometry*. Ph.D. thesis, Dept. Comput. Sci., Yale Univ., New Haven, CT, 1978. [s-cg-78] *Keywords:* doctoral thesis. *Comments:* UMI 78-19047. *Succeeds:* s-pcg-77.

12020 M. I. Shamos. Geometric complexity. In *Proc. 7th Annu. ACM Sympos. Theory Comput.*, pages 224–233, 1975. [s-gc-75]

12021 M. I. Shamos. Geometry and statistics: problems at the interface. In J. F. Traub, editor, *Algorithms and Complexity: New Directions and Recent Results*, pages 251–280. Academic Press, New York, NY, 1976. [s-gspi-76]

12022 M. I. Shamos. Problems in computational geometry. Report, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1977. [s-pcg-77] *Comments:* An early version of his thesis? *Precedes:* s-cg-78.

12023 M. I. Shamos. The early years of computational geometry—a personal memoir. In B. Chazelle, J. E. Goodman, and R. Pollack, editors, *Advances in Discrete and Computational Geometry*, volume 223 of *Contemporary Mathematics*, pages 313–333. American Mathematical Society, Providence, 1999. [s-eycgp-99]

12024 M. I. Shamos and J. L. Bentley. Optimal algorithms for structuring geographic data. In *Proc. Sympos. Topological Data Structures for Geographic Inform. Systems*, pages 43–51. Harvard Univ., 1977. [sb-oasgd-77]

12025 M. I. Shamos and D. Hoey. Closest-point problems. In *Proc. 16th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 151–162, 1975. [sh-cpp-75] *Annote:* Uses Voronoi tesselation to get $O(N \log N)$ algorithms for: all closest points; Euclidean MST; Triangulation; Convex Hull; Largest empty circle; smallest enclosing circle. Divide and Conquer algorithm for VD.

12026 M. I. Shamos and D. Hoey. Geometric intersection problems. In *Proc. 17th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 208–215, 1976. [sh-gip-76]

12027 M. I. Shamos and G. Yuval. Lower bounds from complex function theory. In *Proc. 17th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 268–273, 1976. [sy-lbcft-76]

M. I. Shamos. See also [1654–1656, 10887, 10888].

12028 Mark Shand, Patrice Bertin, and Jean Vuillemin. Hardware speedups in long integer multiplication. In *2nd ACM Sympos. Parallel Algorithms Arch.*, 1990. [sbv-hslim-90]

12029 U. Shani. Filling regions in binary raster images: a graph-theoretical appoach. *Computer graphics*, 14:321–327, 1980. [s-frbri-80]

12030 K. Shanmukh and A. K. Pujari. Volume intersection with optimal set of directions. *P. Reco. Letters*, ??:165–170, 1991. [sp-viosd-91]

A. Shannon. See also [13501].

G. Shannon. See also [1852, 2034].

G. E. Shannon. See also [7763].

12031 M. Shantz. Surface definition for branching contour-defined objects. *Comput. Graph.*, 15:242–270, 1981. [s-sdbcd-81]

K. R. Shao. See also [13881, 13882].

12032 R. Shapira and H. Freeman. The cyclic order property of vertices as an aid in scene analysis. *Commun. ACM*, 22:3–9, 1979. [sf-copva-79]

R. Shapira. See also [5582].

12033 R. E. Shapire. *The Design and Analysis of Efficient Learning Algorithms.* MIT Press, Cambridge, MA, 1991. [s-daela-91]

12034 H. D. Shapiro. Theoretical limitations on the efficient use of parallel memories. *IEEE Trans. Comput.*, ??, 1978. [s-tleup-78]

H. D. Shapiro. See also [9852, 9853].

L. G. Shapiro. See also [6671].

12035 M. Shapiro. A note on Lee and Schachter's algorithm for Delaunay triangulation. *Internat. J. Comput. Inform. Sci.*, 10(6):413–418, 1981. [s-nlsad-81] *Annote:* Modification of Lee and Schachter's second algorithm such that points outside the convex hull can be added. $O(n^2)$ worst case, claims $O(n^{4/3})$ in practice.

12036 V. Shapiro. Maintenance of geometric representations through space decompositions. *Internat. J. Comput. Geom. Appl.*, 7:21–56, 1997. [s-mgrsd-97]

12037 V. Shapiro. Representations of semi-algebraic sets in finite algebras generated by space decompositions. Technical Report CPA 91-1, Cornell Univ., Ithaca, New York, February 1991. [s-rsasf-91]

12038 V. Shapiro and R. M. Haralick. Decomposition of two-dimensinal shapes by graph theoretic clusters. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-1(1):10–20, 1979. [sh-dtdsg-79]

12039 V. Shapiro and D. Vossler. B-rep → CSG conversion I: construction and optimization of CSG representations. Technical Report CPA89-3a, Cornell Programmable Automation, Ithaca, NY, September 1990. [sv-brrcc1-90]

12040 V. Shapiro and D. Vossler. B-rep → CSG conversion II: efficient CSG representations of planar solids. Technical Report CPA89-4a, Cornell Programmable Automation, Ithaca, NY, May 1990. [sv-brrcc2-90]

12041 V. Shapiro and D. Vossler. Efficient CSG representations of planar solids. Technical Report, Sibley School of M&AE, Cornell Univ., Ithaca, NY, 1989. [sv-ecrps-89]

12042 V. Shapiro and D. L. Vossler. What is a parametric family of solids? In *Proc. 3rd ACM Symposium on Solid Modeling and Applications*, May 1995. [sv-wipfs-95]

V. Shapiro. See also [10958, 10959].

Behzad Shariat. See also [7466, 10837].

12043 Micha Sharir. A near-linear algorithm for the planar 2-center problem. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 106–112, 1996. [s-nlap2-96] *Cites:* as-pglp-94, d-ptctm-84, e-dtdlp-92, e-fcptc-96, e-samcp-93, h-fatcd-93, hlc-sdase-93, hs-ftp-91, jk-eaetc-94, ks-ebago-93, m-apcad-83, m-ltalp-83, ms-cscgl-84, ol-mcp-81, s-mpafo-94, ZZZ.

12044 Micha Sharir. A near-linear algorithm for the planar 2-center problem. *Discrete Comput. Geom.*, 18:125–134, 1997. [s-nlap2-97]

12045 Micha Sharir. A note on the Papadimitriou-Silverberg algorithm for planning optimal piecewise-linear motion of a ladder. Technical Report NYU Robotics Report 188, Courant Institute, New York University, 1989. [s-npsap-89t]

12046 Micha Sharir. A note on the Papadimitriou-Silverberg algorithm for planning optimal piecewise linear motion of a ladder. *Inform. Process. Lett.*, 32:187–190, 1989. [s-npsap-89] *Keywords:* motion planning.

12047 Micha Sharir. Algorithmic motion planning. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 40, pages 733–754. CRC Press LLC, Boca Raton, FL, 1997. [s-amp-97]

12048 Micha Sharir. Algorithmic motion planning in robotics. Report 392, Courant Inst. Math. Sci., New York Univ., New York, NY, 1988. [s-ampr-88] *Keywords:* motion planning, robotics, survey paper. *Precedes:* s-ampr-89.

12049 Micha Sharir. Algorithmic motion planning in robotics. *Computer*, 22:9–20, 1989. [s-ampr-89] *Keywords:* motion planning, robotics, survey paper. *Succeeds:* s-ampr-88. *Precedes:* ss-ampr-90.

12050 Micha Sharir. Almost linear upper bounds for the length of general Davenport-Schinzel sequences. *Combinatorica*, 7:131–143, 1987. [s-alubl-87] *Keywords:* Davenport-Schinzel sequences.

12051 Micha Sharir. Almost tight upper bounds for lower envelopes in higher dimensions. manuscript, 1993. [s-atubl-93t] *Precedes:* s-atubl-93, s-atubl-94.

12052 Micha Sharir. Almost tight upper bounds for lower envelopes in higher dimensions. In *Proc. 34th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 498–507, 1993. [s-atubl-93] *Succeeds:* s-atubl-93t.

12053 Micha Sharir. Almost tight upper bounds for lower envelopes in higher dimensions. *Discrete Comput. Geom.*, 12:327–345, 1994. [s-atubl-94] *Succeeds:* s-atubl-93, s-atubl-93t.

12054 Micha Sharir. Arrangements in higher dimensions: Voronoi diagrams, motion planning, and other applications. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 109–121. Springer-Verlag, 1995. [s-ahdvd-95]

12055 Micha Sharir. Arrangements of surfaces in higher dimensions. In B. Chazelle, J. E. Goodman, and R. Pollack, editors, *Advances in Discrete and Computational Geometry*, volume 223 of *Contemporary Mathematics*, pages 335–353. American Mathematical Society, Providence, RI, 1999. [s-ashd-99]

12056 Micha Sharir. Arrangements of surfaces in higher dimensions: Envelopes, single cells, and other recent developments. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 181–186, 1993. [s-ashde-93] *Cites:* ass-sulbl-89, aps-zsha-93, as-tsbac-90, as-car-92, bhok-sanvp-91, bdsty-arsol-92, bd-olrcu-93, cegs-dwclp-93, cegss-lsca-96, cs-arscg-89, e-acg-87, es-vda-86, fl-vdmpp-91, gks-ricdv-92, gmr-vdmpp-91t, gss-gmppt-89, h-ampac-92, hs-nblet-93, hs-nqbmp-93t, hs-cscas, hs-ndssg-86, ms-eracu-91, ps-ueplf-89, p-lmps3-93, pr-ncdsp-93, ss-tddsp-90, s-ksacs-91, s-atubl-93t, cegss-cfals-93, as-dssga-00, ZZZ.

12057 Micha Sharir. Davenport-Schinzel sequences and their geometric applications. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 253–278. Springer-Verlag, Berlin, West Germany, 1988. [s-dsstg-88] *Keywords:* Davenport-Schinzel sequences, survey paper.

12058 Micha Sharir. Efficient algorithms for planning purely translational collision-free motion in two and three dimensions. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1326–1331, 1987. [s-eappt-87]

12059 Micha Sharir. Improved lower bounds on the length of Davenport-Schinzel sequences. *Combinatorica*, 8:117–124, 1988. [s-ilbld-88] *Keywords:* Davenport-Schinzel sequences.

12060 Micha Sharir. Improved p-center algorithms. In *Abstracts 12th European Workshop Comput. Geom.*, page 85. Universität Münster, 1996. [s-ipca-96] *Cites:* ZZZ.

12061 Micha Sharir. Intersection and closest-pair problems for a set of planar discs. *SIAM J. Comput.*, 14:448–468, 1985. [s-icpps-85] *Keywords:* Voronoi diagrams.

12062 Micha Sharir. k-sets and random hulls. *Combinatorica*, 13:483–495, 1993. [s-ksrh-93]

12063 Micha Sharir. On k-sets in arrangements of curves and surfaces. *Discrete Comput. Geom.*, 6:593–613, 1991. [s-ksacs-91]

12064 Micha Sharir. On shortest paths amdist convex polyhedra. Technical Report 181, Computer Science Division, Courant Institute of Mathematical Sciences, 1985. [s-spacp-85]

12065 Micha Sharir. On shortest paths amidst convex polyhedra. *SIAM J. Comput.*, 16:561–572, 1987. [s-spacp-87] *Keywords:* shortest paths, polyhedra, convex, Davenport-Schinzel sequences, Voronoi diagrams. *Succeeds:* sb-spacp-86.

12066 Micha Sharir. On the two-dimensional Davenport-Schinzel problem. Report 193, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, 1985. [s-tddsp-85] *Keywords:* Davenport-Schinzel sequences, upper/lower envelope. *Precedes:* ss-tddsp-90.

12067 M. Sharir. Recent developments in the theory of arrangements of surfaces. In *Proc. 19th Conf. Found. Softw. Tech. Theoret. Comput. Sci.*, volume 1738 of *Lecture Notes Comput. Sci.*, pages 1–20. Springer-Verlag, 1999. [s-rdtas-99]

12068 Micha Sharir. The clarkson-shor technique revisited and extended. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 252–256, 2001. [s-cstre-01]

12069 Micha Sharir. The shortest watchtower and related problems for polyhedral terrains. *Inform. Process. Lett.*, 29(5):265–270, 1988. [s-swrpp-88] *Keywords:* visibility, polyhedral terrain.

12070 Micha Sharir and P. K. Agarwal. *Davenport-Schinzel Sequences and Their Geometric Applications*. Cambridge University Press, New York, 1995. [sa-dsstg-95]

12071 Micha Sharir and E. Ariel-Sheffi. On the "piano movers" problem IV: various decomposable two-dimensional motion planning problems. *Commun. Pure Appl. Math.*, 37:479–493, 1984. [sa-pmp4v-84] *Keywords:* motion planning.

12072 Micha Sharir and A. Baltsan. On shortest paths amidst convex polyhedra. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 193–206, 1986. [sb-spacp-86] *Precedes:* s-spacp-87. *Cites:* sb-spbtc-85, hs-ndssg-84, m-fspcp-85, rs-spesp-85, s-alubl-87, s-spacp-85, ss-spps-86, s-pds-74, ZZZ.

12073 Micha Sharir and A. Baltsan. On shortest paths between two convex polyhedra. Report 180, Dept. Comput. Sci., Courant Inst. Math. Sci., New York Univ., New York, NY, 1985. [sb-spbtc-85] *Precedes:* bs-spbtc-88.

12074 Micha Sharir, R. Cole, K. Kedem, D. Leven, R. Pollack, and S. Sifrony. Geometric applications of Davenport-Schinzel sequences. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 77–86, 1986. [scklps-gadss-86] *Keywords:* Davenport-Schinzel sequences, motion planning, visibility. *Comments:* In five journal papers: [8767], [10823], [7952], [3456], [13566].

12075 Micha Sharir and R. Livne. On minima of functions, intersection patterns of curves and Davenport-Schinzel sequences. In *Proc. 26th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 312–320, 1985. [sl-mfipc-85]

12076 Micha Sharir and M. Overmars. A simple output-sensitive algorithm for hidden-surface removal. *ACM Trans. Graph.*, 11:1–11, 1992. [so-sosah-92]

12077 Micha Sharir and A. Schorr. On shortest paths in polyhedral spaces. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 144–153, 1984. [ss-spps-84] *Precedes:* ss-spps-86.

12078 Micha Sharir and A. Schorr. On shortest paths in polyhedral spaces. *SIAM J. Comput.*, 15:193–215, 1986. [ss-spps-86] *Keywords:* shortest paths, three-dimensional, polyhedra. *Succeeds:* ss-spps-84.

12079 Micha Sharir and S. Sifrony. Coordinated motion planning for two independent robots. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 319–328, 1988. [ss-cmpti-88] *Keywords:* motion planning, configuration space. *Precedes:* ss-cmpti-91. *Cites:* ass-sulbl-87, as-tsbac-88, c-crmp-87, fwy-cmtra-86, gss-gmppt-88, hs-ndssg-86, hw-dt-48, klps-ujrcf-86, ko-mltdu-87, ks-empac-90, l-bc-61, ls-esmpa-87, oy-rmpmd-85, osy-gvdl-86, osy-gvdl-87, pss-stsps-88, ra-amprc-85, ss-pmp1c-83, ss-pmp2g-83, ss-pmp3c-83, ss-empae-85, ss-nempa-87, y-cmsd-84, y-oavds-87, ZZZ.

12080 Micha Sharir and S. Sifrony. Coordinated motion planning for two independent robots. *Ann. Math. Artif. Intell.*, 3:107–130, 1991. [ss-cmpti-91] *Keywords:* motion planning, configuration space. *Succeeds:* ss-cmpti-88.

12081 Micha Sharir and Steven S. Skiena. Tight bounds on a problem of lines and intersections. *Discrete Math.*, 89:313–314, 1991. [ss-tbpli-91]

12082 Micha Sharir, Shakhar Smorodinsky, and Gábor Tardos. An improved bound for k-sets in three dimensions. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 43–49, 2000. [sst-ibkst-00a]

12083 Micha Sharir, Shakhar Smorodinsky, and Gábor Tardos. An improved bound for k-sets in three dimensions. In *Abstracts 16th European Workshop Comput. Geom.*, pages 132–135. Ben-Gurion University of the Negev, 2000. [sst-ibkst-00e]

12084 M. Sharir and S. Toledo. Extremal polygon containment problems. Technical Report 228/91, Dept. Comput. Sci., Tel Aviv Univ., Tel Aviv, Israel, 1991. [st-epcp-91] *Succeeds:* st-epcp-91t.

12085 M. Sharir and S. Toledo. Extremal polygon containment problems. manuscript, 1991. [st-epcp-91t] *Precedes:* st-epcp-91, t-epcpo-91, st-epcp-94, t-epcp-91.

12086 Micha Sharir and S. Toledo. Extremal polygon containment problems. *Comput. Geom. Theory Appl.*, 4:99–118, 1994. [st-epcp-94] *Succeeds:* st-epcp-91t.

12087 Micha Sharir and Emo Welzl. A combinatorial bound for linear programming and related problems. In *Proc. 9th Sympos. Theoret. Aspects Comput. Sci.*, volume 577 of *Lecture Notes Comput. Sci.*, pages 569–579. Springer-Verlag, 1992. [sw-cblpr-92]

12088 Micha Sharir and Emo Welzl. Rectilinear and polygonal p-piercing and p-center problems. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 122–132, 1996. [sw-rpppp-96] *Cites:* as-atgo-95, ast-apsgo-94, a-httgl-94, a-bbhdn-94, cm-ltdao-93, dg-ipbr-82, d-pcpho-84, d-rpcp-87, e-hrctt-93, eh-gssml-72, fw-fll-74, f-oatp-91, fj-csrxm-82, fj-fkppc-83, fj-gsrsm-84, gt-ltasc-85, gks-sgsop-95, g-agtpg-80, kh-aanlp-79, kn-cdg-96, kn-pso-96, kc-ltawt-92, kl-wrccp-91, klc-rmcp-87, klc-oaarm-90, msw-sblp-96, m-ltalp-83, m-welcp-83, m-apcad-83, mt-nrcpc-83, ms-cscgl-84, ol-mcp-81, s-nlap2-96, sw-cblpr-92, ZZZ.

12089 Micha Sharir and E. Yaniv. Randomized incremental construction of Delaunay diagrams: Theory and practice. Technical report, Tel Aviv Univ, Israel, July 1990. [sy-ricdd-90]

Micha Sharir. See also [126–129, 136, 137, 141–153, 156, 165–168, 178, 179, 183–187, 216, 220–223, 225–263, 827, 833, 834, 839–843, 853–855, 860, 862–877, 1333, 1416–1421, 1491, 1705, 1706, 2215, 2216, 2717, 2718, 2961–2967, 2970–2983, 3022–3025, 3166, 3167, 3332, 3359, 3360, 3455–3458, 4693–4704, 4742, 4751–4753, 4758–4761, 4809–4821, 6375, 6380, 6391, 6392, 6397, 6398, 6403–6405, 6413–6415, 6424–6428, 6587–6603, 6668, 6669, 6699, 6700, 7097–7100, 7254–7257, 7689, 7795, 7802, 7803, 7897–7903, 7948–7955, 8705, 8706, 8763–8769, 8932, 9296, 9299, 9300, 9309, 9310, 9478–9482, 9632–9634, 9684, 9791, 9792, 10040, 10041, 10226, 10234–10238, 10461, 10462, 10496, 10499–10501, 10530, 10533–10541, 10820–10823, 11105, 11106, 11128, 11852–11870, 11894, 11895, 12199, 12200, 12327, 13565, 13566, 13656, 13657].

M. G. Sharma. See also [8404].

M. Sharna. See also [2721].

W. Sharp. See also [11829].

12090 A. Shashua and M. Werman. On the trilinear tensor of three perspective views and its underlying geometry. In *Proc. International Conference on Computer Vision*, 1995. [sw-tttpv-95]

A. Shashua. See also [13491].

12091 H. Shatkay and S. Zdonik. Approximate queries and representations for large data sequences. In *ICDE'96*, 1996. [sz-aqrld-96]

S. Shauck. See also [6186, 6187].

S. B. Shauck. See also [6188, 6189].

A. Shaw. See also [11844, 11845].

N. K. Shaw. See also [8655].

12092 R. D. Shaw and R. G. Pitchen. Modifications to the suhara-fukuda method of network generation. *Internat. J. Numer. Methods Eng.*, 12:96–99, 1978. [sp-msfmn-78] *Annote:* Modified S-F algorithm. Generates interior nodes on equilateral triangle grid and then triangulates resulting set. Builds triangle on each "open" edge in turn.

J. Shawe-Taylor. See also [5438].

I. Shearer. See also [2777].

12093 D. J. Sheehy, C. G. Armstrong, and D. J. Robinson. Shape description by medial surface construction. *IEEE Trans. Visualizat. Comput. Graph.*, 2(1):62–72, March 1996. [sar-sdmsc-96]

12094 Raj Shekhar, Elias Fayyad, Roni Yagel, and J. Fredrick Cornhill. Octree-based decimation of marching cubes surfaces. In Roni Yagel and Gregory M. Nielson, editors, *Proceedings of the Conference on Visualization*, pages 335–344, Los Alamitos, 1996. IEEE. [sfyc-obdmcs-96] *ISBN:* 0-7803-3673-9.

S. Shelah. See also [4421, 10730].

C. Shelton. See also [5265–5267, 6604].

Christian R. Shelton. See also [6605].

12095 C. Shen and G. Nagy. Autonomous navigation to provide long-distance surface traverses for Mars rover sample return missions. In *Proc. IEEE Internat. Sympos. Intelligent Control*, pages 362–367, 1989. [sn-anpld-89]

C.-F. Shen. See also [8627].

H.-W. Shen. See also [8931].

W. Shen. See also [1921–1923].

12096 X. Shen and H. Edelsbrunner. A tight lower bound on the size of visibility graphs. Technical Report UIUCDCS-R-86-1299, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1986. [se-tlbsv-86] *Precedes:* se-tlbsv-87.

12097 X. Shen and H. Edelsbrunner. A tight lower bound on the size of visibility graphs. *Inform. Process. Lett.*, 26:61–64, 1987. [se-tlbsv-87] *Succeeds:* se-tlbsv-86.

12098 X. Shen and Q. Hu. A note on minimal visibility graphs. *Inform. Process. Lett.*, 46:101, 1993. [sh-nmvg-93]

X. Shen. See also [4746].

X. J. Shen. See also [4711].

12099 Ching-Kuang Shene. Computing the intersection of a line and a cylinder. In Paul Heckbert, editor, *Graphics Gems IV*, pages 353–355. Academic Press, Boston, MA, 1994. [s-cilc-94] *Keywords:* quadric surface, ray tracing, cone. *Annote:* Geometric method for intersecting a ray with a cylinder.

12100 Ching-Kuang Shene. Equations of cylinders and cones. In Paul Heckbert, editor, *Graphics Gems IV*, pages 321–323. Academic Press, Boston, MA, 1994. [s-ecc-94] *Keywords:* quadric surface. *Annote:* Derives the implicit equations of cylinders and cones.

12101 C.-K. Shene and J. K. Johnstone. On the lower degree intersections of two natural quadrics, part I: algorithms. Technical Report JHU-91-15, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, September 1991. [sj-lditn-91] *Succeeds:* sj-pinq-91.

12102 C.-K. Shene and J. K. Johnstone. On the planar intersection of natural quadrics. In *Proc. ACM Sympos. Solid Modeling Found. CAD/CAM Appl.*, pages 233–242, 1991. [sj-pinq-91] *Precedes:* sj-lditn-91.

C.-K. Shene. See also [7589–7591].

12103 X. Sheng and B. E. Hirsch. Triangulation of trimmed surfaces in parametric space. *Comput. Aided Design*, 24:437–444, 1992. [sh-ttsps-92]

12104 X. Sheng and U. Tucholke. On triangulating suface models for SLA. In *Proc. 2nd Internat. Conf. on Rapid Prototyping*, pages 236–239, 1991. [st-tsms-91]

12105 D. N. Shenton and Z. J. Cendes. MAX—an expert system for automatic adaptive magnetics modelling. *IEEE Trans. Magn.*, MAG-22:805–807, 1986. [sc-mesaa-86] *Annote:* DT mesh refined by adding points at circumcentre instead of centroid.

12106 D. N. Shenton and Z. J. Cendes. Three-dimensional finite element mesh generation using Delaunay tesselation. *IEEE Trans. Magn.*, MAG-21(6):2535–2538, 1985. [sc-tdfem-85] *Annote:* Switching extended to 3D basic incremental algorithm.

D. N. Shenton. See also [2769].

12107 D. Shepard. A two-dimensional interpolation function for irregularly spaced data. In *Proc. 23rd Nat. Conf. ACM*, pages 517–524, 1968. [s-tdifi-68]

12108 G. C. Shepard. The Steiner point of a convex polytope. *Canad. J. Math.*, 18:1294–1300, 1966. [s-spcp-66]

12109 G. C. Shephard. Convex polytopes with convex nets. *Math. Proc. Camb. Phil. Soc.*, 78:389–403, 1975. [s-cpcn-75]

G. C. Shephard. See also [6350–6353, 9388].

12110 M. S. Shephard. Approaches to the automatic generation and control of finite element meshes. *Appl. Mech. Rev.*, 41:169–185, 1988. [s-aagcf-88]

12111 M. S. Shephard. Automatic and adaptive mesh generation. *IEEE Trans. Magn.*, MAG-21:2484–2489, 1985. [s-aamg-85]

12112 M. S. Shephard and J. A. Lo. Automatic generation of coarse three-dimensional meshes using the functionality of a geometric modeler. *Advances in Engineering Software and Workstations*, 13(5–6):273–286, September 1991. [sl-agctd-91] *Annote:* Subdivides by chopping of tetrahedra. Tetra quality measure is $\text{Volume}^2/\text{Area}^3$.

12113 M. S. Shephard, M. A. Yerry, and P. O. Baehmann. Automatic mesh generation allowing for efficient a priori and posteriori mesh refinement. *Comput. Methods Appl. Mech. Engrg.*, 55:161–180, 1985. [syb-amgae-85]

M. S. Shephard. See also [3564, 5797, 11799–11801, 13831].

12114 L. A. Shepp and J. B. Kruskal. Computerized tomography: the new medical X-ray technology. *Amer. Math. Monthly*, 85:420–439, 1978. [sk-ctnmx-78]

L. A. Shepp. See also [5955, 11090, 11091].

12115 S. W. Sheppard. Quaternion from rotation matrix. NASA Contract NAS 9-13809, The Charles Stark Draper Laboratory, Inc., Cambridge, MA, 1978. [s-qrm-78]

12116 E. C. Sherbrooke. *3-D Shape Interrogation by Medial Axis Transform*. Ph.D. thesis, Dept. Ocean Engineering, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1995. [s-3dsi-95] *Keywords:* doctoral thesis.

12117 E. C. Sherbrooke and N. M. Patrikalakis. Computation of medial axis transforms of 3d polyhedra. In J. R. Rossignac and C. M. Hoffmann, editors, *Proc. Third ACM Solid Modeling Conference*, 1995. [sp-cmat3-95]

12118 E. C. Sherbrooke and N. M. Patrikalakis. Computation of the solutions of nonlinear polynomial systems. *Comput. Aided Geom. Design*, 10(5):379–405, 1993. [sp-csnps-93]

12119 E. C. Sherbrooke, N. M. Patrikalakis, and E. Brisson. An algorithm for the medial axis transform of 3d polyhedral solids. *IEEE Trans. Visualizat. Comput. Graph.*, 2(1):45–61, March 1996. [spb-amat3-96]

E. C. Sherbrooke. See also [10662, 10665, 10669, 13880].

12120 D. Sherman and S. Peleg. Stereo by incremental matching of contours. *IEEE Trans. Pattern Anal. Mach. Intell.*, 12(11):1102–1106, 1990. [sp-simc-90]

W. Sherman. See also [86].

12121 T. Shermer. A tight bound on the combinatorial edge guarding problem. In *Snapshots of Computational and Discrete Geometry*, volume 3, pages 191–223. School Comput. Sci., McGill Univ., August 1994. [s-tbceg-94]

12122 T. Shermer. Computing bushy and thin triangulations. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 49, 1989. [s-cbtt-89] *Precedes:* s-cbtt-91.

12123 T. Shermer. Computing bushy and thin triangulations. *Comput. Geom. Theory Appl.*, 1:115–125, 1991. [s-cbtt-91] *Succeeds:* s-cbtt-89.

12124 T. Shermer. Convering and guarding orthogonal polygons with l_k-sets. manuscript, Simon Fraser University, 1991. [s-cgopl-91]

12125 T. Shermer. Convering and guarding polygons using l_k-sets. *Geom. Dedicata*, 37:183–203, 1991. [s-cgpul-91]

12126 T. Shermer. Hiding people in polygons. Technical Report SOCS-87.18, School Comput. Sci., McGill Univ., Montreal, PQ, 1987. [s-hpp-87] *Precedes:* s-hpp-89.

12127 T. Shermer. Hiding people in polygons. *Computing*, 42:109–131, 1989. [s-hpp-89] *Succeeds:* s-hpp-87.

12128 T. Shermer. On rectangle visibility graphs III: External visibility and complexity. Technical report, DIMACS and Simon Fraser University, April 1996. [s-rvg3e-96] *Keywords:* visibility graphs.

12129 T. Shermer. Recent results in art galleries. Technical Report, Simon Fraser Univ., Burnaby, BC, October 1990. [s-rrag-90] *Precedes:* s-rrag-92.

12130 Thomas Shermer. The continuous-graph approach to visibility problems. In *Proc. 5th Canad. Conf. Comput. Geom.*, page 321, 1993. [s-cgavp-93]

12131 T. Shermer. Triangulation graphs that require extra guards. Technical Memo 13, 3-D Animation Syst. Group, Comput. Graph. Lab., New York Inst. Tech., New York, NY, 1984. [s-tgtre-84]

12132 T. Shermer. *Visibility properties of polygons*. PhD thesis, McGill Univ., 1989. [s-vpp-89] *Keywords:* doctoral thesis.

12133 T. Shermer and G. T. Toussaint. Characterizations of convex and star-shaped polygons. Technical Report SOCS-88.11, School of Computer Science, McGill University, June 1988. [st-ccssp-88]

Thomas Shermer. See also [47, 48, 1141, 1588, 1947, 1986, 2301, 2309, 2310, 2330, 2331, 2419, 2423, 2424, 3672, 5082, 6532–6535, 7242, 7243, 9077, 9483, 9890, 9891, 10407, 10408].

12134 T. C. Shermer. A linear algorithm for bisecting a polygon. *Inform. Process. Lett.*, 41:135–140, 1992. [s-labp-92]

12135 T. C. Shermer. On recognizing unions of two convex polygons and related problems. *Pattern Recogn. Lett.*, 14, 1993. [s-rutcp-93]

12136 T. C. Shermer. On rectangle visibility graphs, III: External visibility and complexity. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 234–239, 1996. [s-rvgie-96]

12137 T. C. Shermer. Recent results in art galleries. *Proc. IEEE*, 80(9):1384–1399, September 1992. [s-rrag-92] *Succeeds:* s-rrag-90.

12138 T. C. Shermer and C. K. Yap. Probing for near centers and relative roundness. In *Proc. ASME Workshop on Tolerancing and Metrology*, 1995. [sy-pncrr-95]

T. C. Shermer. See also [965, 1589, 8688, 8809].

D. S. Sheu. See also [8627].

G. R. Shevare. See also [11666].

12139 J. Shewchuk. Adaptive precision floating point arithmetic and fast robust geometric predicates. Technical Report CMU-CS-96-140, Carnegie Mellon Univ., Pittsburgh, PA, 1996. [s-apfpa-96]

12140 Jonathan R. Shewchuk. A condition guaranteeing the existence of higher-dimensional constrained Delaunay triangulations. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 76–85, 1998. [s-cgehd-98]

12141 Jonathan Richard Shewchuk. Adaptive precision floating-point arithmetic and fast robust geometric predicates. *Discrete Comput. Geom.*, 18(3):305–363, 1997. [s-apfpa-97] *Succeeds:* s-apfpa-96,s-rafpg-96.

12142 Jonathan R. Shewchuk. Mesh generation for domains with small angles. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 1–10, 2000. [s-mgdsa-00]

12143 Jonathan R. Shewchuk. Robust adaptive floating-point geometric predicates. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 141–150, 1996. [s-rafpg-96] *Cites:* abdpy-esdus-97, b-phpmp-93, c-sede-92, d-fptea-71, fv-eeacg-93, fv-sayee-96, g-wecss-91, gs-pmgsc-85, kln-edtur-91, k-sa-81, ls-tacdt-80, p-aapfp-91, p-pfpan-92, s-te2dq-96, w-cnddt-81, ZZZ.

12144 Jonathan Richard Shewchuk. Sweep algorithms for constructing higher-dimensional constrained Delaunay triangulations. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 350–359, 2000. [s-sachd-00]

12145 Jonathan R. Shewchuk. Tetrahedral mesh generation by Delaunay refinement. In *Proc. 14th Annu. ACM Sympos. Comput. Geom.*, pages 86–95, 1998. [s-tmgdr-98]

12146 J. R. Shewchuk. Triangle: Engineering a 2d quality mesh generator and Delaunay triangulator. In *First Workshop on Applied Computational Geometry*. Association for Computing Machinery, May 1996. [s-te2dq-96]

W. Shi. See also [4762, 11026].

T. Shibuya. See also [10285].

S. Shieber. See also [656, 3267–3270, 8281, 11489].

F.-S. Shieh. See also [9355].

12147 J. S. Shieh. Shortsighted watchman arrangement. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 192–197, 1992. [s-swa-92] *Cites:* os-snhpd-83, k-dpsc-83, ags-ccrpd-88, o-agta-87, ws-oacdt-87, c-cdt-87, ZZZ.

D. R. Shier. See also [7561].

12148 Bih-Yaw Shih and Hiroshi Sakurai. Automated hexahedral mesh generation by swept volume decomposition and recomposition. In *Proc. 5th International Meshing Roundtable*, pages 273–280, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [ss-ahmgs-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

Jau-Der Shih. See also [6256].

12149 Z. C. Shih, G. H. Chen, and R. C. T. Lee. Systolic algorithms to examine all pairs of elements. *CACM*, ??:161–167, February 1987. [scl-saeap-87]

12150 Z. Shiller and S. Dubowsky. Global time-optimal motions of robotic manipulators in the presence of obstacles. In *Proc. IEEE Internat. Conf. Robot. Autom.*, 1988. [sd-gtomr-88]

J. Shilleto. See also [5296].

Y. Shiloac. See also [997].

12151 Y. Shiloach. *Arrangements of Planar Graphs on the Planar Lattice.* PhD thesis, Weizmann Institute of Science, 1976. [s-apgpl-76] *Keywords:* doctoral thesis, graph drawing.

12152 Y. Shiloach and U. Vishkin. Finding the maximum, merging and sorting in a parallel computation model. *J. Algorithms*, 2:88–102, 1981. [sv-fmmsp-81]

Y. Shiloach. See also [5070, 7411].

12153 K. Shim, R. Srikant, and R. Agrawarl. High-dimensional similarity joins. In *Proc. 13th IEEE Internat. Conf. Data Eng.*, pages 301–311, 1997. [ssa-hdsj-97]

S. Shim. See also [326].

12154 K. Shimada and D. C. Gossard. Computational methods for physically-based FE mesh generation. In *Proc. IFIP/TC5/WG5.3 8th Internat. Conf. PROLAMAT*, 1992. [sg-cmpbf-92]

Kenji Shimada. See also [13735].

T. Shimanouchi. See also [1845].

T. Shimonmura. See also [7408].

12155 M. Shimrat. Algorithm 112: position of point relative to polygon. *Commun. ACM*, 5:434, 1962. [s-a112p-62]

12156 C.-S. Shin, S. K. Kim, and K.-Y. Chwa. Area-efficient algorithms for straight-line tree drawings. *Comput. Geom. Theory Appl.*, 15:175–202, 2000. [skc-aeasl-00] *Succeeds:* skc-aeaus-96.

12157 C.-S. Shin, S. K. Kim, and K.-Y. Chwa. Area-efficient algorithms for upward straight-line tree drawings. In *Proc. 2nd Ann. Internat. Conf. Computing and Combinatorics*, volume 1090 of *Lecture Notes Comput. Sci.*, pages 106–116. Springer-Verlag, 1996. [skc-aeaus-96] *Keywords:* graph drawing, tree drawing, straight line drawing. *Precedes:* skc-aeasl-00. *Abstract:* The presented algorithm produces an upward, straight-line tree drawing whose area is $O(n \log \log n)$. Several related tree drawing problems are considered.

Chan-Su Shin. See also [338, 8048–8051, 8648, 10841].

12158 H. Shin, A. L. Sangiovanni-Vincentelli, and C. H. Séquin. Two dimensional compaction by 'zone refining'. In *Proc. 23rd Design Autom. Conf.*, pages 115–122, 1986. [sss-tdczr-86]

H. Y. Shin. See also [3233].

12159 K. G. Shin and N. D. McKay. Minimum-time control of robotic manipulators with geometric path constraints. *IEEE Trans. Autom. Control*, AC-30:531–541, June 1985. [sm-mtcrm-85]

K. G. Shin. See also [12640].

S. Shin. See also [8043].

S.-B. Shin. See also [7407].

12160 S. Y. Shin. A predictive algorithm for intersecting parametric polynomial surfaces. *Internat. J. Comput. Geom. Appl.*, 3:203–219, 1993. [s-paipp-93] *Keywords:* computer graphics, parametric surfaces, ray-patch intersection algorithms.

12161 S. Y. Shin and T. C. Woo. Finding the convex hull of a simple polygon in linear time. *Pattern Recogn.*, 19:453–458, 1986. [sw-fchsp-86]

S. Y. Shin. See also [1212, 1213, 3245, 3246, 8045, 8648, 13674, 13764].

12162 Y. Shinagawa and T. L. Kunii. Constructing a Reeb graph automatically from cross sections. *IEEE Comput. Graph. Appl.*, 11:44–51, November 1991. [sk-crgac-91]

12163 Y. Shinagawa, T. L. Kunii, and Y. L. Kergosien. Surface coding based on morse theory. *IEEE Comput. Graph. Appl.*, 11:66–78, September 1991. [skk-scbmt-91]

Y. Shinagawa. See also [12712].

M. Shing. See also [6078, 8062, 8063].

M. T. Shing. See also [264, 4457, 6084, 7164, 8249].

S. Shinotuka. See also [10030].

12164 M. Shinya and M.-C. Forgue. Laying out objects with geometric and physical constraints. *Visual Comput.*, 11(4):188–201, 1995. [sf-loogp-95]

I. Shirakawa. See also [3191].

12165 P. Shirley. Discrepancy as a quality measure for sample distributions. In F. H. Post and W. Barth, editors, *Proc. Eurographics '91*, pages 183–194, Vienna, Austria, September 1991. Elsevier Science. [s-dqmsd-91]

12166 P. Shirley and A. Tuchman. A polygonal approximation to direct scalar volume rendering. In *San Diego Workshop on Volume Visualization*, volume 24 of *Comput. Gr*, pages 63–70, December 1990. [st-padsc-90]

P. Shirley. See also [3228, 13615].

L. A. Shirman. See also [66].

12167 D. Shmoys, E. Tardos, and K. Aardel. Approximation algorithms for facility location problems. In *Proc. 29th Annu. ACM Sympos. Theory Comput.*, pages 265–274, 1997. [sta-aaflp-97]

D. Shmoys. See also [2861, 6981, 6982].

D. B. Shmoys. See also [6013, 8538].

12168 M. Shneerson and A. Tal. Gasp-ii: A geometric algorithm animation system for an electronic classroom. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 379–381, 1997. [st-gigaa-97] *Cites:* bclt-aawww-96, b-aa-87, b-zsaam-92a, bn-catwb-96, bs-taa-85, ekkmns-wcg-94, mn-lledt-89, s-raplg-91, s-tfsaa-90, td-vga-95, ZZZ.

12169 B. Shneiderman. Reduced combined indexes for efficient multiple attribute retrieval. *Inform. Syst.*, 2:149–154, 1977. [s-rciem-77]

B. Shneiderman. See also [7567].

12170 M. Shneier. Calculations of geometric properties using quadtrees. *Comput. Graph. Image Process.*, 16:296–302, 1981. [s-cgpuq-81]

12171 M. Shneier. Path length distance transform for quadtrees. *Inform. Sci.*, 23:45–67, 1981. [s-pldtq-81]

12172 M. Shneier. Two hierarchical linear feature representations: edge pyramids and edge quadtrees. *Comput. Graph. Image Process.*, 17:211–224, 1981. [s-thlfr-81]

12173 M. Shneier. Using pyramids to define local thresholds for blob detection. In *Proc. DARPA Image Understanding Workshop*, pages 31–35, 1979. [s-updlt-79]

M. Shneier. See also [11003].

12174 Ken Shoemake. Arcball rotation control. In Paul Heckbert, editor, *Graphics Gems IV*, pages 175–192. Academic Press, Boston, MA, 1994. [s-arc-94] *Keywords:* interaction, quaternion. *Annote:* Asks the question: how does one control the three degrees of freedom of rotation in 3D, using a 2D input device such as a mouse? Shoemake's answer: use a pair of points to designate a relative rotation, and use quaternions to make the rotation axis specification intuitive and consistent. Contains C code.

12175 Ken Shoemake. Euler angle conversion. In Paul Heckbert, editor, *Graphics Gems IV*, pages 222–229. Academic Press, Boston, MA, 1994. [s-eac-94] *Keywords:* quaternion, rotation. *Annote:* Gives code to convert a rotation expressed by one triple of axes into another triple. Rotations in 3D are often described in terms of Euler angles: rotations about x, y, and z in some order. The order of rotations is significant, but not standardized. These routines are useful for doing such conversions. Contains C code.

12176 Ken Shoemake. Fiber bundle twist reduction. In Paul Heckbert, editor, *Graphics Gems IV*, pages 230–236. Academic Press, Boston, MA, 1994. [s-fbtr-94] *Keywords:* animation, camera control, quaternion, topology, rotation. *Annote:* Applies some advanced concepts from topology to the problem of minimizing twist (rotation about the z axis of screen space) in animation.

12177 Ken Shoemake. Polar matrix decomposition. In Paul Heckbert, editor, *Graphics Gems IV*, pages 207–221. Academic Press, Boston, MA, 1994. [s-pmd-94] *Keywords:* quaternion, spectral decomposition, singular value decomposition. *Annote:* Describes a method for decomposing an affine 3D transformation into translation, scaling, and rotation transformations in a physically meaningful way. This can be useful for keyframe animation. Contains C code.

12178 K. Shoemake. Uniform random rotations. In D. Kirk, editor, *Graphics Gems III*, pages 124–132. Academic Press, Boston, MA, 1992. [s-urr-92]

12179 B. K. Shoichet, D. L. Bodian, and I. D. Kuntz. Molecular docking using shape descriptors. *J. Computational Chemistry*, 13:380–397, 1992. [sbk-mdusd-92]

M. Amin Shokrollahi. See also [2590].

Michael Shook. See also [8730].

12180 P. Shor. Geometric realization of superlinear Davenport–Schinzel sequences: I. Line segments. Unpublished manuscript, 1990. [s-grsds-90]

P. Shor. See also [1761, 10723, 10724].

12181 P. W. Shor. *Random planar matching and bin packing.* PhD thesis, Massachusetts Inst. Tech., Cambridge, MA, 1985. [s-rpmbp-85] *Keywords:* doctoral thesis.

12182 P. W. Shor. Stretchability of pseudolines is NP-hard. In P. Gritzman and B. Sturmfels, editors, *Applied Geometry and Discrete Mathematics: The Victor Klee Festschrift*, volume 4 of *DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, pages 531–554. AMS Press, 1991. [s-spinh-91] *Keywords:* pseudolines, stretchability, NP-hard, isotopy conjecture. *Comments:* includes description of Mnëv's proof that any semialgebraic set is homotopy-equivalent to the realization space of some configuration of pseudolines.

12183 P. W. Shor and N. J. A. Sloane. A family of optimal packings in Grassmannian manifolds. *J. Algebraic Combin.*, ??, 1997. To appear. [ss-fopgm-97]

12184 P. W. Shor and C. J. Van Wyk. Detecting and decomposing self-overlapping curves. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 44–50, 1989. [sv-ddsoc-89] *Precedes:* sv-ddsoc-92. *Cites:* a-ca-66, ce-oails-88, fpp-sssfe-88, ll-gdtpg-86, ns-issip-80, rt-rplbo-86, w-rccp-37, ZZZ.

12185 P. W. Shor and C. J. Van Wyk. Detecting and decomposing self-overlapping curves. *Comput. Geom. Theory Appl.*, 2(1):31–50, 1992. [sv-ddsoc-92] *Keywords:* computational topology, constrained Delaunay triangulation, dynamic programming, immersions. *Succeeds:* sv-ddsoc-89.

P. W. Shor. See also [258, 288, 289, 297, 298, 302, 1760, 3368, 3369, 3401].

12186 A. Shoshani. OLAP and statistical databases: Similarities and differences. In *Proc. Annu. ACM Sympos. Principles Database Syst.*, pages 185–196, 1997. [s-osdsd-97]

N. Shouraboura. See also [2942, 2947, 2948, 3026].

Gregory Shpitalnik. See also [5979–5981].

R. Shrairaman. See also [4425].

Robert Shrist. See also [76].

E. Shriver. See also [13261, 13262].

E. A. M. Shriver. See also [13270–13272].

12187 L. Shu-Xiang and M. H. Loew. The quad-codes and its applications. *Commun. ACM*, 30:621–625, 1987. [sl-qcia-87]

M. Shub. See also [2104].

J. Shugart. See also [4187].

S. G. Shulyak. See also [13124].

L. J. Shustek. See also [5612].

G. Shute. See also [3968].

12188 G. M. Shute. A reduced grid for rectilinear Steiner minimal trees. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 309–314, 1990. [s-rgrsm-90] *Precedes:* s-rgrsm-91. *Cites:* b-tprrs-86, ce-lsdst-86, gj-rstpi-77, h-sprd-66, h-smtrd-76, tds-crsmt-87, w-ndsor-85, yw-ossaw-72, ZZZ.

12189 G. M. Shute. A reduced grid for rectilinear Steiner minimal trees. Technical report, Comput. Sci. Dept., Univ. of Minnesota, 1991. [s-rgrsm-91] *Succeeds:* s-rgrsm-90.

12190 G. M. Shute, L. L. Deneen, and C. D. Thomborson. An $O(n \log n)$ plane-sweep algorithm for L_1 and L_∞ Delaunay triangulations. *Algorithmica*, 6:207–221, 1991. [sdt-opsal-91]

G. M. Shute. See also [3971, 3972, 12897].

R. K. Shyamasundar. See also [287, 5923, 5924].

Masato Shyokawa. See also [13838].

12191 R. Sibson. A brief description of natural neighbour interpolation. In Vic Barnet, editor, *Interpreting Multivariate Data*, pages 21–36. John Wiley & Sons, Chichester, 1981. [s-bdnni-81] *Annote:* Weights for an interpolant at a point p can be found by considering what fraction of the area of $VP(p)$ is taken from the VP for $p_1, p_2, \ldots, p_n$.

12192 R. Sibson. A vector identity for the Dirichlet tesselation. *Math. Proc. Camb. Phil. Soc.*, 87:151–155, 1980. [s-vidt-80] *Abstract:* Take away a site p from a Voronoi diagram, and for every other site q, let w_q be the fraction of p's cell that is taken by the cell of q. Then p is the weighted average (centroid) of the other sites q with weights w_q. This property is used in [12191]. It holds in any dimension, and also for power diagrams (defined in the paper as intersections of higher-dimensional Voronoi diagrams with subspaces).

12193 R. Sibson. Locally equiangular triangulations. *Comput. J.*, 21(3):243–245, 1978. [s-let-78] *Keywords:* point-set triangulation. *Annote:* "Lawson has given a criterion of local equiangularity of the convex hull of a finite set of distinct points in the plane. In this note it is shown that (with suitable modifications to deal with degeneracy) there is only one such triangulation, and that it is the Delaunay triangulation.".

12194 R. Sibson. The Dirichlet tesselation as an aid in data analysis. *Scand. J. Statist.*, 7:14–20, 1980. [s-dtada-80]

R. R. Sibson. See also [6252].

M. Sideri. See also [8296, 8297, 10593].

Nikolaos Sidiropoulos. See also [8267].

J. B. Sidney. See also [11632–11634].

S. J. Sidney. See also [1382, 11632–11634].

L. C. Siebenmann. See also [8067].

12195 A. Siegel and D. Dolev. Some geometry for general river routing. *SIAM J. Comput.*, 17:583–605, 1988. [sd-sggrr-88]

A. Siegel. See also [3459, 3460, 4336, 4337, 11733, 11870].

12196 A. F. Siegel. Robust regression using repeated medians. *Biometrika*, 69:242–244, 1982. [s-rrurm-82]

Eliot Siegel. See also [8267].

J. Siegel. See also [1324].

12197 R. Siegel and J. R. Howell. *Thermal Radiation Heat Transfer.* Hemisphere Pu. Co., Washington, 3rd edition, 1992. [sh-trht-92]

12198 G. Sierksma. Extending a convexity space to an aligned space. *Indagationes Mathematicae*, 46:429–435, 1985. [s-ecsas-85]

12199 S. Sifrony and Micha Sharir. A new efficient motion-planning algorithm for a rod in polygonal space. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 178–186, 1986. [ss-nempa-86] *Precedes:* ss-nempa-87. *Cites:* bo-arcgi-79, cd-vdbcd-85, f-fapct-85, ks-empac-90, ls-esmpa-85, ls-pptmc-87, ls-ncfcc-87, m-gtd23-77, o-lbml-85, osy-gvdl1-84, osy-gvdl2-84, oy-rmpmd-85, r-cmpg-79, ss-pmp2g-83, ss-pmp3c-83, ss-empae-85, ss-pmp5c-84, sa-pmp4v-84, ZZZ.

12200 S. Sifrony and Micha Sharir. A new efficient motion-planning algorithm for a rod in two-dimensional polygonal space. *Algorithmica*, 2:367–402, 1987. [ss-nempa-87] *Keywords:* motion planning. *Succeeds:* ss-nempa-86.

S. Sifrony. See also [6427, 6428, 9296, 9299, 9300, 10822, 10823, 12074, 12079, 12080].

Theresa M. Silberberg. See also [13907, 13908].

12201 SiliconGraphics. *Iris Inventor Programming Guide*, 1992. [s-iipg-92]

C. B. Silio. See also [8628].

12202 C. B. Silio, Jr. An efficient simplex coverability algorithm in E^2 with applications to stochastic sequential machines. *IEEE Trans. Comput.*, C-28:109–120, 1979. [s-escae-79]

C. B. Silio, Jr. See also [8629].

12203 E. Silla. ?? *J. Mol. Graphics*, 8:168–172, September 1990. [s--90]

12204 F. Sillion and C. Puech. A general two-pass method integrating specular and diffuse reflection. *Comput. Graph.*, 23(3):335–344, 1989. Proc. SIGGRAPH '89. [sp-gtpmi-89]

12205 F. Sillion and C. Puech. *Radiosity Global Illumination.* Morgan Kauffmann, 1994. [sp-rgi-94]

12206 F. X. Sillion, D. D. George, and D. P. Greenberg. Radiosity redistribution for dynamic environments. *IEEE Comput. Graph. Appl.*, 10(4):26–34, July 1990. [sgg-rrde-90]

12207 S. X. Sillion and G. Drettakis. Feature-based control of visibility error: A multi-resolution clustering algorithm for global illumination. *Comput. Graph.*, ??, 1995. Proc. SIGGRAPH '95. [sd-fbcve-95]

12208 C. Silva, Joseph S. B. Mitchell, and A. E. Kaufman. Automatic generation of triangular irregular networks using greedy cuts. In *Visualization 95*, pages 201–208, San Jose CA, 1995. IEEE Computer Society Press. [smk-agtin-95]

C. Silva. See also [1843].

12209 C. E. Silva. Alternative definitions of faces in boundary representations of solid objects. Report TM-36, College Engrg. Appl. Sci., Univ. Rochester, Rochester, NY, 1981. [s-adfbr-81]

12210 Cláudio T. Silva and Joseph S. B. Mitchell. Greedy cuts: An advancing front terrain triangulation algorithm. In *Proc. 6th ACM Workshop on Advances in GIS*, page to appear, 1998. [sm-gcaft-98]

12211 C. T. Silva and Joseph S. B. Mitchell. The lazy sweep ray casting algorithm for rendering irregular grids. *IEEE Trans. Visualizat. Comput. Graph.*, 3(2):142–157, April 1997. [sm-lsrca-97] *Keywords:* plane sweep, space sweep, ray shooting, volume visualization, graphics. *Succeeds:* smk-frig-96. *Annote:* special issue devoted to selected papers from Volume Visualization'96.

12212 C. T. Silva, Joseph S. B. Mitchell, and A. E. Kaufman. Fast rendering of irregular grids. In *Proc. 1996 Symposium on Volume Visualization*, pages 15–22; 97 (color plate), San Francisco, October 1996. ACM SIGGRAPH. [smk-frig-96] *Keywords:* plane sweep, space sweep, ray shooting, volume visualization, graphics. *Precedes:* sm-lsrca-97.

C. T. Silva. See also [3180–3182, 6201].

12213 Y. V. Silva Filho. Average case analysis of region search in balanced k-d trees. *Inform. Process. Lett.*, 8:219–223, 1979. [s-acars-79]

12214 Y. V. Silva Filho. Multidimensional search trees as indices of files. Report ??, Univ. Kent, Canterbury, England, 1978. [s-mstif-78]

12215 Y. V. Silva Filho. Optimal choice of discriminators in a balanced k-d binary search tree. *Inform. Process. Lett.*, 13:67–70, 1981. [s-ocdbk-81]

L. Silva. See also [5106, 5107].

12216 D. Silver. *Geometry, Graphics & Numerical Analysis.* PhD thesis, Princeton Univ., Princeton, NJ, 1988. In preparation. [s-ggna-88] *Keywords:* doctoral thesis.

D. Silver. See also [4308, 4309].

N. Silver. See also [9685].

12217 E. B. Silverberg. *Motion planning and shortest paths in the plane.* Ph.D. thesis, Dept. Oper. Res., Stanford Univ., Stanford, CA, 1986. [s-mpspp-86] *Keywords:* motion planning, path planning, geodesic distance, shortest paths.

12218 E. B. Silverberg. Shortest paths for polygonal bodies in two dimensions. Manuscript, Dept. of Operations Research, Stanford University, 1985. [s-sppbt-85]

E. B. Silverberg. See also [10594–10596].

12219 B. W. Silverman and D. M. Titterington. Minimum covering ellipses. *SIAM J. Sci. Statist. Comput.*, 1:401–409, 1980. [st-mce-80]

B. W. Silverman. See also [6253].

R. Silverman. See also [911, 912, 7759, 9909–9912, 9914, 9915].

C. Silverstein. See also [1486].

L. R. Simar. See also [7962].

B. Simeone. See also [8925–8927].

M. Siminovits. See also [8991].

A. Simmons. See also [4995].

J. Simon. See also [7470, 7600, 10677].

K. Simon. See also [9484].

M. Simonovits. See also [5000, 8992].

Borislav Simov. See also [8535].

12220 P. K. Simpson. *Artificial Neural Systems: Foundations, Paradigms, Applications, and Implementations.* Pergamon Press, 1990. [s-ansfp-90]

R. B. Simpson. See also [3831, 7555–7559].

12221 C. Sims. Computational methods in the study of permutation groups. In J. Leech, editor, *Computational Problems in Abstract Algebra.* Pergamon Press, 1970. [s-cmspg-70]

12222 K. Sims. Evolving virtual creatures. *Comput. Graph.*, ??:15–22, 1994. Proc. SIGGRAPH '94. [s-evc-94]

12223 K. Sims. Particle animation and rendering using data parallel computation. *Comput. Graph.*, 24(4):405–413, 1990. [s-parud-90]

A. Simvonis. See also [5372–5374].

E. Šiňajová. See also [11167].

12224 David Singer. *Geometry: Plane and Fancy.* Springer-Verlag, Berlin, 1997. [s-gpf-97] *Comments:* Describes Zaremba's proof, sz-clccp-67.

12225 J. Singer. A theorem in finite projective geometry and some applications to number theory. *Trans. Amer. Math. Soc.*, 43, 1938. 377–385. [s-tfpgs-38]

D. Singerman. See also [2549].

Mona Singh. See also [1899, 1900].

12226 S. Singh. Documentation for Parento-GDS. Manuscript, Dept. of Comp. Sci., Brown University, 1991. [s-dpg-91] *Keywords:* graph drawing.

T. Singh. See also [7778].

K. Singhal. See also [8920, 8921].

12227 P. Sinha, E. Klassen, and K. K. Wang. Exploiting topological and geometric properties for selective subdivision. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 39–45, 1985. [skw-etgps-85] *Cites:* b-cbs-72, clr-dbsst-80, lr-tdcgd-80, mk-impgo-84, p-afilb-84, gp-dt-74, l-padps-76, v-ssidq-, -rpmv4-82, -t1-78, gl-mc-83, k-smrra-, c-sacdc-74, ZZZ.

Constantinos Siniolakis. See also [5855].

P. Sipala. See also [12777].

J. Sipelstein. See also [2077].

12228 J. K. Sircar and J. A. Cerbrian. Application of image processing techniques to the automated labelling of raster digitized contours. In *Proc. 2nd Internat. Sympos. Spatial Data Handling*, pages 171–184, 1986. [sc-aipta-86]

Y. Siret. See also [3812].

12229 A. Sirjani and G. Cross. On representation of a shape's skeleton. *Pattern Recogn. Lett.*, 12:149–154, 1991. [sc-rss-91]

12230 A. Prasad Sistla and Ouri Wolfson. Temporal conditions and integrity constraints in active database systems. In *Proceedings of the 1995 ACM SIGMOD International Conference on Management of Data*, pages 269–280, 1995. [sw-tcica-95]

12231 A. P. Sistla, O. Wolfson, S. Chamberlain, and S. Dao. Modeling and querying moving objects. In *Proc. Intl Conf. Data Engineering*, pages 422–432, 1997. [swcd-mqmo-97]

W. Y. Sit. See also [6029].

12232 Valeriu Sitaru and Tony Ruso. Polygonizations of point sets. McGill University, School of Computer Science, http://www.CS.McGill.CA/~ktulu/507/, 1997. [sr-pps-97] *URL:* http://www.CS.McGill.CA/~ktulu/507/.

D. Sivakumar. See also [8403].

12233 R. Sivan and H. Samet. Algorithms for constructing quadtree surface maps. In *Proceedings of the fifth international symposium on spatial data handling*, volume 1, pages 361–370, August 1992. [ss-acqsm-92]

Venkateshkumar Sivaswami. See also [5507, 5508].

12234 M. Sivilotti, M. Emerling, and C. Mead. Vlsi architectures for implementation of neural networks. In J. Denker, editor, *Proc. AIP Conference: Neural Networks for Computing*, volume 151, pages 408–413. American Institute of Physics, 1986. [sem-vainn-86]

12235 H.-W. Six. Durchschnittsanalyse von Gitterdatenstrukturen. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [s-dg-89]

12236 H.-W. Six and D. Wood. Counting and reporting intersections of D-ranges. *IEEE Trans. Comput.*, C-31:181–187, 1982. [sw-cridr-82]

12237 H.-W. Six and D. Wood. The rectangle intersection problem revisited. *BIT*, 20:426–433, 1980. [sw-ripr-80]

H.-W. Six. See also [1564, 6823, 7244–7247, 10557].

12238 J. M. Six, K. G. Kakoulis, and I. G. Tollis. Refinement of orthogonal graph drawings. In S. H. Whitesides, editor, *Graph Drawing (Proc. GD '98)*, volume 1547 of *Lecture Notes Comput. Sci.*, pages 302–315. Springer-Verlag, 1998. [skt-rogd-98]

J. M. Six. See also [10613, 10614].

Gregory D. Sjaardema. See also [1662, 13512].

S. A. Mitchell G. D. Sjaardema. See also [2061].

12239 V. Skala. An efficient algorithm for line clipping by convex and non-convex polyhedra in e^3. *Comput. Graph. Forum*, 15(1):61–68, March 1996. [s-ealcc-96]

12240 Vaclav Skala. $o(\log n)$ line clipping algorithm in e^2. In *Winter School of Computer Graphics and CAD Systems 94*, pages 174–191, Pilsel, Czech Republic, January 1994. University of West Bohemia. [s-olcae-94] *Comments:* line in convex polygon clipping.

T. Skewis. See also [9036, 9044].

12241 S. Skiena. Counting k-projections of a point set. *J. Combin. Theory Ser. A*, 55:153–160, 1990. [s-ckpps-90]

S. Skiena. See also [1852, 9498, 9499].

12242 Steven S. Skiena. *Geometric probing*. Ph.D. thesis, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1988. [s-gp-88] *Keywords:* probing, doctoral thesis.

12243 Steven S. Skiena. Geometric reconstruction problems. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 26, pages 481–490. CRC Press LLC, Boca Raton, FL, 1997. [s-grp-97]

12244 Steven S. Skiena. Interactive reconstruction via geometric probing. *Proc. IEEE*, 80(9):1364–1383, September 1992. [s-irgp-92]

12245 Steven S. Skiena. Probing convex polygons with half-planes. *J. Algorithms*, 12:359–374, 1991. [s-pcphp-91]

12246 Steven S. Skiena. Problems in geometric probing. *Algorithmica*, 4:599–605, 1989. [s-pgp-89] *Keywords:* survey paper, problem collection.

12247 Steven S. Skiena. Reconstructing graphs from cut-set sizes. *Inform. Process. Lett.*, 32(3):123–7, 1989. [s-rgcss-89]

12248 S. S. Skiena. *The Algorithm Design Manual*. Telos/Springer-Verlag, New York, 1998. [s-adm-98]

12249 Steven S. Skiena, W. D. Smith, and P. Lemke. Reconstructing sets from interpoint distances. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 332–339, 1990. [ssl-rsid-90] *Cites:* b-nccp-49, b-ctp-77, b-hs1-61, b-hs2-64, dk-ebsrs-88, e-sdnp-46, gj-cigtn-79, gs-tde-74, l-fpq-87, lw-ciaff-88, lll-fprc-82, m-ltn-76, p-ncbmp-76, p-dmdci-35, p-axrac-44, p-sledd-39, rpib-cppcs1-80, rpib-cppcs2-80, r-drmrc-88, rs-shs-82, s-ewgks-79, s-pcg-77, s-pcouc-71, s-adwag-49, s-idssd-78, ZZZ.

Steven S. Skiena. See also [763–765, 771, 772, 780–783, 788, 794, 795, 4763–4766, 5059, 7619, 8831, 8832, 9985, 11673, 11674, 12081].

S. Skinner. See also [9553, 9554].

12250 J. Sklansky. Finding the convex hull of a simple polygon. *Pattern Recogn. Lett.*, 1:79–83, 1982. [s-fchsp-82]

12251 J. Sklansky. Measuring concavity on rectangular mosaic. *IEEE Trans. Comput.*, C-21:1355–1364, 1972. [s-mcrm-72]

12252 J. Sklansky. On filling cellular concavities. *Comput. Graph. Image Process.*, 4:236–247, 1975. [s-fcc-75]

12253 J. Sklansky. Recognition of convex blobs. *Pattern Recogn.*, 2:3–10, 1970. [s-rcb-70]

12254 J. Sklansky, R. L. Chazin, and B. J. Hansen. Minimum perimeter polygons of digitized silhouettes. *IEEE Trans. Comput.*, C-21:260–268, 1972. [sch-mppds-72]

12255 J. Sklansky, L. P. Cordella, and S. Levialdi. Parallel detection of concavities in cellular blobs. *IEEE Trans. Comput.*, C-25:187–196, 1976. [scl-pdccb-76]

12256 J. Sklansky and V. Gonzalez. Fast polygonal approximation of digitized curves. *Pattern Recogn.*, 12:327–331, 1980. [sg-fpadc-80]

J. Sklansky. See also [5219, 5220, 7407].

M. Skutella. See also [759].

12257 S. Skyum. A simple algorithm for computing the smallest enclosing circle. *Inform. Process. Lett.*, 37:121–125, 1991. [s-sacse-91] *Keywords:* computational geometry, Voronoi diagrams, convex polygons. *Abstract:* Presented is a simple $O(n \log n)$ algorithm for computing the smallest enclosing circle of a convex polygon. It can be easily extended to algorithms that compute the farthest- and the closest-point Voronoi diagram of a convex polygon within the same time bound. (Author abstract) 4 Refs.

12258 S. Skyum. A sweepline algorithm for generalized Delaunay triangulations. Technical Report DAIMI PB-373, CS Dept., Aarhus University, 1991. [s-sagdt-91]

12259 Sven Skyum. A sweepline algorithm for generalized Delaunay triangulations and a simple method for nearest-neighbour search. In *Abstracts 8th European Workshop Comput. Geom.*, pages 41–43. Utrecht University, 1992. [s-sagdt-92]

12260 J. R. Slagle and J. K. Dixon. Using descriptions to find figures that approximate the given points. In *Proc. 5th IEEE Internat. Conf. Pattern Recogn.*, pages 1049–1054, 1980. [sd-udfft-80]

J. R. Slagle. See also [8651].

12261 M. Slater and B. A. Barsky. 2d line and polygon clipping based on space subdivision. *Visual Comput.*, 10(7):407–422, 1994. [sb-2dlpc-94]

12262 D. D. Sleator. A 2.5 times optimal algorithm for packing in two dimensions. *Inform. Process. Lett.*, 10:37–40, 1980. [s-2toap-80]

12263 D. D. Sleator. *An $0(nm \log n)$ algorithm for maximum network flow*. PhD thesis, Stanford University, 1980. [s-oamnf-80] *Keywords:* doctoral thesis.

12264 D. D. Sleator and R. E. Tarjan. A data structure for dynamic trees. *J. Comput. Syst. Sci.*, 26(3):362–381, 1983. [st-dsdt-83] *Keywords:* data structure, tree.

12265 D. D. Sleator and R. E. Tarjan. Amortized efficiency of list update and paging rules. *Commun. ACM*, 28:202–208, 1985. [st-aelup-85]

12266 D. D. Sleator and R. E. Tarjan. Self-adjusting binary search trees. *J. ACM*, 32(3):652–686, 1985. [st-sabst-85] *Keywords:* data structure, search tree.

12267 D. D. Sleator and R. E. Tarjan. Self-adjusting heaps. *SIAM J. Comput.*, 15(1):52–69, February 1986. [st-sah-86]

12268 D. D. Sleator, R. E. Tarjan, and W. P. Thurston. Rotation distance, triangulations, and hyperbolic geometry. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 122–135, 1986. [stt-rdthg-86] *Precedes:* stt-rdthg-88.

12269 D. D. Sleator, R. E. Tarjan, and W. P. Thurston. Rotation distance, triangulations, and hyperbolic geometry. *J. Amer. Math. Soc.*, 1:647–682, 1988. [stt-rdthg-88] *Succeeds:* stt-rdthg-86.

D. D. Sleator. See also [1619, 4198, 4426, 9152].

S. Sleator. See also [4427].

R. Sledgewick. See also [8898].

N. Sleumer. See also [9010].

K. Sloan. See also [9553, 9554].

12270 K. R. Sloan and L. M. Hrechanyk. Surface reconstruction from sparse data. In *Proc. 6th IEEE Internat. Conf. Pattern Recogn.*, pages 45–48, 1981. [sh-srsd-81]

12271 K. R. Sloan and J. Painter. From contours to surfaces: testbed and initial results. In *Proc. Graphics Interface '87*, pages 115–120, 1987. [sp-cstir-87]

12272 K. R. Sloan and J. Painter. Pessimal guess may be optimal: A counterintuitive search result. *IEEE Trans. Pattern Anal. Mach. Intell.*, 10:949–955, 1988. [sp-pgmbo-88]

K. R. Sloan, Jr. See also [2005, 10409].

12273 S. W. Sloan. A fast algorithm for constructing Delaunay triangulations in the plane. *Adv. Eng. Softw.*, 9(1):34–55, January 1987. [s-facdt-87] *Annote:* Your basic incremental switching algorithm. Points are sorted into bins to increase speed of point location (which walks the triangulation, starting at the previous triangle.). *Abstract:* The primary purpose of the paper is to present a FORTRAN 77 code for the efficient triangulation of planar data points as might be required for the mesh generation of a finite element analysis. The author describes in detail the various features of the algorithm and compares them to existing routines. The efficiency of the algorithm is demonstrated for randomly distributed data points where the number of points varies between 100 and 10,000. It is shown that the proposed scheme outperforms existing routines for both large and small data sets. -G. E. Bell, St. Andrews, U.

12274 S. W. Sloan. A fast algorithm for generating constrained Delaunay triangulations. Research Report 065.07.1991, The University of Newcastle Department of Civil Engineering and Surveying, New South Wales, 1991. [s-fagcd-91] *Annote:* First computes DT then constrained edges are inserted one at a time. Flips are done that decrease number of crossings with constraint edges, until no crossings remain. Then Delaunay flips are done. (DT algorithm uses bin ordering to speed point location).

12275 S. W. Sloan and G. T. Houlsby. An implementation of Watson's algorithm for computing 2-dimensional Delaunay triangulations. *Adv. Eng. Softw.*, 6(4):192–197, 1984. [sh-iwac2-84] *Annote:* Sigh. Incremental algorithm all triangles whose cc contains new point are deleted. Points are sorted by x coord, so only those triangles whose cc includes current x coord need be included. F77 code included. Does not keep adjacency info for triangles.

N. J. A. Sloane. See also [2620, 3513–3515, 6240, 6678, 12183].

J.-J. E. Slotine. See also [920].

12276 A. van der Sluis. Asymptotic expansions for quadrature errors over a simplex. In *Proc. Conf. Numerical Integration*, pages 222–240. Birkhäuser, 1982. [s-aeqes-82]

12277 M. L. C. Sluiter and D. L. Hansen. A general purpose automatic mesh generator for shell and solid finite elements. Manuscript, ??, ?? [sh-gpamg-??]

P. Slusallek. See also [6779].

12278 M. Slusarek. A coloring algorithm for interval graphs. In *Proc. 1987 MCFS.*, volume 379 of *Lecture Notes in CS*, pages 471–480, 1987. [s-caig-87]

Giora Slutzki. See also [8535].

12279 S. Smale. On the topology of algorithms I. *J. of Compl.*, 3:81–89, 1987. [s-ta-87]

12280 S. Smale. Regular curves on riemannian manifolds. *Trans. Amer. Math. Soc.*, 87:492–512, 1958. [s-rcrm-58]

12281 S. Smale. The problem of the average speed of the simplex method. In A. Bachem, M. Grötschel, and B. Korte, editors, *Mathematical Programming: the state of the art*, pages 530–539. Springer-Verlag, Berlin, West Germany, 1983. [s-passm-83]

S. Smale. See also [2104].

L. L. Smarr. See also [7911].

12282 J. C. Smart and V. Vemuri. A-vu: A visualization tool for complex software systems. In *Proc. IEEE Symposium on Assessment of Quality Software Development Tools*, May 1992. [sv-vvtcs-92] *Keywords:* graph drawing.

12283 A. F. Smeaton and C. J. van Rijsbergen. The nearest neighbour problem in information retrieval. *J. ACM*, ??:83–87, 1981. [sr-nnpir-81]

12284 A. Smellie, S. Kahn, and S. Teig. Analysis of conformational coverage: 1. validation and estimation of coverage. *J. Chem. Inf. Comput. Sci.*, 8:290–303, 1995. [skt-acc1v-95]

A. Smellie. See also [1440].

S. V. Smelyakov. See also [12559].

12285 A. Smeulders and L. Dorst. Decomposition of discrete curves into piece-wise straight segments in linear time. In Melter, Rosenfeld, and Bhattacharya, editors, *Vision Geometry*, volume 119 of *Proc. Amer. Math. Soc.*, pages 169–195. Contemporary Mathematics,, 1991. [sd-ddcps-91]

Arnold W. M. Smeulders. See also [4392, 4393, 13699].

12286 M. Smid. A worst-case algorithm for semi-online updates on decomposable problems. Report A-03/90, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, West Germany, 1990. [s-wcaso-90] *Precedes:* s-asolu-90.

12287 M. Smid. Algorithms for semi-online updates on decomposable problems. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 347–350, 1990. [s-asolu-90] *Succeeds:* s-wcaso-90. *Cites:* ZZZ.

12288 M. Smid. An $O(n \log n)$ algorithm for finding a k-point subset with minimal L_∞-diameter. Report MPI-I-93-116, Max-Planck-Institut Inform., Saarbrücken, Germany, 1993. [s-oafkp-93] *Annote:* The analysis of the running time is wrong; the actual running time is very high.

12289 M. Smid. Closest point problems in computational geometry. Report MPI-I-95-1-026, Max-Planck-Institut Inform., Saarbrücken, Germany, 1995. [s-cppcg-95] *Keywords:* survey paper. *Precedes:* s-cppcg-00.

12290 Michiel Smid. Closest point problems in computational geometry. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 877–935. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [s-cppcg-00] *Succeeds:* s-cppcg-95. *Annote:* Chapter 20 of su-hcg-00.

12291 M. Smid. *Dynamic data structures on multiple storage media*. Ph.D. thesis, Depts. Math. Comput. Sci., Univ. Amsterdam, Amsterdam, Netherlands, 1989. [s-ddsms-89] *Keywords:* doctoral thesis.

12292 M. Smid. Dynamic rectangular point location, with an application to the closest pair problem. Report MPI-I-91-101, Max-Planck-Institut Inform., Saarbrücken, Germany, 1991. [s-drpla-91] *Precedes:* s-drpla-95.

12293 M. Smid. Dynamic rectangular point location, with an application to the closest pair problem. *Inform. Comput.*, 116:1–9, 1995. [s-drpla-95] *Succeeds:* s-drpla-91.

12294 M. Smid. Finding k points with a smallest enclosing square. Report MPI-I-92-152, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [s-fkpse-92]

12295 M. Smid. Lecture notes: Selected topics in data structures. Report MPI-I-94-155, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [s-lnstd-94] *Keywords:* skip lists, union-find, range trees, post-office problem, maintaining order in a list.

12296 M. Smid. Maintaining the minimal distance of a point set in less than linear time. Report A-06/90, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, West Germany, 1990. [s-mmdpsl-90t] *Precedes:* s-mmdpsl-90i.

12297 M. Smid. Maintaining the minimal distance of a point set in less than linear time. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 1–4, 1990. [s-mmdpsl-90i] *Succeeds:* s-mmdpsl-90t. *Precedes:* s-mmdpsl-91a. *Cites:* agss-ltacv-89, ds-dcmdf-89, m-mdscg-84, v-oaann-86, ZZZ.

12298 M. Smid. Maintaining the minimal distance of a point set in less than linear time. *Algorithms Rev.*, 2:33–44, 1991. [s-mmdpsl-91a] *Succeeds:* s-mmdpsl-90i.

12299 M. Smid. Maintaining the minimal distance of a point set in polylogarithmic time. Report A-13/90, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, West Germany, 1990. [s-mmdpsp-90t] *Precedes:* s-mmdpsp-91i.

12300 M. Smid. Maintaining the minimal distance of a point set in polylogarithmic time. In *Proc. 2nd ACM-SIAM Sympos. Discrete Algorithms*, pages 1–6, 1991. [s-mmdpsp-91i] *Succeeds:* s-mmdpsp-90t. *Precedes:* s-mmdpsp-91t.

12301 M. Smid. Maintaining the minimal distance of a point set in polylogarithmic time. *Discrete Comput. Geom.*, 7:415–431, 1992. [s-mmdpsp-92a] *Succeeds:* s-mmdpsp-91t.

12302 M. Smid. Maintaining the minimal distance of a point set in polylogarithmic time (revised version). Report MPI-I-91-103, Max-Planck-Institut Inform., Saarbrücken, Germany, 1991. [s-mmdpsp-91t] *Succeeds:* s-mmdpsp-91i. *Precedes:* s-mmdpsp-92a.

12303 M. Smid. On the circumradius of acute point sets. Report TR 96-08, Department of Computer Science, King's College, London, UK, 1996. [s-ocaps-96]

12304 M. Smid. Range trees with slack parameter. Report MPI-I-91-102, Max-Planck-Institut Inform., Saarbrücken, Germany, 1991. [s-rtsp-91t] *Precedes:* s-rtsp-91a.

12305 M. Smid. Range trees with slack parameter. *Algorithms Rev.*, 2:77–87, 1991. [s-rtsp-91a] *Succeeds:* s-rtsp-91t.

12306 M. Smid. Rectangular point location and the dynamic closest pair problem. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 364–374. Springer-Verlag, 1991. [s-rpldc-91]

12307 M. Smid and R. Janardan. On the width and roundness of a set of points in the plane. Report MPI-I-94-111, Max-Planck-Institut Inform., Saarbrücken, Germany, 1994. [sj-wrspp-94]

12308 Michiel Smid and Ravi Janardan. On the width and roundness of a set of points in the plane. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 193–198, 1995. [sj-wrspp-95] *Precedes:* sj-wrspp-99.

12309 M. Smid and R. Janardan. On the width and roundness of a set of points in the plane. *Internat. J. Comput. Geom. Appl.*, 9:97–108, 1999. [sj-wrspp-99] *Succeeds:* sj-wrspp-95.

M. Smid. See also [753, 903, 913–918, 2380, 2381, 3047–3049, 3222, 3762–3764, 3771, 3793–3795, 5362–5364, 6046–6051, 6061, 6365, 6459–6478, 7069, 7075, 7339, 7340, 7779–7782, 8481, 8712–8724, 8757–8760, 9110, 9124–9131, 10044–10048, 11875–11879, 11900–11910].

12310 M. H. Smid. A data structure for the union-find problem having good single-operation complexity. *Algorithms Rev.*, 1(1):1–11, 1990. [s-dsufp-90]

12311 M. H. M. Smid and M. H. Overmars. Maintaining range trees in secondary memory, part II: lower bounds. *Acta Inform.*, 27:453–480, 1990. [so-mrtsm-90]

M. H. M. Smid. See also [10502].

B. Smith. See also [8908].

Carl Smith. See also [716, 11353–11355].

C. L. Smith. See also [784–787].

C. M. Smith. See also [892].

12312 D. A. Smith. Using enhanced spherical images. Technical Report MIT AI Memo 530, MIT, May 1979. [s-uesi-79]

12313 D. J. Smith and M. K. Vamanamurthy. How small is a unit ball? *Math. Mag.*, 62:101–107, 1989. [sv-hsiub-89]

D. R. Smith. See also [2625].

12314 H. J. Smith. On systems of indeterminate equations and congruences. *Philos. Trans.*, 151:293–326, 1861. [s-siec-61]

J. Smith. See also [4334].

J. L. Smith. See also [27].

12315 J. M. Smith and M. Gross. Steiner minimal trees and urban service networks. *J. Socio. Econ. Plng.*, 16:21–38, 1982. [sg-smtus-82]

12316 J. M. Smith, D. T. Lee, and J. S. Liebman. An $O(n \log n)$ algorithm for the rectilinear Steiner minimal tree problem. *Engineering Optimization*, 4:179–192, 1980. [sll-ohars-80]

12317 J. M. Smith, D. T. Lee, and J. S. Liebman. An $O(n \log n)$ heuristic algorithm for Steiner minimal tree problems on the Euclidean metric. *Networks*, 11:23–29, 1981. [sll-ohasm-81]

12318 J. M. Smith and P. Winter. Computational geometry and topological network design. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 1 of *Lecture Notes Series on Computing*, pages 287–385. World Scientific, Singapore, 1992. [sw-cgtnd-92] *Keywords:* survey paper. *Comments:* includes morphological classification of basic computational geometry. *Precedes:* sw-cgtnd-95.

12319 J. M. Smith and P. Winter. Computational geometry and topological network design. In Ding-Zhu Du and Frank Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 351–451. World Scientific, Singapore, 2nd edition, 1995. [sw-cgtnd-95] *Keywords:* survey paper. *Comments:* includes morphological classification of basic computational geometry. *Succeeds:* sw-cgtnd-92.

K. P. Smith. See also [1522].

12320 K. T. Smith, D. C. Solomon, and S. L. Wagner. Practical and mathematical aspects of the problem of reconstructing objects from radiographs. *Bull. Amer. Math. Soc.*, 83:1227–1270, November 1977. [ssw-pmapr-77]

S. J. Smith. See also [2078].

S. Savitt an K. Smith. See also [12903].

12321 T. Smith, G. Peng, and P. Gahinet. A family of local, asynchronous, iterative, and parallel procedures for solving the weighted region least cost path problem. Technical report, Department of Computer Science, University of California, Santa Barbara, 1988. [spg-flaip-88]

T. M. Smith. See also [5977].

12322 T. R. Smith and P. Gao. Experimental performance evaluations on spatial access methods. In *Proc. 4th Internat. Sympos. Spatial Data Handling*, pages 991–1002, July 1990. [sg-epesa-90]

T. R. Smith. See also [3087].

12323 W. D. Smith. A polynomial-time algorithm for deciding the inscribability of graphs. Manuscript, NEC Research Institute, Princeton, NJ, 1992. [s-ptadi-92]

12324 W. D. Smith. How to find Steiner minimal trees in Euclidean d-space. *Algorithmica*, 7:137–177, 1992. [s-hfsmt-92]

12325 W. D. Smith. Polytope triangulations in d-space, improving Hadamard's inequality, and maximal volumes of regular polytopes in hyperbolic d-space. Report ??, Program Appl. Comput. Math., Princeton Univ., Princeton, NJ, 1987. [s-ptdsi-87]

12326 W. D. Smith. *Studies in computational geometry motivated by mesh generation*. PhD thesis, Priceton Univ., Princeton, NJ, 1988. [s-scgmm-88] *Keywords:* doctoral thesis.

W. D. Smith. See also [4229, 4233–4237, 5241, 6991, 6992, 11029, 11288, 11289, 12249].

W. R. Smith. See also [9524].

Roman Smolensky. See also [6280].

12327 S. Smorodinsky, J. S. B. Mitchell, and M. Sharir. Sharp bounds on geometric permutations for pairwise disjoint balls in $\Re^d$. *Discrete Comput. Geom.*, 23:247–259, 2000. [sms-sbgpp-00]

Shakhar Smorodinsky. See also [12082, 12083].

12328 C. J. Smyth. On the product of the conjugates outside the unit circle of an algebraic integer. *Bull. London Math. Soc.*, 3:169–175, 1971. [s-pcouc-71]

P. H. Sneath. See also [12369].

12329 P. H. A. Sneath. A method for curve seeking from scattered points. *Comput. J.*, 9:383–391, 1966. [s-mcssp-66]

P. B. Snedecor. See also [8429].

Scott S. Snibbe. See also [11652].

Oliver Sniehotta. See also [11061].

M. Snir. See also [273, 278, 279, 8376–8378].

J. Snively. See also [11918].

12330 Jack Snoeyink. A geometric basis for visualizing time-dependent volume data. In *Abstracts 17th European Workshop Comput. Geom.*, pages 13–16. Freie Universität Berlin, 2001. [s-gbvtd-01]

12331 J. Snoeyink. A trivial knot whose spanning disks have exponential size. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 139–147, 1990. [s-tkwsd-90] *Cites:* a-bt-79, cm-grdg-72, cf-ikt-65, f-pc6ck-89, h-tdnei-61, r-kl-76, rs-iplt-72, s-bdpvv-61, ZZZ.

12332 J. Snoeyink. Etch: A drawing program that illustrates geometric duality. Unpublished article, 1988. [s-edpti-88]

12333 J. Snoeyink. Point location. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 30, pages 559–574. CRC Press LLC, Boca Raton, FL, 1997. [s-pl-97] *Cites:* a-bt-79, cm-grdg-72, cf-ikt-65, f-pc6ck-89, h-tdnei-61, r-kl-76, rs-iplt-72, s-bdpvv-61, ZZZ.

12334 J. Snoeyink. The number of views of axis-parallel objects. *Algorithms Rev.*, 2:27–32, 1991. [s-nvapo-91]

12335 J. Snoeyink. Video: Objects that cannot be taken apart with two hands. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, page 405, 1993. [s-votcb-93] *Keywords:* video review. *Succeeds:* ss-otcbt-93. *Cites:* fh-usk-63, n-pa-88, ss-otcbt-93, ZZZ.

12336 J. Snoeyink and J. Hershberger. Sweeping arrangements of curves. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 354–363, 1989. [sh-sac-89] *Cites:* ass-sulbl-87, bo-arcgi-79, bgs-op-74, ce-oails-88, cgl-pgd-85, dghs-eafcr-88, e-acg-87, egppss-acptc-88, eg-tsa-86, eos-calha-86, epss-lebfi-87, g-pcbgs-80, gp-pgcsc-80, gp-tpdnd-81, gp-tod-82, gp-sccca-84, gp-httpa-82, gy-frcg-86, g-cp-67, g-ah-71, g-as-72, g-ibs-70, hs-ndssg-86, jk-spals-88, l-dtdpe-26, ms-rcibt-88, mo-al3sd-88, m-vigau-88p, ow-nmcvg-88, p-hresr-84, r-kl-76, sh-gip-76, scklps-gadss-86, ws-prnds-88, ZZZ.

12337 J. Snoeyink and J. Hershberger. Sweeping arrangements of curves. In *Discrete and Computational Geometry: Papers from the DIMACS Special Year*, pages 309–349. American Mathematical Society, Association for Computing Machinery, Providence, RI, 1991. [sh-sac-91]

12338 J. Snoeyink and M. van Kreveld. Good orders for incremental (re)constructions. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 400–402, 1997. [sk-goirc-97] *Cites:* bkos-cgaa-97, be-mgot-92i, cns-l5cap-81, d-gc-95, dl-cvdrp-91, gks-ricdv-92, h-pm-96, k-osps-83, m-cgitr-93, pflm-tin-78, rsst-efcpg-96, s-barga-93, s-mplbc-85, ZZZ.

12339 J. Snoeyink and M. van Kreveld. Linear-time reconstruction of Delaunay triangulations with applications. In *Proc. Annu. European Sympos. Algorithms*, number 1284 in Lecture Notes Comput. Sci., pages 459–471. Springer-Verlag, 1997. [sk-ltrdt-97]

12340 J. Snoeyink and J. Stolfi. Objects that cannot be taken apart with two hands. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 247–256, 1993. [ss-otcbt-93] *Precedes:* s-votcb-93. *Cites:* c-pwpd-91, d-rbwdo-84, b-navw-54, b-p11a-55, fh-usk-63, gy-tsr-80, m-camap-91, mss-esmpg-87, n-pa-88, p-gsa-89, p-pplr-90, wm-paimt-92, ZZZ.

12341 J. Snoeyink and J. Stolfi. Objects that cannot be taken apart with two hands. *Discrete Comput. Geom.*, 12:367–384, 1994. [ss-otcbt-94]

12342 Jack Snoeyink and Chong Zhu. Generating random monotone polygons. Technical Report 93-28, Dept. of Computer Science, University of British Columbia, September 1993. [sz-grmp-93]

J. Snoeyink. See also [91, 515, 516, 590, 683, 704, 1141, 1576, 1587, 1688, 1712, 1713, 1730–1735, 1793, 1810, 1889, 1891, 2217, 2218, 2308, 2741, 2812, 2813, 2961, 2962, 2964, 2971–2973, 2981, 2982, 3202, 3203, 4290, 4291, 4693–4696, 5608–5611, 5756, 6190, 6191, 6367, 6376, 6399, 6400, 6666, 6710, 6856–6863, 7403, 7404, 7659, 8017, 8074–8078, 8340, 8344, 8345, 9306, 9343–9348, 10563, 10564, 11421, 11877–11879, 12404, 13328, 13844, 13896, 13897].

12343 J. S. Snoeyink. Topological approaches in computational geometry. Report STAN-CS-90-1331, Stanford Univ., Standford, CA, 1990. [s-tacg-90]

J. S. Snoeyink. See also [4428, 6192, 6401, 6402, 6885].

John Snyder. See also [2785, 11999].

12344 J. M. Snyder, A. R. Woodbury, K. Fleischer, B. Currin, and A. H. Barr. Interval methods for multi-point collisions between time-dependent curved surfaces. *Comput. Graph.*, 27:321–334, August 1993. Proc. SIGGRAPH '93. [swfcb-immcb-93]

L. Snyder. See also [4310].

12345 T. Snyder and J. M. Steele. Convex hulls of random walks. *Proc. Amer. Math. Soc.*, 117(4):1165–1173, 1993. [ss-chrw-93]

12346 T. L. Snyder. *Asymptotic worst case lengths in some problems from classical Computational geometry and Combinatorial Optimization*. PhD thesis, Princeton Univ., Princeton, NJ, 1987. [s-awcls-87] *Keywords:* doctoral thesis.

12347 T. L. Snyder. Lower bounds for rectilinear Steiner trees in bounded space. Submitted for publication, 1989. [s-lbrst-89]

12348 T. L. Snyder. Lower bounds for rectilinear Steiner trees in bounded space. *Inform. Process. Lett.*, 37:71–74, 1991. [s-lbrst-91]

12349 T. L. Snyder. On minimal rectilinear Steiner trees in all dimensions. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 311–320, 1990. [s-mrsta-90] *Cites:* bhh-sptmp-59, b-tprrs-88, cg-stbps-81, ch-lmrst-79, cr-wim-41, f-splrt-55, fhp-gtadm-79, gj-rstpi-77, ggj-sncgp-76, gp-smt-68, g-qwcet-88, gr-ibtsp-87, h-sprd-66, h-smtrd-76, k-hlcet-87, m-ps-61, m-lotcs-84, sr-lvsta-75, s-scgmm-88, s-awcls-87, s-sfars-89, s-lbrst-89, ss-wcgmu-90, s-sefnl-81, ss-wcgrs-89, srp-tspmm-83, ZZZ.

12350 T. L. Snyder. Worst-case minimal rectilinear Steiner trees in all dimensions. *Discrete Comput. Geom.*, 8:73–92, 1992. [s-wcmrs-92]

12351 T. L. Snyder and J. M. Steele. A priori inequalities for the Euclidean traveling salesman. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 344–349, 1992. [ss-piets-92] *Cites:* f-splrt-55, k-hlcet-89, n-ps-82, s-pwcac-90, ss-wcgrs-89, v-sptnp-51, ZZZ.

12352 T. L. Snyder and J. M. Steele. Equidistribution of point sets for the traveling salesman and related problems. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 462–466, 1993. [ss-epsts-93]

12353 T. L. Snyder and J. M. Steele. Worst-case greedy matchings in the unit d-cube. *Networks*, 20:779–800, 1990. [ss-wcgmu-90]

12354 T. L. Snyder and J. M. Steele. Worst-case TSP point sets in all dimensions are asymptotically equidistributed. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 147–152, 1994. [ss-wctps-94] *Cites:* bhh-sptmp-59, f-splrt-55, g-qwcet-88, hlp-i-64, k-hlcet-89, k-pascs-76, s-wcmrs-92, ss-epsts-93, ss-wcgrs-89, srp-tspmm-83, ZZZ.

T. L. Snyder. See also [12478].

12355 W. E. Snyder and D. A. Tang. Comments on "A counterexample to a diameter algorithm for convex polygons". *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-4:309, 1982. [st-ccdac-82] *Succeeds:* bt-cdacp-82.

12356 W. E. Snyder and D. A. Tang. Finding the extrema of a region. *IEEE Trans. Pattern Anal. Mach. Intell.*, PAMI-2:266–269, 1980. [st-fer-80] *Keywords:* diameter, polygons. *Precedes:* bt-cdacp-82.

H. So. See also [5766].

12357 J. Soares. Approximating Euclidean distances by small degree graphs. Technical Report 92-05, Univ. Chicago, 1992. [s-aedsd-92]

12358 J. Soares. Approximating Euclidean distances by small degree graphs. *Discrete Comput. Geom.*, 11:213–233, 1994. [s-aedsd-94]

12359 J. Soares. *Graph Spanners*. PhD thesis, Univ. Chicago, Chicago, IL, 1992. Report CS 92-14. [s-gs-92] *Keywords:* doctoral thesis.

12360 J. Soares. Graph spanners: a survey. *Congr. Numer.*, 89:225–238, 1992. [s-gss-92]

12361 J. Soares. Spanners. Unpublished Manuscript, 1991. [s-s-91]

J. Soares. See also [609, 2823, 2824].

G. Sobczyk. See also [6902].

M. Sobel. See also [1425].

12362 H. A. Sober. *Handbook of Biochemistry*. The Chemical Rubber Co., 2nd edition, 1970. [s-hb-70]

12363 C. Sobhanpanah. Extension of a boundary representation technique for the description of n-dimensional polytopes. *Comput. Graph.*, 13(1):17–23, 1989. [s-ebrtd-89]

I. M. Sobol. See also [2630].

Nir Sochen. See also [10998].

D. Sofotassios. See also [476, 2042–2044].

Christian Sohler. See also [3980].

12364 W. Sohrt and B. D. Brüderlin. Interaction with constraints in 3D modeling. *Internat. J. Comput. Geom. Appl.*, 1(4):405–425, 1991. [sb-ic3dm-91] *Keywords:* geometric constraints, graphical interactive modeling, CAD/CAM.

12365 E. Soisalon-Soininen. On computing approximate convex hulls. *Inform. Process. Lett.*, 16:121–126, 1983. [s-cach-83] *Keywords:* designing algorithms, convex hull, two-dimensional, approximation.

12366 E. Soisalon-Soininen and D. Wood. An optimal algorithm for testing for safety and detecting deadlocks in locked transaction systems. In *Proc. ACM SIGACT-SIGMOD Conf. Principles Database Systems*, pages 108–116, 1982. [sw-oatsd-82]

12367 E. Soisalon-Soininen and D. Wood. Optimal algorithms to compute the closure of a set of iso-rectangles. *J. Algorithms*, 5:199–214, 1984. [sw-oaccs-84]

E. Soisalon-Soininen. See also [3011, 10431–10433, 10450, 12541].

12368 Eduard Sojka. Three simple and efficient algorithms for Jordan sorting. In *Abstracts 13th European Workshop Comput. Geom.*, pages 24–26. Universität Würzburg, 1997. [s-tseaj-97] *Cites:* fntv-sltjs-90, hmrt-sjslt-86, ZZZ.

12369 R. R. Sokal and P. H. Sneath. *Principles of Numerical Taxonomy*. W. H. Freeman, San Francisco, CA, 1963. [ss-pnt-63]

R. R. Sokal. See also [5695, 9322].

P. Solernó. See also [6784–6786].

D. C. Solomon. See also [12320].

L. Solomon. See also [10297].

R. Solovay. See also [8013].

12370 V. Soltan and A. Gorpinevich. Minimum dissection of rectilinear polygon with arbitrary holes into rectangles. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, pages 296–302, 1992. [sg-mdrpa-92] *Keywords:* polygons, decomposition, rectangles, isothetic. *Precedes:* sg-mdrpa-93. *Cites:* l-fmprp-83, l-ompa-84, ia-eaggs-86, l-pnrh-82, ZZZ.

12371 V. Soltan and A. Gorpinevich. Minimum dissection of rectilinear polygon with arbitrary holes into rectangles. *Discrete Comput. Geom.*, 9:57–79, 1993. [sg-mdrpa-93] *Keywords:* polygons, decomposition, rectangles, isothetic. *Succeeds:* sg-mdrpa-92. *Cites:* l-pnrh-82.

V. Soltan. See also [9219, 9863].

12372 J. Solymosi. *Combinatorial problems in finite Ramsey theory*. Master's thesis, Eötvös University, Budapest, 1988. [s-cpfrt-88] *Keywords:* doctoral thesis.

12373 J. Solymosi and Cs. D. Tóth. Distinct distances in the plane. *Discrete Comput. Geom.*, 25(4):629–634, 2001. [st-ddp-01]

J. Solymosi. See also [10103].

A. K. Somani. See also [9535].

12374 D. M. Y. Sommerville. *Analytical Geometry in Three Dimensions*. Cambridge University Press, Cambridge, 1934. [s-agtd-34] *Keywords:* geometry, lines.

12375 E. Sonatg and H. Sussmann. Time-optimal control of manipulators. Technical report, Dept. Math., Rutgers Univ., New Brunswick, NJ, 1986. [ss-tocm-86]

G. D. Song. See also [4452, 7274].

I. Y. Song. See also [13506].

J. W. Song. See also [13506].

S. W. Song. See also [11243].

12376 G. Sonnevend. Sequential optimal order algorithms for the uniform approximation of functions with convex r-th derivates. *Analysis Mathematica*, 10:311–335, 1984. [s-sooau-84]

12377 ?? Sontag. Sigmoids distinguish better than heavisides. *Neural Computation*, 1:470–472, 1989. [s-sdbh-89]

12378 E. Sontag and H. Sussmann. Remarks on the time-optimal control of two-link manipulators. In *Proc. 24th Conf. Decision Control*, 1985. [ss-rtoct-85]

E. Sontag. See also [968].

12379 J. Sorenson. Two fast GCD algorithms. *J. Algorithms*, 16:110–144, 1994. [s-tfga-94]

P. G. Sorenson. See also [10914, 13323].

M. Soria. See also [5622].

Stephen Sorkin. See also [7152].

D. Soroker. See also [7732].

V. Sós. See also [1554].

12380 M. Soss and G. T. Toussaint. Geometric and computational aspects of polymer reconfiguration. *J. Math. Chemistry*, 27(4):303–318, 2000. [st-gcapr-00]

12381 M. Soss and G. T. Toussaint. Reconfiguring polymer-like 3D linkages. Technical Report SOCS-00.2, McGill Univ., Montreal, 2000. [st-rp3dl-00]

Michael Soss. See also [378, 380, 5226].

M. A. Soss. See also [1991].

D. Sotteau. See also [5430].

12382 P. Souères, J.-Y. Fourquet, and J.-P. Laumond. Set of reachable positions for a car. In *IEEE Transaction on Automatic Control*, 1994. to appear. [sfl-srpc-94]

12383 P. Souères and J.-P. Laumond. Synthèse des plus courts chemins pour la voiture de reeds et shepp. Research Report LAAS/CNRS 92234, LAAS, Toulouse, France, 1992. [sl-sdpcc-92]

P. Souères. See also [2580, 2581, 8521].

Klaus Soukup. See also [8512].

L. Soukup. See also [6564].

S. Soundaralakshmi. See also [3799, 10430].

12384 A. I. Sourin and A. A. Pasko. Function representation for sweeping by a moving solid. *IEEE Trans. Visualizat. Comput. Graph.*, 2(1):11–18, March 1996. [sp-frsms-96]

12385 R. V. Southwell. *Relaxation Methods in Engineering Science*. Oxford University Press, 1940. [s-rmes-40]

12386 Diane Souvaine and Rephael Wenger. Constructing piecewise linear homeomorphisms. Technical Report 94–52, DIMACS, New Brunswick, New Jersey, 1994. [sw-cplh-94]

D. Souvaine. See also [756–758, 861, 968, 1209, 2313, 2314, 3672, 5085, 5588].

12387 D. L. Souvaine. *Computational geometry in a curved world.* Ph.D. thesis, Princeton Univ., Princeton, NJ, 1986. [s-cgcw-86] *Keywords:* doctoral thesis, design of algorithms. *Comments:* UMI AAC86-29439, 134 pp. *Precedes:* ds-cgcw-90.

12388 D. L. Souvaine. The contour problem for restricted-orientation polygons. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 38, 1989. [s-cprop-89]

12389 D. L. Souvaine and I. Bjorling-Sachs. The contour problem for restricted-orientation polygons. Report LCSR-TR-137, Lab. Comput. Sci. Res., Rutgers Univ., New Brunswick, NJ, 1989. [sb-cprop-89] *Keywords:* contour of union, plane-sweep, segment tree, divide-and-conquer, VLSI.

12390 D. L. Souvaine and I. Bjorling-Sachs. The contour problem for restricted-oriented polygons. *Proc. IEEE*, 80(9):1449–1470, September 1992. [sb-cprop-92]

12391 D. L. Souvaine and J. M. Steele. Time- and space- efficient algorithms for least median of squares regression. *J. Amer. Statist. Assoc.*, 82:794–801, 1987. [ss-tseal-87] *Keywords:* statistics, optimization, plane-sweep, geometric transformations, points, lines.

12392 D. L. Souvaine and C. J. Van Wyk. Clamping a polygon. Report LCSR-TR-98, Lab. Comput. Sci. Res., Rutgers Univ., New Brunswick, NJ, 1989. [sv-cp-89t] *Keywords:* clamp, convex polygon, simple polygon. *Precedes:* sv-cp-89i.

12393 D. L. Souvaine and C. J. Van Wyk. Clamping a polygon. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 6, 1989. [sv-cp-89i] *Succeeds:* sv-cp-89t.

12394 D. L. Souvaine and C. J. Van Wyk. Clamping a polygon. *Visual Comput.*, 10:484–494, 1994. [sv-cp-94]

12395 D. L. Souvaine and C. J. Van Wyk. How hard can it be to draw a pie chart? *Math. Mag.*, 63:165–172, 1990. [sv-hhcib-90] *Keywords:* design of algorithms, NP-hard.

12396 Diane L. Souvaine and Chee-Keng Yap. Combinatorial complexity of signed discs. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 577–588. Springer-Verlag, 1993. [sy-ccsd-93] *Precedes:* sy-ccsd-95.

12397 Diane L. Souvaine and Chee-Keng Yap. Combinatorial complexity of signed discs. *Comput. Geom. Theory Appl.*, 5:207–223, 1995. [sy-ccsd-95] *Succeeds:* sy-ccsd-93.

D. L. Souvaine. See also [2050–2053, 4311–4315, 4767, 9510–9514, 9779].

H. Sowizral. See also [8199].

M. S. Spach. See also [1442].

12398 B. Spain. *Analytical Conics.* Pergamon Press, 1957. [s-ac-57]

12399 E. H. Spanier. *Algebraic Topology.* McGraw-Hill Book Company, New York, 1966. [s-at-66]

12400 M. Spann and R. Wilson. Quadtree approach to image segmentation which statistical and spatial information. *Pattern Recogn.*, 18:257–269, 1985. [sw-qaisc-85]

12401 H. Späth. Orthogonal least squares fitting by conic sections and other algebraic curves and surfaces with a special two-step descent method. In *Abstracts 13th European Workshop Comput. Geom.*, page 27. Universität Würzburg, 1997. [s-olsfc-97] *Cites:* ZZZ.

12402 H. Späth and G. A. Watson. On orthogonal linear L_1 approximation. *Numer. Math.*, 51:531–543, 1987. [sw-olla-87]

Anthony Spatharis. See also [8310].

12403 W. Specht. Abschätzungen der Wurzeln algebraischer Gleichungen. *Math. Z.*, 52:310–321, 1949. [s-adwag-49]

12404 Bettina Speckmann and Jack Snoeyink. Easy triangle strips for TIN terrain models. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 239–244, 1997. [ss-etstt-97]

Bettina Speckmann. See also [8017, 8078].

L. Richard Speer. See also [5975].

12405 T. Speevak. An efficient algorithm for obtaining the volume of a special kind of pyramid and application to convex polyhedra. *Math. Comput.*, 46:531–536, 1986. [s-eaovs-86]

12406 J.-C. Spehner. Merging in maps and pavings. Research Report 48, Laboratoire de Mathématiques et Informatique, Université des Haute-Alsace, Mulhouse, France, 1991. [s-mmp-91]

J.-C. Spehner. See also [82, 4847, 7907, 11624, 11744, 11745].

G. Spencer. See also [6574].

12407 J. Spencer. Six standard deviations suffice. *Trans. Amer. Math. Soc.*, 289:679–706, 1985. [s-ssds-85] *Keywords:* discrepancy, probabilistic method.

12408 J. Spencer. *Ten lectures on the probabilistic method.* CBMS-NSF. SIAM, 1987. [s-tlpm-87]

12409 J. Spencer, E. Szemerédi, and W. T. Trotter. Unit distances in the Euclidean plane. In B. Bollobás, editor, *Graph Theory and Combinatorics*, pages 293–303. Academic Press, New York, NY, 1984. [sst-udep-84]

J. Spencer. See also [551, 5001, 6229, 6239, 10542].

J. H. Spencer. See also [2619].

T. Spencer. See also [4958].

T. H. Spencer. See also [4960, 5693].

H. Spiegel. See also [4329].

12410 J. Spiegels. Computational geometry in a restricted universe. Manuscript, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1989. [s-cgru-89] *Keywords:* survey paper, two-dimensional, domination, convex hull, rectangles, subdivisions, range search.

12411 Daniel A. Spielman and Shang-Hua Teng. Disk packings and planar separators. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 349–358, 1996. [st-dpps-96] *Cites:* ast-ps-94, a-cpls-70, a-cpfvl-70, pa-cg-95, cgt-pumlp-96, cemst-acpir-93, d-pppg-82, e-acg-87, emt-dltag-93, f-slrpg-48, fpp-sssfe-88, gl-cslsp-81, g-iaspg-86, gm-psen-90, hlp-i-52, k-kdka-36, lt-stpg-79, lrt-gnd-79, m-fsscs-86, mtv-ugags-91, mttv-gsfem-95, mt-sttd-90, t-pssug-90, t-pdfip-80, t-gt3m-88, t-crg-60, t-hdg-63, ZZZ.

J. Spinrad. See also [3477].

C. Spirakis. See also [11447].

12412 P. Spirakis and C. Yap. On the combinatorial complexity of motion coordination. Report 76, Courant Inst. Math. Sci., New York Univ., New York, NY, 1983. [sy-ccmc-83]

12413 P. Spirakis and C. Yap. Strong NP-hardness of moving many discs. *Inform. Process. Lett.*, 19:55–59, 1984. [sy-snhmd-84]

12414 P. G. Spirakis. The volume of the union of many spheres and point inclusion problems. Report TR 133, Courant Inst. Math. Sci., New York Univ., New York, NY, 1984. [s-vumsp-84]

12415 P. G. Spirakis. Very fast algorithms for the area of the union of many circles. Report 98, Dept. Comput. Sci., New York Univ., New York, NY, 1983. [s-vfaau-83]

Klaus Spitzmüller. See also [1076].

12416 M. Spivak. *A Comprehensive Introduction to Differential Geometry*, volume 3. Publish or Perish Press, Berkeley, CA, 1979. [s-cidg-79]

12417 M. Spivak. *Calculus on Manifolds.* W. A. Benjamin Inc., New York, 1965. [s-cm-65]

P. Sprague. See also [1440].

12418 L. Spratt and A. Ambler. Using 3D tubes to solve the intersecting line representation problem. In *Proc. IEEE Symp. on Visual Languages, 1994*, pages 254–261, 1995. [sa-u3tst-95] *Keywords:* graph drawing, 3D.

Wendy Spratte. See also [13621].

12419 M. J. Spriggs and J. M. Keil. A new bound for map labeling with uniform circle pairs. *Inform. Process. Lett.*, 81:47–53, 2002. [sk-nbmlu-02]

12420 G. Springer. *Introduction to Riemann Surfaces.* Chelsea, 1981. [s-irs-81]

12421 J. Sprinzak. Point matching algorithms. Masters thesis, Dept. Comput. Sci., Hebrew Univ., Jerusalem, Israel, 1990. [s-pma-90] *Keywords:* master thesis.

12422 J. Sprinzak and M. Werman. Affine point matching. *Pattern Recogn. Lett.*, 15:337–339, 1994. [sw-apm-94]

12423 J. Sprinzak and M. Werman. Exact point matching. In *Proc. Israeli Symposium on AI, Vision and Pattern Recognition.* Elsevier Science Publishers, 1990. [sw-epm-90]

J. Sprinzak. See also [789, 790].

12424 R. F. Sproull. Refinements to nearest-neighbor searching. *Algorithmica*, 6:579–589, 1991. [s-rnns-91]

12425 R. F. Sproull. Refinements to nearest-neighbor searching in k-d trees. Technical Report SSAPP 184, Southerland, Sproull and Associates, July 1988. [s-rnnsk-88]

R. F. Sproull. See also [10119, 12677].

12426 G. Spur et al. NC programming and dynamic simulation based on solid models in a CIM strategy. *Robotics and Computer-Integrated Manufacturing*, 4(3–4):471–481, 1988. [so-npdsb-88] *Annote:* claims to use Voronoi diagrams.

V. G. Sragovič. See also [2630].

N. Sreibl. See also [8952].

J. A. Šreider. See also [2630].

12427 K. Sridharan, H. E. Stephanou, and S. S. Deerthi. On computing a distance measure for path planning. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 554–559, 1993. [ssk-cdmpp-93]

K. Sridharan. See also [7958–7960].

12428 S. N. Srihari. Representation of three-dimensional digital images. *ACM Comput. Surv.*, 13(4):399–424, 1981. [s-rtddi-81]

S. N. Srihari. See also [610, 13823, 13824].

R. Srikant. See also [3800, 6961, 12153].

V. Srilakshmi. See also [8365].

M. A. Srinivas. See also [5550, 5551].

A. Srinivasan. See also [10576, 11733].

12429 P. Srinivasan et al. Computational geometric methods in volumetric intersection for 3D reconstruction. *Pattern Recogn.*, 23:843–857, 1990. [s-cgmvi-90]

12430 V. Srinivasan. Dealing with geometric variations in manufacturing. Invited lecture, NSF Workshop on Manufacturing and Computational Geometry, April 1, 1994. [s-dgvm-94]

12431 V. Srinivasan. Geometry, measurements, and manufacturing. Invited lecture, Fourth MSI Workshop on Computational Geometry, October 14-15, 1994. [s-gmm-94]

12432 V. Srinivasan. Role of sweeps in tolerance semantics. In *Proc. 1993 Int. Forum on Dimensional Tolerancing and Metrology*, pages 69–78, 1993. [s-rsts-93]

12433 V. Srinivasan and L. R. Nackman. An algorithm to compute the Voronoi diagram of a multiply connected polygonal domain. Report RC 11605 (#52150), IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1985. [sn-acvdm-85]

12434 V. Srinivasan and L. R. Nackman. Maximal balls of linearly separable sets. Report RC 14596, IBM T. J. Watson Res. Center, Yorktown Heights, NY, May 1989. [sn-mblss-89] *Precedes:* sn-mblss-94.

12435 V. Srinivasan and L. R. Nackman. Maximal balls of linearly separable sets. *Internat. J. Comput. Geom. Appl.*, 4:25–38, 1994. [sn-mblss-94] *Keywords:* separable sets, maximal balls, bissectors, triangulation. *Succeeds:* sn-mblss-89.

12436 V. Srinivasan and L. R. Nackman. Voronoi diagram for multiply-connected polygonal domains I: algorithm. *IBM J. Res. Develop.*, 31:361–372, 1987. [sn-vdmcp-87]

12437 V. Srinivasan, L. R. Nackman, J. Tang, and S. N. Meshkat. Automatic mesh generation unsing the symmetric axis transformation of polygonal domains. Technical Report RC 16132, IBM Res. Center, 1990. [sntm-amgus-90]

12438 V. Srinivasan, L. R. Nackman, J.-M. Tang, and S. N. Meshkat. Automatic mesh generation using the symmetric axis transform of polygonal domains. *Proc. IEEE*, 80(9):1485–1501, September 1992. [sntm-amgus-92]

12439 V. Srinivasan and M. A. O'Connor. On interpreting statistical tolerancing. *Manufacturing Review*, 7(4):304–311, 1994. [so-oist-94]

12440 V. Srinivasan and H. B. Voelcker, editors. *Dimensional Tolerancing and Metrology*, volume 27 of *CRTD*. The American Society of Mechanical Engineers, 1993. [sv-dtm-93]

V. Srinivasan. See also [7518, 7621, 7919, 7920, 10011, 10012, 13329, 13330].

12441 G. Srinivasaraghavan. *On Some Visibility and Intersection Problems in Computational Geometry*. PhD thesis, Department of Computer Science and Engineering, Indian Institute of Technology, Kanpur, India, 1992. [s-vipcg-92] *Keywords:* doctoral thesis.

12442 G. Srinivasaraghavan and A. Mukhopadhyay. A new necessary condition for the vertex visibility graphs of simple polygons. *Discrete Comput. Geom.*, 12:65–82, 1994. [sm-nncvv-94] *Keywords:* visibility.

12443 G. Srinivasaraghavan and A. Mukhopadhyay. On the notion of completeness for reconstruction algorithms. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 315–320, 1993. [sm-ncra-93] *Cites:* o-agta-87, s-vipcg-92, ZZZ.

12444 G. Srinivasaraghavan and Asish Mukhopadhyay. Stabbing simple planar sets. Technical Report TRCS-92-152, IIT Kanpur, Computer Science and Engg. Dept., 1992. [sm-ssps-92]

R. Sriram. See also [7339, 7340].

12445 A. Srivastav and P. Stangier. Algorithmic Chernoff-Hoeffding inequalities in integer programming. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 226–234. Springer-Verlag, 1994. [ss-achii-94]

12446 A. Srivastav and P. Stangier. Tight approximations of resource constrained scheduling problems. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 307–318. Springer-Verlag, 1994. [ss-tarcs-94]

12447 A. Srivastav and P. Stangier. Weighted fractional and integral k-matching in hypergraphs. *Discrete Appl. Math.*, 57:255–269, 1995. [ss-wfikm-95]

Anand Srivastav. See also [8200].

12448 S. Srivastava and N. Ahuia. An algorithm for generating octrees from object silhouettes in perspective views. In *Proc. IEEE Workshop Comput. Vision*, pages 363–365, November 1987. [sa-agoos-87]

T. W. Stacey. See also [9569].

12449 Ernesto Staffetti. Planning the motion of a segment in a polygonal environment. In *Abstracts 14th European Workshop Comput. Geom.*, pages 135–137. Universitat Polytènica de Catalunya, Barcelona, 1998. [s-pmspe-98]

W. A. Stahel. See also [6630].

D. F. Stanat. See also [1657, 1658].

P. Stangier. See also [12445–12447].

12450 R. Stanley. On the number of reduced decompositions of elements of Coxeter groups. *European J. Combin.*, 5:359–372, 1984. [s-nrdec-84]

12451 R. Stanley. The number of faces of a simplical convex polytope. *Adv. Math.*, 35:236–238, 1980. [s-nfscp-80]

12452 R. Stanley. The upper-bound conjecture and Cohen-Macaulay rings. *Stud. Appl. Math.*, 54:135–142, 1975. [s-ubccr-75]

12453 R. P. Stanley. *Enumerative Combinatorics*, volume 1. Wadsworth & Brooks/Cole, Monterey, CA, 1986. [s-ec-86]

12454 R. P. Stanley. Two poset polytopes. *Discrete Comput. Geom.*, 1:9–23, 1986. [s-tpp-86]

12455 S. M. Stanley, R. B. Jerard, and P. R. White. Computer-aided design of curved surfaces with automatic model generation. *Journal of Mechanical Design, ASME Transactions*, 104(3):817–824, October 1982. [sjw-cadcs-82]

C. Stanton. See also [11840].

12456 M. Stanton. Pareto optimal paths among obstacles in the plane. M.S. thesis, Dept. Operations Research, Cornell University, Ithaca, NY, 1989. [s-popop-89] *Keywords:* master thesis.

12457 R. Stanton and P. Dirksen. Davenport–Schinzel sequences. *Ars Combinatorica*, 1:43–51, 1976. [sd-dss-76]

12458 R. Stanton and D. Roselle. A result on Davenport–Schinzel sequences. In P. Erdős et al., editors, *Combinatorial Theory and Its Applications, Colloq. Math. Society János Bolyai*, volume 4, pages 1023–1027. North-Holland, Amsterdam, 1969. [sr-rdss-69]

R. Stanton. See also [9944, 11377, 11378].

12459 A. F. van der Stappen. *Motion Planning amidst Fat Obstacles*. Ph.D. dissertation, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1994. [s-mpafo-94] *Keywords:* doctoral thesis.

12460 A. F. van der Stappen. The complexity of the free space for motion planning amidst fat obstacles. *Journal of Intelligent & Robotic Systems*, ??, ?? To appear. [s-cfsmp-]

12461 A. F. van der Stappen, K. Goldberg, and M. H. Overmars. Geometric eccentricity and the complexity of manipulation plans. Report UU-CS-1996-49, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1996. [sgo-gecmp-96] *Comments:* To appear in Algorithmica.

12462 A. F. van der Stappen, D. Halperin, and M. H. Overmars. Efficient algorithms for exact motion planning amidst fat obstacles. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 297–304, 1993. [sho-eaemp-93] *Keywords:* robotics, motion planning.

12463 A. F. van der Stappen, D. Halperin, and M. H. Overmars. The complexity of the free space for a robot moving amidst fat obstacles. Report RUU-CS-92-05, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1992. [sho-cfsrm-92] *Keywords:* motion planning. *Precedes:* sho-cfsrm-93.

12464 A. F. van der Stappen, D. Halperin, and M. H. Overmars. The complexity of the free space for a robot moving amidst fat obstacles. *Comput. Geom. Theory Appl.*, 3:353–373, 1993. [sho-cfsrm-93] *Succeeds:* sho-cfsrm-92.

12465 A. F. van der Stappen and M. H. Overmars. Motion planning amidst fat obstacles. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 31–40, 1994. [so-mpafo-94] *Cites:* afkmnsu-ampcb-92, abf-pempa-89, bo-arcgi-79, bgh-vdt3s-94, mmpssw-ftdlm-91, o-plfs-92, ss-pmp1c-83, ss-nempa-87, ss-pmp2g-83, ss-empae-85, sho-cfsrm-93, s-cfsmp-, sho-eaemp-93, ZZZ.

12466 A. F. van der Stappen and M. H. Overmars. Motion planning in environments with low obstacle density. Technical Report UU-CS-1995-33, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, October 1995. [so-mpelo-95]

12467 A. F. van der Stappen, M. H. Overmars, M. de Berg, and J. Vleugels. Motion planning in environments with low obstacle density. Report UU-CS-1997-19, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1997. [sobv-mpelo-97]

A. F. van der Stappen. See also [828, 829, 1669, 1714, 1715, 1849–1851, 10503, 10504, 13485].

F. Van der Stappen. See also [1848].

12468 J. Star and J. Estes. *Geographic Information Systems: an Introduction*. Prentice Hall, Englewood Cliffs, 1990. [se-gisi-90]

L. Stark. See also [4826].

M. Stark. See also [9936].

12469 J. T. Stasko. Simplifying algorithm animation with tango. In *Proc. IEEE Workshop on Visual Languages*, pages 1–6, 1990. [s-saat-90]

12470 J. T. Stasko. Tango: a framework and system for algorithm animation. *IEEE Computer*, 23(9):27–39, 1990. [s-tfsaa-90] *URL:* http://www.cc.gatech.edu/gvu/softviz/algoanim/xtango.html.

12471 J. T. Stasko. The path-transition paradigm: a practical methodology for adding animation to program interfaces. *J. Visual Lang. Comput.*, 1(3):213–236, 1990. [s-ptppm-90]

L. Stauffer. See also [8803].

12472 J. P. Steadman. *Architectural Morphology*. Pion, London, 1983. [s-am-83] *Keywords:* graph drawing.

R. E. Stearns. See also [7211, 11397, 11398].

D. Steele. See also [5336].

12473 G. L. Steele, Jr. *The definition and implementation of a computer programming language based on constraints*. PhD thesis, Artif. Intell. Lab., Massachusetts Inst. Tech., Cambridge, MA, August 1980. Technical Report AI-TR-595. [s-dicpl-80] *Keywords:* doctoral thesis.

12474 J. M. Steele. Complete convergence of short paths and Karp's algorithm for the TSP. *Math. Oper. Res.*, 6:374–378, 1981. [s-ccspk-81]

12475 J. M. Steele. Optimal triangulations of random samples in the plane. *Ann. Probab.*, 10(3):548–553, 1982. [s-otrsp-82]

12476 J. M. Steele. Probabilistic and worst-case analysis of classical problems of combinatorial optimization in Euclidean space. *Math. Oper. Res.*, 15:749–770, 1990. [s-pwcac-90]

12477 J. M. Steele. Subadditive Euclidean functionals and non-linear growth in geometric probability. *Ann. Probab.*, 9:365–376, 1981. [s-sefnl-81]

12478 J. M. Steele and T. L. Snyder. Worst-case growth rates of some classical problems of combinatorial optimization. *SIAM J. Comput.*, 18:278–287, 1989. [ss-wcgrs-89]

12479 J. M. Steele and A. C. Yao. Lower bounds for algebraic decision trees. *J. Algorithms*, 3:1–8, 1982. [sy-lbadt-82]

J. M. Steele. See also [1145, 12345, 12351–12354, 12391].

N. E. Steenrod. See also [3223].

12480 M. Stefik. Inferring DNA structures from segmentation data. *Artif. Intell.*, 11:85–114, 1978. [s-idssd-78]

12481 M. Stefik and D. G. Bobrow. Object-oriented programming: themes and variations. *The AI Magazine*, ??:40–62, 1985. [sb-ooptv-85]

A. Steger. See also [8274].

12482 T. Stehling. Ammann bars and quasicrystals. *Discrete Comput. Geom.*, 7:125–133, 1992. [s-abq-92]

12483 William Steiger. Algorithms for ham sandwich cuts. In *Proc. 5th Canad. Conf. Comput. Geom.*, page 48, 1993. [s-ahsc-93]

12484 William Steiger. Some geometric lower bounds using connected components. In *Abstracts 11th European Workshop Comput. Geom.*, page 61. Universität Linz, 1995. [s-sglbu-95]

12485 William Steiger. Some space/time tradeoffs for ranking and searching. In *Abstracts 11th European Workshop Comput. Geom.*, page 63. Universität Linz, 1995. [s-ssttr-95]

12486 W. Steiger and I. Streinu. A pseudo-algorithmic separation of lines from pseudo-lines. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 7–11, 1994. [ss-paslp-94] *Cites:* csss-otass-89, eg-ccytb-84, e-acg-87, f-hgiit-76, gp-ms-83, gp-ubcpr-86, hpss-sxoc-75, l-sxyoc-91, m-lblmp-91, pss-ubnpk-92, s-nrdec-84, gp-asotd-93, ZZZ.

12487 W. Steiger and I. Streinu. A pseudo-algorithmic separation of lines from pseudo-lines. *Inform. Process. Lett.*, 53:295–299, 1995. [ss-paslp-95]

12488 W. Steiger and I. Streinu. Illumination by floodlights. *Comput. Geom. Theory Appl.*, 10(1):57–70, 1998. [ss-if-98] *Keywords:* visibility, floodlights. *Succeeds:* ss-pnrfp-94.

12489 W. Steiger and I. Streinu. Positive and negative results on the floodlight problem. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 87–92, 1994. [ss-pnrfp-94] *Keywords:* visibility, floodlights. *Precedes:* ss-if-98. *Cites:* ae-tpss-87, bglosu-fp-93, cru-ofipt-93, e-acg-87, o-agta-87, ps-cgi-85, bfprt-tbs-73, ZZZ.

W. Steiger. See also [389, 1383, 1384, 3200, 3453, 3454, 5944, 6122, 8936, 8938, 10543–10545, 12002, 12003].

W. L. Steiger. See also [390, 8937].

K. Steiglitz. See also [7215, 7216, 7425, 10597–10599].

12490 A. Stein and M. Werman. Finding the repeated median regression line. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 409–413, 1992. [sw-frmrl-92]

12491 A. Stein and M. Werman. Robust statistics in shape fitting. In *Proc. IEEE Internat. Conf. Comput. Vision Pattern. Recogn.*, pages 540–546, June 1992. [sw-rssf-92]

J. Stein. See also [4396].

M. L. Stein. See also [7561].

12492 S. K. Stein. Convex maps. *Proc. Amer. Math. Soc.*, 2(3):464–466, 1951. [s-cm-51] *Keywords:* graph drawing.

L. Steinberg. See also [3029].

12493 R. Steinberg. Solution to problem no 4065. *Amer. Math. Monthly*, 51:169–171, 1944. [s-spn4-44]

12494 J. Steiner. Einige Gesetze über die Theilung der Ebene und des Raumes. *J. Reine Angew. Math.*, 1:349–364, 1826. [s-egudt-26]

12495 J. Steiner. Systematische Entwicklung der Abhängigkeit geometrischer Gestalten voneinander. In *Jakob Steiner's Collected Works*. ??, 1881. [s-sedag-81]

Marcel Steiner. See also [7612].

12496 T. L. Steiner. A simple and faster algorithm for the rectilinear Steiner problem in general dimension. Technical Report, Dept. Comput. Sci., Georgetown Univ., Washington, DC, 1989. [s-sfars-89]

12497 E. Steinitz. Polyeder und raumeinteilungen. *Enzykl. Math. Wiss.*, 3:1–139, 1922. Part 3AB12. [s-pur-22]

12498 E. Steinitz. Über isoperimetrische probleme bei konvexen polyedern. *J. Math.*, 158:129–153, 1927. [s-uipkp-27]

12499 E. Steinitz and H. Rademacher. *Vorlesungen über die Theorie der Polyeder*. Julius Springer, Berlin, Germany, 1934. [sr-vudtd-34] *Keywords:* graph drawing.

F. Stenger. See also [11382].

12500 G. Stengle. Constraints on the angular distribution of the zeros of a polynomial of low complexity. *Discrete Comput. Geom.*, 6:163–169, 1991. [s-cadzp-91]

A. A. Stepanov. See also [9045, 9046].

H. E. Stephanou. See also [12427].

A. Sterbini. See also [2651, 2652].

?? Stern. See also [12922].

12501 H. I. Stern. A routing algorithm for a mobile search robot. In *Impacts of Microcomputers on Operations Research*, pages 73–87. 1986. [s-ramsr-86]

J. Stern. See also [884].

H. J. Stetter. See also [2138].

12502 B. M. Steward and F. Herzog. Semi-regular plane polygons of integral type. *Israel J. Math.*, 11:31–52, 1972. [sh-srppi-72]

B. M. Steward. See also [6901].

C. Steward. See also [10574].

N. F. Steward. See also [3992].

12503 A. Stewart and S. Ghali. An output sensitive algorithm for the computation of shadow boundaries. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 291–296, 1993. [sg-osacs-93] *Cites:* cf-nrtsg-89, cf-aaial-91, cf-fopsg-92, h-dmr-92, ltg-dmar-92, m-eahsr-89, s-agtd-34, gcs-ecrag-91, st-pplup-86, ZZZ.

12504 A. J. Stewart. Fast horizon computation at all points of a terrain with visibility and shading applications. *IEEE Trans. Visualizat. Comput. Graph.*, 4(1):82–93, January 1998. [s-fhcap-98]

12505 A. James Stewart. Hierarchical visibility in terrains. In *Eurographics Rendering Workshop*, June 1997. [s-hvt-97] *URL:* http://www.dgp.toronto.edu/people/JamesStewart/papers/egrw97.html.

12506 A. J. Stewart. Local robustness and its application to polyhedral intersection. *Internat. J. Comput. Geom. Appl.*, 4(1):87–118, 1994. [s-lrapi-94]

12507 A. J. Stewart. Maximizing incidences between approximate polygons is NP-hard. Manuscript, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, 1991. [s-mibap-91]

12508 A. J. Stewart. Robust point location in approximate polygons. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 179–182, August 1991. [s-rplap-91] *Keywords:* point location, robustness. *Cites:* ds-rgnap-88, f-smpst-89, hhk-tirgc-88, m-vigau-88p, gss-egbra-89, si-cvd10-89, ZZZ.

12509 A. J. Stewart. *The theory and practice of robust geometric computation, or, how to build robust solid modelers*. Ph.D. thesis, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, August 1991. Technical Report TR 91-1229. [s-tprgc-91] *Keywords:* doctoral thesis, robustness.

12510 A. J. Stewart and S. Ghali. Fast computation of shadow boundaries using spatial coherence and backprojections. In A. Glassner, editor, *Proc. SIGGRAPH '94*, pages 231–238. ACM Press, 1994. ISBN 0-89791-667-0. [sg-fcsbu-94]

A. James Stewart. See also [5880, 5881].

C. V. Stewart. See also [5322–5324].

12511 G. W. Stewart. *Introduction to Matrix Computations*. Academic Press, New ork, NY, 1973. [s-imc-73]

G. W. Stewart. See also [4378].

12512 Ian Stewart. Mathematical recreations. *Sci. Amer.*, 275(2):100–103, August 1996. Includes light in circular forest problem due to Janos Pach. [s-mr-96]

N. Stewart. See also [10740].

12513 N. F. Stewart. A sufficient condition for correct topological form in tolerance specification. *Comput. Aided Design*, 12:39–48, 1992. [s-scctf-92]

N. F. Stewart. See also [674, 2370, 2371, 3993–3995].

12514 W. M. Stewart. An algorithm to find the facets of the convex hull in higher dimensions. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 252–256, 1990. [s-affch-90] *Cites:* b-icp-83, ck-acp-70, g-eadch-72, ph-chfsp-77, ps-cgi-85, s-chaop-81, s-chdch-86, ZZZ.

12515 W. R. Stewart. Euclidean traveling salesman problems and Voronoi diagrams. Manuscript, School of Business Administration, College of William and Mary, 1992. [s-etspv-92]

12516 J.-M. Steyaert. La formule de Lagrange et ses applications au denombrement de familles d'arbres. In *Seminaire d'Informatique Theorique*, 1981. [s-lfdle-81]

J.-M. Steyaert. See also [5320].

L. T. Steyaert. See also [6095].

C. Stiel. See also [8318].

12517 S. Stifter. *A medley of solutions to the robot collision problem in two and three dimensions*. Ph.D. thesis, Johannes Kepler Univ., Linz, Austria, 1988. Report RISC-LINZ 88-12.0. [s-msrcp-88] *Keywords:* doctoral thesis.

12518 S. Stifter. An axiomatic approach to Voronoi-diagrams in 3-D. Report RISC-LINZ 88-64.0, Johannes Kepler Univ., Linz, Austria, 1988. [s-aavd3-88] *Precedes:* s-aavd3-91.

12519 S. Stifter. An axiomatic approach to Voronoi-diagrams in 3D. *J. Comput. Syst. Sci.*, 43:361–374, 1991. [s-aavd3-91] *Keywords:* Voronoi diagrams, retraction methods, findpath problem, computational geometry. *Succeeds:* s-aavd3-88. *Abstract:* Voronoi-diagrams were first introduced for sets of points, and later generalized to other sets. There have been very few attempts to generalize Voronoi-diagrams for non-point sets to three (or higher) dimensions. We define a Voronoi-diagram for a quite general subset of three-space which is characterized by specific axioms. This diagram is one-dimensional and connected provided that the complement of the subset is connected. These Voronoi-diagrams can be used in retraction methods to solve the Findpath Problem for a ball moving in a three-dimensional environment. (Author abstract) 14 Refs.

12520 S. Stifter. Application of Voronoi-diagrams to solve the findpath problem in 3-D. Report RISC-LINZ 88-71.0, Johannes Kepler Univ., Linz, Austria, 1988. [s-avdsf-88]

12521 S. Stifter. Characterization of contour elements that generate abstract Voronoi diagrams. *Comput. Geom. Theory Appl.*, 7:245, 1997. [s-ccega-97]

12522 Sabine Stifter. Geometry theorem proving in vector spaces. In *Abstracts 9th European Workshop Comput. Geom.*, pages 56–58. FernUniversität Hagen, 1993. [s-gtpvs-93]

12523 Sabine Stifter. Numerical problems in the plane Roider method. In *Abstracts 11th European Workshop Comput. Geom.*, pages 53–56. Universität Linz, 1995. [s-npprm-95]

12524 Sabine Stifter. Predictions about collision free paths from intersection tests. In *Proc. Computational Geometry: Methods, Algorithms and Applications*, volume 553 of *Lecture Notes Comput. Sci.*, pages 309–320. Springer-Verlag, 1991. [s-pacfp-91] *Keywords:* motion planning. *Annote:* 7th Intern. Workshop Comput. Geom.

12525 Sabine Stifter. Secure path planning. In *Abstracts 8th European Workshop Comput. Geom.*, pages 7–8. Utrecht University, 1992. [s-spp-92]

12526 Sabine Stifter. Technological conditions in geometric algorithms: A case study for the nesting problem. In *Abstracts 10th European Workshop Comput. Geom.*, pages 78–80. Universidad de Cantabria, Santander, 1994. [s-tcgac-94] *Cites:* ZZZ.

12527 Sabine Stifter. Voronoi-Diagramme für Teilmengen des 3D und ihre Anwendung auf Kollisionsprobleme bei Robotern. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 24. Universität Siegen, 1990. [s-vdt3d-90]

S. Stifter. See also [2567, 8430, 8431].

W. Still. See also [2842, 8895].

P. F. Stiller. See also [5132].

12528 J. Stillwell. *Classical Topology and Combinatorial Group Theory*. Number 72 in Graduate Texts in Mathematics. Springer-Verlag, New York, NY, 1980. [s-ctcgt-80] *ISBN:* 0-387-90516-2.

12529 J. Stillwell. *Classical Topology and Combinatorial Group Theory*. Springer-Verlag, New York, 1993. [s-ctcgt-93]

J. C. H. Stillwell. See also [11767].

C. Stirk. See also [4595, 4596].

D. R. Stirzaker. See also [6286].

G. Stöckl. See also [1115–1117, 4768].

12530 L. Stockmeyer. Optimal orientation of cells in slicing floorplan design. *Inform. Control*, 57:91–101, 1983. [s-oocsf-83]

12531 J. Stoer. *Einführung in die Numerische Mathematik I*. Springer-Verlag, 1983. [s-eidnm-83]

12532 J. Stoer and R. Bullirsch. *Introduction to Numerical Analysis*. Springer-Verlag, 1980. [sb-ina-80]

12533 J. Stoer and C. Witzgall. *Convexity and optimization in finite dimensions I*. Springer-Verlag, 1970. [sw-cofd1-70]

J. Stoer. See also [2582, 2583].

12534 M. Stoer and F. Wagner. A simple min cut algorithm. In *Proc. 2nd Annu. European Sympos. Algorithms*, volume 855 of *Lecture Notes Comput. Sci.*, pages 141–147. Springer-Verlag, 1994. [sw-smca-94]

12535 I. Stojmenovic. Computational geometry on a hypercube. In *Proc. Internat. Conf. Parallel Process.*, pages 100–103, 1988. [s-cgh-88]

12536 I. Stojmenović. Cutting the volumes of convex polyhedra by a plane. Technical Report TR-90-23, Univ. Ottawa, Ottawa, ON, June 1990. [s-cvcpp-90t] *Precedes:* s-cvcpp-90i.

12537 I. Stojmenović. Cutting the volumes of convex polyhedra by a plane. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 291–295, 1990. [s-cvcpp-90i] *Succeeds:* s-cvcpp-90t. *Cites:* a-dapa-89, aw-plts-88, e-acg-87, gm-eha3s-87, m-ptlp-85, ZZZ.

12538 I. Stojmenović. Finding the largest m-dimensional circle in a k-dimensional box. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 328–333, 1993. [s-flmdc-93] *Cites:* ew-falc3-91t, ew-falc3-91, sb-mla-89, ZZZ.

12539 I. Stojmenović. n-dimensional convex hull algorithm. Manuscript, ??, 1985. [s-ndcha-85] *Keywords:* convex hull.

12540 I. Stojmenović and M. A. Langston. On a proposed divide-and conquer minimal spanning tree algorithm. *BIT*, 28:755–791, 1988. [sl-pdcms-88] *Annote:* Discusses errors in [2852].

12541 I. Stojmenović and E. Soisalon-Soininen. A note on approximate convex hulls. *Inform. Process. Lett.*, 22:55–56, 1986. [ss-nach-86]

Ivan Stojmenović. See also [430–432, 1919, 1938–1940, 3668, 3669, 3695, 3696, 3923, 3924, 3935–3937, 5057, 5874, 6274, 10263, 12954].

12542 J. Stolfi. Oriented projective geometry. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 76–85, 1987. [s-opg-87] *Precedes:* s-pcg-88. *Cites:* bbr-ecit-85, c-rpp-49, i-ppc-85, ir-cpc-84, r-hcppc-81, h-hgc-84, hs-cagcu-84, grs-kfcg-83, ZZZ.

12543 J. Stolfi. *Oriented Projective Geometry: A Framework for Geometric Computations*. Academic Press, New York, NY, 1991. [s-opgfg-91] *Keywords:* oriented projective geometry, duality, convexity, Plücker coordinates. *Succeeds:* s-pcg-88.

12544 J. Stolfi. *Primitives for Computational Geometry*. Ph.D. thesis, Dept. Comput. Sci., Stanford Univ., Stanford, CA, May 1988. Reprinted as Technical Report 36, DEC Systems Research Center, January 1989. [s-pcg-88] *Keywords:* doctoral thesis. *Succeeds:* s-opg-87. *Precedes:* s-opgfg-91.

12545 J. Stolfi and Leonidas J. Guibas. A note on the shortest distance between two sets of points. Report ??, Xerox Palo Alto Res. Center, Palo Alto, CA, 1983. [sg-nsdbt-83]

J. Stolfi. See also [675, 2983, 4705, 4706, 6382, 6383, 6416–6419, 6429–6434, 9119, 12340, 12341].

N. Stoltzfus. See also [11027].

C. Stone. See also [2418].

12546 M. Stonebreaker, E. Hanson, and T. Sellis. Rule indexing implementations in database systems. In *Proc. 1st Int. Conf. on Expert Database Systems*, 1986. [shs-riids-86]

Clive Stops. See also [10909].

C. Storb. See also [5743, 5744].

J. Storer. See also [11107].

12547 J. A. Storer. On minimal node-cost planar embeddings. *Networks*, 14:181–212, 1984. [s-mncpe-84] *Keywords:* approximation, graph drawing. *Succeeds:* s-ncmeg-80.

12548 J. A. Storer. The node cost measure for embedding graphs on the planar grid. In *Proc. 11th Annu. ACM Sympos. Theory Comput.*, pages 201–210, 1980. [s-ncmeg-80] *Keywords:* approximation. *Precedes:* s-mncpe-84.

12549 J. A. Storer and J. H. Reif. Shortest paths in the plane with polygonal obstacles. Technical Report, ?? [sr-spppo-??] *Succeeds:* rs-spesp-85. *Precedes:* sr-spppo-94.

12550 J. A. Storer and J. H. Reif. Shortest paths in the plane with polygonal obstacles. *J. ACM*, 41(5):982–1012, 1994. [sr-spppo-94] *Succeeds:* rs-spesp-85.

J. A. Storer. See also [8814, 11129–11133].

12551 S. Storoy. An algorithm for finding a vector in the intersection of open convex polyhedral cones. *BIT*, 13:114–119, 1973. [s-afvio-73]

D. W. Storti. See also [4915, 13076].

Leen Stougie. See also [1118].

K. F. Stout. See also [4376].

12552 Q. Stout. Constant-time geometry on PRAMs. Manuscript, Univ. of Michigan, Univ. Illinois, Urbana, IL., 1989. [s-ctgp-89] *Comments:* talk was the Semi-Annual Lunch, Algorithms, and Dinner Symposium.

12553 Q. F. Stout. Drawing straight lines with a pyramid cellular automaton. *Inform. Process. Lett.*, 15:233–237, 1982. [s-dslpc-82]

12554 Q. F. Stout. Mesh and pyramid computers inspired by geometric algorithms. In *Workshop on Algorithm-Guided Parallel Architectures for Automatic Target Recognition*, pages 293–315, 1985. [s-mpcig-85]

12555 Q. F. Stout. Pyramid computer solutions of the closest pair problem. *J. Algorithms*, ??, 1985. To appear. [s-pcscp-85]

12556 Q. F. Stout. Sorting, merging, selecting, and filtering on tree and pyramid machines. In *Proc. Internat. Conf. Parallel Process.*, pages 214–221, 1983. [s-smsft-83]

Q. F. Stout. See also [9082, 9636–9645].

12557 D. Stoyan, W. S. Kendall, and J. Mecke. *Stochastic Geometry and its Applications.* Akadamie-Verlag, Berlin, West Germany, 1987. [skm-sgia-87] *Annote:* Contains a summary of Voronoi diagram applications in a variety of areas.

12558 D. Stoyan, W. S. Kendall, and J. Mecke. *Stochastic Geometry and its Applications.* Wiley-Interscience, 2nd edition, 1995. [skm-sga-95] *Annote:* Contains a summary of Voronoi diagram applications in a variety of areas.

12559 Y. G. Stoyan and S. V. Smelyakov. An approach to the problems of routing optimization in the regions of intricate shape. *Inform. Process. Lett.*, 13:39–43, 1981. [ss-apror-81]

12560 G. Strang. Maximal flow through a domain. *Math. Program.*, 26:123–143, 1983. [s-mftd-83]

12561 G. Strang. The width of a chair. *Amm. Math. Monthly*, 89:529–535, 1982. [s-wc-82]

12562 G. Strang and G. Fix. *An Alaysis of the Finite Element Method.* Prentice Hall, Englewood Cliffs, NJ, 1973. [sf-afem-73]

M. Strani. See also [4133].

12563 Volker Strassen. Algebraic complexity theory. In J. van Leeuwen, editor, *Algorithms and Complexity*, volume A of *Handbook of Theoretical Computer Science*, chapter 11, pages 633–672. MIT Press, 1990. [s-act-90]

12564 W. Straßer. Constructing $3D$ objects from $2D$ information. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, NATO ASI Series, pages 967–996. Springer-Verlag, 1988. [s-c3do2-88] *ISBN:* 3-540-19506-8.

W. Straßer. See also [6440].

12565 S. Straszewicz. Sur un problème geometrique de P. Erdős. *Bulletin de l'Académie Polonaise des Sciences, Classe III*, 5:39–40, 1957. [s-supgd-57]

E. Straus. See also [4995].

E. G. Straus. See also [7681, 11430].

E. Strauss. See also [6691].

12566 I. Streinu. A combinatorial approach to planar non-colliding robot arm motion planning. In *Proc. 41st Annu. IEEE Sympos. Found. Comput. Sci.* IEEE, November 2000. 443–453. [s-capnc-00]

12567 I. Streinu. Clusters of stars. Technical report, Dept. Comput. Sci., Smith College, Northampton, MA, 1996. [s-cs-96]

12568 I. Streinu. Clusters of stars. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 439–441, 1997. [s-cs-97] *Cites:* blwszom-93, eos-calha-86, ehn-sisp-96, gp-sccca-84, gpasotd-93, k-ah-92, os-vepvgcr-97, ZZZ.

12569 I. Streinu. Nonstretchable pseudovisibility graphs. Technical Report 055, Dept. Comput. Sci., Smith College, December 1996. [s-nspvg-96] *Keywords:* visibility.

I. Streinu. See also [1979–1981, 10407, 10408, 10410–10415, 12486–12489].

12570 T. Strijk and M. van Kreveld. Labeling a rectilinear map more efficiently. *Inform. Process. Lett.*, 69:25–30, 1999. [sk-lrmme-99]

12571 T. Strijk and A. Wolff. Labeling points with circles. *Internat. J. Comput. Geom. Appl.*, 11:181–195, 2001. [sw-lpc-01]

Tycho Strijk. See also [189, 10841].

12572 D. Strip and M. Karasick. Solid modeling on a massively parallel processor. Technical report, IBM, Research Division, February 1991. [sk-smmpp-91] *Precedes:* sk-smmpp-92.

12573 David Strip and Michael Karasick. Solid modeling on a massively parallel processor. *Internat. J. Supercomputer Appl.*, 6:175–92??, Summer 1992. From IBM TR index: full volume/no/pages date vol. 6, no. 2, p. 175-92, Summer 1992. Entry ID 3876. Is this the report number for IBM TRs. [sk-smmpp-92] *Succeeds:* sk-smmpp-91.

12574 J. J. Stroker. *Differential Geometry.* Wiley-Interscience, 1969. [s-dg-69]

A. Strong. See also [4336, 4337].

Thomas Strothotte. See also [2727].

12575 Th. Strothotte and J.-R. Sack. Knowledge aquisition using diagrams. In *Proc. 3rd IFIP Conference on Man-Machine Systems*, 1988. [ss-kaud-88]

Th. Strothotte. See also [1064, 11507].

12576 A. H. Stroud. *Approximate Calculation of Multiple Integrals.* Prentice Hall, 1971. [s-acmi-71]

I. A. Stroud. See also [2387].

12577 B. Stroustrup. *The C++ Programming Language.* Addison-Wesley, 1986. [s-cpl-86]

12578 Anja Struyf and Peter J. Rousseeuw. Halfspace depth characterizes the empirical distribution. Manuscript, Dept. of Mathematics and Computer Science, University of Antwerp, Belgium, 1998. [sr-hdced-98] *Keywords:* coordinate-free, multivariate ranks, robustness, AMS Classification: 62G30, 62J05. *Abstract:* For any empirical multivariate distribution, we show that the resulting halfspace depth function determines the distribution completely. We do this by actually reconstructing the data points from the depth contours. The data need not be in general position. Moreover, we prove an analogous property for regression depth.

Anja Struyf. See also [11440].

S. Stueckle. See also [10762, 10763, 11234].

W. Stuerzlinger. See also [11694].

W. Stuetzle. See also [7115–7117].

12579 M. A. Stuff and J. N. Cederquist. Coordinate transformations realizable with multiple holographic optical elements. *J. Optical Soc. Amer.*, A7(6):977–981, 1990. [sc-ctrmh-90]

12580 G. Stumme and R. Wille. A geometrical heuristic for drawing concept lattices. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 452–459. Springer-Verlag, 1995. [sw-ghdcl-95] *Keywords:* graph drawing, order, upward.

Martin Stumpf. See also [13451].

12581 B. Sturmfels. Computational synthetic geometry. Manuscript, Inst. Math. Appl., Univ. Minnesota, Minneapolis, MN, 1987. [s-csg-87]

12582 Bernd Sturmfels. Cyclic polytopes and d-order curves. *Geom. Dedicta*, 24:103–107, 1987. [s-cpdoc-87]

12583 B. Sturmfels. Gröbner bases and convex polytopes, April 1995. Expanded Lecture Notes from the Holiday Symposium at New Mexico State University. [s-gbcp-95]

12584 B. Sturmfels. Gröbner bases of toric varieties. *Tohoku Math. J.*, 43(2):249–261, 1991. [s-gbtv-91]

B. Sturmfels. See also [2028, 2056, 2233, 2234, 3594, 6123, 6124, 6273, 6305, 7464, 8948, 8950, 10282].

C. Sturtivant. See also [3361, 3362].

12585 M. Styness. On faster convergence of the bisection method for all triangles. *Math. Comput.*, 35:1195–1201, 1980. [s-fcbmt-80]

M. R. Stytz. See also [5607].

12586 C.-J. Su. A new collision detection method for csg-represented objects in virtual manufacturing. *Comput. Ind.*, 40(1):1–13, 1999. [s-ncdmc-99]

12587 P. Su. *Efficient parallel algorithms for closest point problems.* PhD thesis, Dartmouth College, 1994. Number PCS-TR94-238. [s-epacp-94] *Keywords:* doctoral thesis.

12588 P. Su and R. Drysdale. A comparison of sequential Delaunay triangulation algorithms. *Comput. Geom. Theory Appl.*, 7:361–386, 1997. [sd-csdta-97] *Succeeds:* sd-csdta-95.

12589 Peter Su and Robert L. Scot Drysdale. A comparison of sequential Delaunay triangulation algorithms. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 61–70, 1995. [sd-csdta-95] *Keywords:* experimental comparison. *Cites:* b-cgida-93, b-etsh-90, b-kdtsp-90, bwy-oetac-80, cs-arscg-89, d-fdcac-87, d-hdvdl-91, f-savd-87, gs-cdtp-78, gks-ricdv-92, gs-pmgsc-85, gs-pmgsc-85, kk-cdtmb-87, m-dtchn-84, m-eaa-86, oim-iimvd-84, s-iggp-76, sy-ricdd-90, too-natdv-83, w-smaa-78, ZZZ.

12590 Tung-Hsin Su and Ruei-Chuan Chang. Computing the constrained relative neighborhood graphs and constrained gabriel graphs in Euclidean plane. *Pattern Recogn. Lett.*, 24(3):221–230, 1991. [sc-ccrng-91] *Keywords:* constrained relative neighborhood graphs (crng), constrained gabriel graphs (cgg), euclidean plane, Delaunay triangulation. *Annote:* CRNG and CGG are subgraphs of CDT. *Abstract:* The original relative neighborhood graph (RNG) and Gabriel graph (GG) were defined on a vertices set in the plane. In this paper, we will extend this domain to a planar straight-line graph, and call this type of RNG and GG the constrained relative neighborhood graph (CRNG) and the constrained Gabriel graph (CGG) respectively. Given a planar straight-line graph G in the plane, the edges of the CRNG of G(CRNG(G)) satisfy the following two properties: (1) All of the edges in G (called prespecified edges) are included in the CRNG(G) and the remaining edges do not properly intersect with them; (2) If non-prespecified edge (p,q) belongs to the CRNG(G) then either there does not exist a vertex z such that d(p,z) less than d(p,q) and d(q,z) less than d(p,q), or if z satisfies the above condition then z must be invisible by p or q (i.e. if you draw the line segments from z to p and q, then at least one of the lines segments crosses a prespecified edge of G). The constrained Gabriel graph is defined similarly. The CRNG and CGG are the extensions of RNG and GG respectively for which one can specify in advance some special or important edges which must be included in the outcome graph. These variants of RNG and GG provide a new application for the original RNG and GG. In this paper, we will show that both CRNG and CGG are subgraphs of the constrained Delaunay triangulation, and propose two optimal algorithms to construct them in $\Theta(n \log n)$ time. (Author abstract) 14 Refs.

12591 Tung-Hsin Su and Ruei-Chuan Chang. On constructing the relative neighborhood graph in Euclidean k-dimensional spaces. *Computing*, 46:121–130, 1991. [sc-crnge-91] *Keywords:* rng. *Annote:* in $O(n(n \log n)^{1-2^{-(k+1)}}$ time, under some general position assumptions.

12592 T. H. Su and R. C. Chang. The k-Gabriel graphs and their applications. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 66–75. Springer-Verlag, 1990. [sc-kggta-90]

R. Suaya. See also [9875].

K. R. Subramanian. See also [2746].

12593 Sairam Subramanian and Sridhar Ramaswamy. The P-range tree: A new data structure for range searching in secondary memory. In *Proc. 6th ACM-SIAM Sympos. Discrete Algorithms*, pages 378–387, 1995. [sr-prtnd-95] *Keywords:* range searching, external memory algorithms.

S. Subramanian. See also [8145, 10981].

V. Subramanian. See also [5965, 5966, 10416].

12594 R. V. Subramaniyam and A. A. Diwan. A counterexample for the sufficiency of edge guards in star polygons. *Inform. Process. Lett.*, 40:97–99, 1991. [sd-csegs-91]

12595 R. Subramonian. *Asynchronous Algorithms for Shared Memory Parallel Computers.* Ph.D. thesis, Univ. California, Davis, 1991. [s-aasmp-91] *Keywords:* doctoral thesis.

12596 R. Subramonian. Designing synchronous algorithms for asynchronous processors. In *Proc. 4th ACM Sympos. Parallel Algorithms Architect.*, pages 189–198, 1992. [s-dsaap-92]

R. Subramonian. See also [3647, 9207, 9208].

M. Sudan. See also [887, 1580, 1820].

12597 S. Sudarshan and C. P. Rangan. A fast algorithm for computing sparse visibility graphs. *Algorithmica*, 5:201–214, 1990. [sr-facsv-90] *Keywords:* visibility graphs, segments, two-dimensional. *Annote:* $O(|E| \log^2 n)$ time, $O(n)$ space.

S. Sudarshan. See also [4248].

O. Sudarsky. See also [6208].

Attawith Sudsang. See also [10833].

Torsten Suel. See also [748].

C. Suen. See also [9858].

N. Sugie. See also [7379].

12598 Kokichi Sugihara. A robust and consistent algorithm for intersecting convex polyhedra. *Comput. Graph. Forum*, 13(3):45–54, 1994. Proc. EUROGRAPHICS '94. [s-rcaic-94] *Keywords:* solid modeling, convexity, polyhedra, robustness, intersection.

12599 K. Sugihara. A simple method for avoiding numerical errors and degeneracy in Voronoi diagram construction. *IEICE Trans. Fundamentals*, E75-A(4):468–477, April 1992. [s-smane-92]

12600 K. Sugihara. Algorithms for computing Voronoi diagrams. In A. Okabe, B. Boots, and K. Sugihara, editors, *Spatial Tesselations: Concepts and Applications of Voronoi Diagrams.* John Wiley & Sons, Chichester, UK, 1992. [s-acvd-92]

12601 K. Sugihara. An algebraic and combinatorial approach to the analysis of line drawings of polyhedra. *Discrete Appl. Math.*, 9:77–104, 1984. [s-acaal-84]

12602 K. Sugihara. An approach to error-free solid modeling. Note, Inst. Math. Appl., Univ. Minnesota, Minneapolis, MN, 1987. [s-aefsm-87t]

12603 K. Sugihara. An approach to error-free solid modeling. In *IMA Summer Program on Robotics.* Institute for Mathematics and Applications, University of Minnesota, 1987. [s-aefsm-87]

12604 Kokichi Sugihara. An intersection algorithm based on Delaunay triangulation. *IEEE Comput. Graph. Appl.*, 12(2):59–67, March 1992. [s-iabdt-92] *Keywords:* Delaunay triangulation, computational geometry. *Abstract:* A robust method for finding points of intersection of line segments in a 2- D plane is presented. The plane is subdivided by Delaunay triangulation to localize areas where points of intersection exist and to guarantee the topological consistency of the resulting arrangement. The subdivision is refined by inserting midpoints recursively until the areas containing points of intersection are sufficiently localized. The method is robust in the sense that it does not miss points of intersection that are easily detectable when costly line-pair checking is performed. The algorithm is adaptive in the sense that most of the computational cost is incurred for the areas where finding points of intersection is difficult. 6 Refs.

12605 K. Sugihara. An $n \log n$ algorithm for determining the congruity of polyhedra. *J. Comput. Syst. Sci.*, 29:36–47, 1984. [s-nadcp-84]

12606 K. Sugihara. Approximation of generalized Voronoi diagrams by ordinary Voronoi diagrams. *CVGIP: Graph. Models Image Process.*, 55:522–531, 1993. [s-agvdo-93]

12607 K. Sugihara. Location of a robot using sparse visual information. In R. Bolles and B. Roth, editors, *Robotics Research – The Fourth Internat. Sympos.*, pages 319–326, 1988. [s-lrusv-88]

12608 K. Sugihara. *Machine Interpretation of Line Drawings.* MIT Press Series in Artificial Intelligence. MIT Press, 1986. [s-mild-86] *ISBN:* 0-262-19254-3.

12609 K. Sugihara. Mathematical structures of line drawings of polyhedra - toward man-machine commonication by means of line drawings. Technical report, Nagoya University, 1981. [s-msldp-81]

12610 K. Sugihara. On finite precision representations of geometric objects. Res. Memo RMI 87-06, Dept. Math. Engrg., Univ. Tokyo, Tokyo, Japan, 1987. [s-fprgo-87]

12611 K. Sugihara. On finite-precision representations of geometric objects. *J. Comput. Syst. Sci.*, 39:236–247, 1989. [s-fprgo-89]

12612 K. Sugihara. Realizability of polyhedrons from line drawings. In G. T. Toussaint, editor, *Computational Morphology*, pages 177–206. North-Holland, Amsterdam, Netherlands, 1988. [s-rpld-88] *Annote:* sehr ausfuehrlich mit vielen referenzen.

12613 Kokichi Sugihara. Robust gift-wrapping for the three-dimensional convex hull. *J. Comput. Syst. Sci.*, ??, 1993. to appear. [s-rgwtd-93]

12614 K. Sugihara. Some location problems for robot navigation using a single camera. *Comput. Vision Graph. Image Process.*, 42:112–129, 1988. [s-slprn-88]

12615 K. Sugihara. Topologically consistent algorithms related to convex polyhedra. In *Proc. 3rd Annu. Internat. Sympos. Algorithms Comput.*, volume 650 of *Lecture Notes Comput. Sci.*, pages 209–218. Springer-Verlag, 1992. [s-tcarc-92]

12616 K. Sugihara. Voronoi diagrams in a river. *Internat. J. Comput. Geom. Appl.*, 2(1):29–48, 1992. [s-vdr-92] *Keywords:* Generalized Voronoi diagram, boat-sail distance, smallest hitting circle, forest of cones, plane sweep algorithm.

12617 Kokichi Sugihara and Tetsuya Hiroshima. How to draw a Delaunay diagram with a given topology. In *Abstracts 13th European Workshop Comput. Geom.*, pages 13–15. Universität Würzburg, 1997. [sh-hdddg-97]

12618 K. Sugihara and H. Inagaki. Why is the 3D Delaunay triangulation difficult to construct? *Inform. Process. Lett.*, 54:275–280, 1995. [si-w3dtd-95]

12619 K. Sugihara and M. Iri. A numerically stable method for Voronoi diagram construction. In *Proc. of the 1988 Fall Conf. of the Operations Research Soc. of Japan*, pages 20–21, September 1988. [si-nsmvd-88]

12620 K. Sugihara and M. Iri. A robust topology-oriented incremental algorithm for Voronoi diagrams. *Internat. J. Comput. Geom. Appl.*, 4(2):179–228, 1994. [si-rtoia-94] *Keywords:* Voronoi diagram, robust algorithm, topology oriented method, incremental construction, combinatorial abstraction, asymptotic correctness. *Succeeds:* si-toimc-89.

12621 K. Sugihara and M. Iri. A solid modelling system free from topological inconsistency. *J. Inform. Proc.*, 12(4):380–393, 1989. [si-smsft-89]

12622 K. Sugihara and M. Iri. Construction of the Voronoi diagram for one million generators in single-precision arithmetic. Technical Report RMI 89-05, Dept. Mathematical Eng., U. Tokyo, Tokyo 113, Japan, August 1989. [si-cvdom-89] *Keywords:* numerical precision, stability, robustness.

12623 K. Sugihara and M. Iri. Construction of the Voronoi diagram for 'one million' generators in single-precision arithmetic. *Proc. IEEE*, 80(9):1471–1484, September 1992. [si-cvdom-92]

12624 K. Sugihara and M. Iri. Construction of the Voronoi diagram for over 10^5 generators in single-precision arithmetic. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 42, August 1989. [si-cvd10-89]

12625 K. Sugihara and M. Iri. Geometric algorithms in finite-precision arithmetic. Research Memorandum 88-10, Math. Eng. and Physics Dept., U. of Tokyo, Japan, September 1988. Presented at 13th Int. Sympos. Math. Prog, Tokyo, Aug 29-Sep 2, 1988. [si-gafpa-88] *Keywords:* numerical precision, stability, robustness.

12626 K. Sugihara and M. Iri. Topology-oriented incremental method for constructing Voronoi diagrams robust against numerical errors. Technical Report RMI 89-02, Dept. Mathematical Eng., U. Tokyo, Tokyo 113, Japan, 1989. [si-toimc-89] *Keywords:* numerical precision, stability, robustness. *Precedes:* si-rtoia-94.

12627 K. Sugihara and M. Iri. Two design principles of geometric algorithms in finite-precision arithmetic. *Appl. Math. Lett.*, 2(2):203–206, 1989. [si-tdpga-89] *Keywords:* numerical precision, stability, robustness.

12628 K. Sugihara and M. Iri. Voronoi2 reference manual. Technical Report RMI 89-04, Dept. Mathematical Eng., U. Tokyo, Tokyo 113, Japan, September 1989. [si-vrm-89]

12629 K. Sugihara, M. Iri, H. Inagaki, and T. Imai. Topology-oriented implementation - an approach to robust geometric algorithms. *Algorithmica*, 27(1):5–20, 2000. [siii-toiar-00]

12630 K. Sugihara, Y. Ooishi, and T. Imai. Topology-oriented approach to robustness and its applications to several Voronoi-diagram algorithms. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 36–39, 1990. [soi-toari-90] *Cites:* si-cvd10-89, kk-cdtmb-88, o-nridc-90, i-nracv-89, ZZZ.

12631 K. Sugihara, I. Suzuki, and M. Yamashita. The searchlight scheduling problem. *SIAM J. Comput.*, 19(6):1024–1040, 1990. [ssy-ssp-90]

Kokichi Sugihara. See also [4080, 4094, 4111, 6948, 6957, 7378, 7379, 10256, 10257, 10259].

12632 K. Sugiyama. A cognitive approach for graph drawing. *Cybernetics and Systems: An International Journal*, 18:447–488, 1987. [s-cagd-87] *Keywords:* graph drawing.

12633 K. Sugiyama. A readability requirement on drawing digraphs: Level assignment and edge removal for reducing the total length of lines. Technical Report 45, Internat. Inst. for Advanced Study of Social Information Science, March 1984. [s-rrddl-84] *Keywords:* graph drawing.

12634 K. Sugiyama. Achieving uniqueness requirement in drawing digraphs: Optimum code algorithm and hierarchic isomorphism. Technical Report 58, Internat. Inst. for Advanced Study of Social Information Science, July 1985. [s-aurdd-85] *Keywords:* graph drawing.

12635 K. Sugiyama and K. Misue. A simple and unified method for drawing graphs: Magnetic-spring algorithm. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 364–375. Springer-Verlag, 1995. [sm-sumdg-95] *Keywords:* graph drawing, force-directed, system.

12636 K. Sugiyama and K. Misue. Graph drawing by the magnetic spring model. *J. Visual Lang. Comput.*, 6(3):217–231, 1995. (special issue on Graph Visualization, edited by I. F. Cruz and P. Eades). [sm-gdmsm-95] *Keywords:* graph drawing, 3D, system, software visualization. *Succeeds:* sm-sumdg-95.

12637 K. Sugiyama and K. Misue. Visualization of structural information: Automatic drawing of compound digraphs. *IEEE Trans. Softw. Eng.*, 21(4):876–892, 1991. [sm-vsiad-91] *Keywords:* graph drawing.

12638 K. Sugiyama, S. Tagawa, and M. Toda. Methods for visual understanding of hierarchical systems. *IEEE Trans. Syst. Man Cybern.*, SMC-11(2):109–125, 1981. [stt-mvuhs-81] *Keywords:* graph drawing.

12639 K. Sugiyama and M. Toda. Structuring information for understanding complex systems: A basis for decision making. *Fujitsu Scientific and Technical Journal*, 21(2):144–164, 1985. [st-siucs-85] *Keywords:* graph drawing.

K. Sugiyama. See also [4578, 4597, 9688].

12640 S.-H. Suh and K. G. Shin. A variational dynamic programming approach to robot-path planning with a distance-safety criterion. *IEEE Trans. Robot. Autom.*, 4(3):334–349, 1988. [ss-vdpar-88]

12641 Y. S. Suh and K. Lee. NC milling tool path generation for arbitrary pockets defined by sculptured surfaces. *Comput. Aided Design*, 22(5):273–284, June 1990. [sl-nmtpg-90]

12642 J. Suhara and J. Fukuda. Automatic mesh generation for finite element analysis. In J. T. Oden, R. W. Clough, and Y. Yamamoto, editors, *Advances in Computational Methods in Structural Mechanics and Design*, pages 607–624. UAU Press, Huntsville, AL, 1972. [sf-amgfe-72] *Annote:* Adds points to interior and then triangulates.

J. Suhara. See also [5657].

M. Suk. See also [13727].

R. Sulanke. See also [11178, 11179].

F. Sullivan. See also [1572, 12868].

F. E. Sullivan. See also [10729].

12643 G. F. Sullivan, D. S. Wilson, and G. M. Masson. Certification of computational results. *IEEE Trans. Comput.*, 44(7):833–847, 1995. [swm-ccr-95]

J. M. Sullivan. See also [7582].

P. F. Sullivan. See also [4376].

Steve Sullivan. See also [10833].

R. Sulonen. See also [9181].

S. Sumino. See also [7366].

David Sun. See also [5504, 5508].

Julie Sun. See also [1985].

12644 K. Sun and V. J. Lumelsky. Computer simulation of sensor-based robot collision avoidance in an unknown environment. *Robotica*, 5(4):291–302, 1987. [sl-cssbr-87]

K. Sun. See also [9043, 9047, 9048].

G. Sundaram. See also [3105, 3283, 9741, 13896, 13897].

R. Sundaram. See also [11062].

C. J. Sundaresan. See also [4194].

T. Y. Sung. See also [6964].

12645 K. J. Supowit. Decomposing a set of points into chains, with applications to permutation and circle graphs. *Inform. Process. Lett.*, 21:249–252, 1985. [s-dspca-85] *Keywords:* decomposition.

12646 Kenneth J. Supowit. Grid heuristics for some geometric covering problems. In Franco P. Preparata, editor, *Computational Geometry*, volume 1 of *Adv. Comput. Res.*, pages 215–233. JAI Press, Greenwich, Conn., 1983. [s-ghsgc-83] *Keywords:* balls, d-dimensional, covering, heuristics.

12647 K. J. Supowit. New techniques for some dynamic closest-point and farthest-point problems. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 84–90, 1990. [s-ntsdc-90]

12648 K. J. Supowit. The relative neighborhood graph with an application to minimum spanning trees. *J. ACM*, 30(3):428–448, 1983. [s-rngam-83] *Keywords:* plane-sweep, pattern recognition, Delaunay triangulations, minimum spanning trees, polygons, convex.

12649 K. J. Supowit. Topics in computational geometry. Report UIUCDCS-R-81-1062, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1981. [s-tcg-81] *Keywords:* matchings, worst-case analysis, average-case analysis, plane-sweep.

12650 K. J. Supowit and E. M. Reingold. Divide-and-conquer heuristics for minimum weighted Euclidean matching. *SIAM J. Comput.*, 12:118–143, 1983. [sr-dchmw-83] *Keywords:* matchings, worst-case analysis, divide-and-conquer.

12651 K. J. Supowit and E. M. Reingold. The complexity of drawing trees nicely. *Acta Inform.*, 18:377–392, 1983. [sr-cdtn-83] *Keywords:* graph drawing.

12652 K. J. Supowit, E. M. Reingold, and D. A. Plaisted. The traveling salesman problem and minimum matching in the unit square. *SIAM J. Comput.*, 12:144–156, 1983. [srp-tspmm-83] *Keywords:* traveling salesman tours, matchings, worst-case analysis.

K. J. Supowit. See also [4287, 4288, 5687, 5688, 9432, 10417, 10889, 11145].

12653 Tatiana Surazhsky, Vitaly Surazhsky, Gill Barequet, and Ayellet Tal. Smooth blending of polygonal slices with different topologies. In *Abstracts 16th European Workshop Comput. Geom.*, pages 40–44. Ben-Gurion University of the Negev, 2000. [ssbt-sbpsd-00]

12654 Vitaly Surazhsky and Craig Gotsman. Morphing planar triangulations and polygons using convex representations. In *Abstracts 16th European Workshop Comput. Geom.*, pages 31–34. Ben-Gurion University of the Negev, 2000. [sg-mptpu-00]

Vitaly Surazhsky. See also [4620, 12653].

12655 K. Suresh and H. B. Voelcker. New challenges in dimensional metrology: A case study based on "size". *Manufacturing Review*, 7(4):292–303, 1994. [sv-ncdma-94]

12656 Subhash Suri. A linear time algorithm for minimum link paths inside a simple polygon. *Comput. Vision Graph. Image Process.*, 35:99–110, 1986. [s-ltaml-86]

12657 S. Suri. A polygon partitioning technique for link distance problems. Manuscript, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, November 1986. [s-pptld-86]

12658 S. Suri. Computing all geodesic furthest neighbors of a simple polygon. Manuscript, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, November 1986. [s-cagfn-86]

12659 Subhash Suri. Computing geodesic furthest neighbors in simple polygons. *J. Comput. Syst. Sci.*, 39:220–235, 1989. [s-cgfns-89] *Succeeds:* s-agfnp-87.

12660 Subhash Suri. Computing the envelope of a set of lines. Report ??, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1985. [s-cesl-85]

12661 Subhash Suri. Computing the geodesic diameter of a simple polygon. Report JHU-EECS-86/08, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1986. [s-cgdsp-86]

12662 Subhash Suri. Computing the link diameter of a simple polygon. Report JHU-EECS-86/09, Dept. Elect. Engrg. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1986. [s-cldsp-86]

12663 Subhash Suri. *Minimum link paths in polygons and related problems.* Ph.D. thesis, Dept. Comput. Sci., Johns Hopkins Univ., Baltimore, MD, 1987. [s-mlppr-87] *Keywords:* doctoral thesis.

12664 S. Suri. On some link distance problems in a simple polygon. *IEEE Trans. Robot. Autom.*, 6(1):108–113, 1988. [s-ldpsp-88] *Precedes:* s-sldps-90.

12665 Subhash Suri. On some link distance problems in a simple polygon. *IEEE Trans. Robot. Autom.*, 6:108–113, 1990. [s-sldps-90] *Succeeds:* s-ldpsp-88.

12666 Subhash Suri. Polygons. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 23, pages 429–444. CRC Press LLC, Boca Raton, FL, 1997. [s-p-97]

12667 Subhash Suri. The all-geodesic-furthest neighbors problem for simple polygons. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 64–75, 1987. [s-agfnp-87] *Precedes:* s-cgfns-89. *Cites:* akmsw-gamsa-86, art-lbcpr-87, at-cgcsp-86, atb-mdcp-82, c-tpca-82, cg-vippg-85, gh-ospqs-87, ghlst-ltavs-86, gjpt-tsp-78, hm-ftsp-83, lm-gmqia-84, lp-annpc-78, lp-esppr-84, p-msc-77, ps-cgcsp-86, rs-mtdmi-85, sh-cpp-75, t-safnp-83, t-cgpp-86, tb-gatuf-81, tv-otats-86, ZZZ.

12668 Subhash Suri, Philip M. Hubbard, and John F. Hughes. Collision detection in aspect and scale bounded polyhedra. In *Proc. 9th ACM-SIAM Sympos. Discrete Algorithms*, pages 127–136, 1998. [shh-cdasb-98]

12669 Subhash Suri and J. O'Rourke. Finding minimal nested polygons. Technical Report, Johns Hopkins Univ., Baltimore, MD, 1985. [so-fmnp-85t]

12670 Subhash Suri and J. O'Rourke. Finding minimal nested polygons. In *Proc. 23rd Allerton Conf. Commun. Control Comput.*, pages 470–479, 1985. [so-fmnp-85] *Keywords:* packing, visibility.

12671 Subhash Suri and J. O'Rourke. Worst-case optimal algorithms for constructing visibility polygons with holes. Technical report, Johns Hopkins Univ., 1985. [so-wcoac-85] *Precedes:* so-wcoac-86.

12672 Subhash Suri and J. O'Rourke. Worst-case optimal algorithms for constructing visibility polygons with holes. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 14–23, 1986. [so-wcoac-86] *Keywords:* visibility. *Succeeds:* so-wcoac-85. *Cites:* aaghi-vpses-85, c-iies-84, cg-vippg-85, e-eacwv-84, ea-lacvp-81, ghlst-ltavs-86, aaghi-vdp-86, ll-cvpe-86, m-wcohs-87, w-cvgnl-85, so-wcoac-85, g-ttn-66, ZZZ.

S. Suri. See also [122–125,152–154,160, 198, 212, 213, 265, 266, 275, 276, 292, 293, 302, 311–313, 548, 801, 802, 968, 1813, 2554, 4264, 4265, 4270, 4271, 6377, 6855, 6864–6883, 8705, 8706, 9191–9193, 9372, 9731, 9732, 9744–9748, 9811–9817, 10418, 10419, 11508–11510, 12742, 13885].

D. Surla. See also [79].

12673 H. J. Sussman. Shortest 3-dimensional paths with a prescribed curvature bound. In *Proc. 34th IEEE Conf. Decision Control*, pages 3306–3311, 1995. [s-s3dpp-95] *Keywords:* curvature-constrained shortest paths.

H. Sussmann. See also [12375, 12378].

12674 H. J. Sussmann and G. Tang. Shortest paths for the Reeds-Shepp car: A worked out example of the use of geometric techniques in nonlinear optimal control. Research Report SYCON-91-10, Rutgers University, New Brunswick, NJ, 1991. [st-sprsc-91]

Y. J. Sussmann. See also [1930, 8032].

U. W. Suter. See also [9876].

12675 I. E. Sutherland. *Sketchpad: A man-machine graphical communication system.* PhD thesis, Massachusetts Inst. Tech., Cambridge, MA, January 1963. [s-smmgc-63] *Keywords:* doctoral thesis.

12676 I. E. Sutherland and G. W. Hodgman. Reentrant polygon clipping. *Commun. ACM*, 17:32–42, 1974. [sh-rpc-74]

12677 I. E. Sutherland, R. F. Sproull, and R. A. Schumacker. A characterization of ten hidden-surface algorithms. *ACM Comput. Surv.*, 6(1):1–55, March 1974. [sss-cthsa-74]

J. Sutherland. See also [5212].

H. Suwanda. See also [9977].

12678 A. Suzuki. An incremental algorithm for the farthest Voronoi diagram. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 43, 1989. [s-iafvd-89]

12679 A. Suzuki and M. Iri. Approximation of a tessellation of the plane by a Voronoi diagram. *J. Oper. Res. Soc. Japan*, 29:69–96, 1986. [si-atpvd-86]

A. Suzuki. See also [10260].

12680 H. Suzuki, T. Akama, and T. Nishizeki. Finding Steiner forests in planar graphs. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 444–453, 1990. [san-fsfpg-90]

H. Suzuki. See also [7419, 7420, 8425, 8426, 12710, 12711].

12681 I. Suzuki and M. Yamashita. Designing multi-link robot arms in a convex polygon. *Internat. J. Comput. Geom. Appl.*, 6:461–486, 1996. [sy-dmlra-96]

12682 I. Suzuki and M. Yamashita. Searching for a mobile intruder in a polygonal region. *SIAM J. Comput.*, 21:863–888, 1992. [sy-smipr-92]

I. Suzuki. See also [3601, 12631, 13746].

T. Suzuki. See also [10034].

O. Švestka. See also [828].

12683 Petr Švestka and Mark H. Overmars. Motion planning for car-like robots using a probabilistic learning approach. *Internat. J. Robot. Res.*, 16(2):119–143, April 1997. [so-mpclr-95]

12684 Petr Švestka and Jules Vleugels. Exact motion planning for tractor-trailer robots. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 2445–2450, 1995. [sv-emptt-95]

P. Švestka. See also [829, 4261, 7927, 10505].

A. Swami. See also [323, 325].

R. Swaminathan. See also [2835, 2836].

V. Swaminathan. See also [900].

M. N. S. Swamy. See also [7514–7517].

S. Swamy. See also [352].

12685 Kurt Swanson. An optimal algorithm for roundness determination on convex polygons. In *Proc. 3rd Workshop Algorithms Data Struct.*, volume 709 of *Lecture Notes Comput. Sci.*, pages 601–609. Springer-Verlag, 1993. [s-oardc-93]

12686 K. Swanson, D. T. Lee, and Vanban L. Wu. An optimal algorithm for roundness determination on convex polygons. *Comput. Geom. Theory Appl.*, 5:225–235, 1995. [slw-oardc-95]

K. Swanson. See also [672, 673].

12687 G. F. Swart. An $O(\log n)$ time algorithm for finding bridge points of convex arcs. Report ??, Dept. Comput. Sci., Univ. Washington, Seattle, WA, 1980. [s-otafb-80]

12688 G. F. Swart. Finding the convex hull facet by facet. *J. Algorithms*, 6:17–48, 1985. [s-fchff-85]

Z. Sweedyk. See also [884].

P. Sweeney. See also [555].

12689 P. E. Sweeney and E. R. Paternoster. Cutting and packing problems: A categorized, application-orientated research bibliography. *J. Oper. Res. Society*, 43(7):691–706, 1992. [sp-cppca-92]

12690 R. E. Sweet. Empirical estimates of program entropy. Technical Report STAN-CS-78-698, Department of Computer Science, Stanford University, 1978. [s-eepe-78] *Keywords:* graph drawing.

W. Swelden. See also [8582].

G. Świątek. See also [4715, 4716, 7506].

W. Swindell. See also [5982].

12691 H. P. F. Swinnerton-Dyer. The number of lattice points on a convex curve. *J. Number Theory*, 6:128–135, 1974. [s-nlpcc-74]

12692 J. B. Sydney, S. J. Sydney, and J. Urrutia. Circle orders, n-gon orders and the crossing number for partial orders. *Order*, 5:1–10, 1988. [ssu-congo-88]

S. J. Sydney. See also [12692].

O. Sýkora. See also [3613, 4210, 12011, 12012].

12693 J. J. Sylvester. A question on the geometry of situation. *Quart. J. Math.*, 1:79, 1857. [s-qgs-57]

12694 J. J. Sylvester. Mathematical question 11851. *Educational Times*, 59:98, 1893. [s-mq1-93]

12695 J. J. Sylvester. On Poncelet's approximate valuation of surd forms. *Philos. Magazine*, XX:203–222, 1860. [s-pavsf-60]

A. Symvonis. See also [4598, 9547, 9548].

H. Syta. See also [4910].

12696 S. Szabó. A reduction of lattice tiling by translates of a cubical cluster. *Discrete Comput. Geom.*, 2:33–36, 1987. [s-rlttc-87]

N. Szafran. See also [8445].

I. Szalkai. See also [6564].

M. Szegedy. See also [887, 8988, 10531, 10532].

12697 L. A. Székely. Crossing numbers and hard Erdős problems in discrete geometry. *Combinatorics, Probability and Computing*, 6:353–358, 1997. [s-cnhep-97]

L. A. Székely. See also [8260, 12011–12013].

G. Szekeres. See also [5002, 5003].

12698 R. Szeliski and D. Tonnesen. Surface modeling with oriented particle systems. *Comput. Graph.*, 26(2):185–194, July 1992. [st-smops-92]

12699 E. Szemerédi. On a problem of Davenport and Schinzel. *Acta Arithmetica*, 25:213–224, 1974. [s-pds-74]

12700 E. Szemerédi and W. Trotter, Jr. A combinatorial distinction between Euclidean and projective planes. *European J. Combin.*, 4:385–394, 1983. [st-cdbep-83]

12701 E. Szemerédi and W. Trotter, Jr. Extremal problems in discrete geometry. *Combinatorica*, 3:381–392, 1983. [st-epdg-83]

E. Szemerédi. See also [388–392, 2841, 3453, 3454, 5567, 5568, 7883, 10543–10545, 12409].

T. Szendrényi. See also [4004].

E. Szeto. See also [13258].

12702 László Szirmay-Kalos. Dynamic layout algorithm to display general graphs. In Paul Heckbert, editor, *Graphics Gems IV*, pages 505–517. Academic Press, Boston, MA, 1994. [s-dladg-94] *Keywords:* cartography, layout, graph visualization, physically-based methods. *Annote:* Gives code that finds aesthetic arrangements for a graph. This could be used to graphically display data structures. Contains C++ code.

K. Szkatula. See also [9334].

12703 H. Szu. Holographic coordinate transformations and optical computing. In *Optical and Hybrid Computing, Proc. SPIE*, volume 634, pages 480–484, 1986. [s-hctoc-86]

J. L. Szwarcfiter. See also [7409].

T. Szymacha. See also [3284, 3695].

12704 A. Szymczak, D. King, and J. Rossignac. An Edgebreaker-based efficient compression scheme for regular meshes. *Comput. Geom. Theory Appl.*, 20:53–68, 2001. [skr-ebecs-01]

12705 Serge Tabachnikov. *Billiards*. Panoramas et Synthéses. Société Mathématique de France, 1995. [t-b-95]

M. Tachibana. See also [10250].

12706 B. Tagansky. A new technique for analyzing substructures in arrangements. Unpublished manuscript, Tel-Aviv University, 1994. [t-ntasa-94]

12707 Boaz Tagansky. A new technique for analyzing substructures in arrangements. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 200–210, 1995. [t-ntasa-95] *Keywords:* cell complexity, zones, levels in arrangements, vertical decomposition. *Cites:* aacfi-92, ass-oletd-94, aps-zsha-93, as-tsbac-90, ascar-94, ast-ucptd-97, as-tmp3s-94, bsty-vdhdc-95, ckstw-vdl3s-95, c-narsc-87, cs-arscg-89, bds-lric-94, bgh-vdt3s-94, e-acg-87, e-ueplf-89, ess-ztha-93, ghms-vdahf-95, gs-caa-93, hs-nblet-94, hs-atarr-95, hs-ndssg-86, m-cgitr-93, ps-ueplf-89, s-atubl-94, sa-dsstg-95, ws-prnds-88, ZZZ.

12708 Boaz Tagansky. A new technique for analyzing substructures in arrangements of piecewise linear surfaces. *Discrete Comput. Geom.*, 16:455–479, 1996. [t-ntasa-96] *Succeeds:* t-ntasa-95. *Annote:* Special Issue: ACM Symposium on Computational Geometry, Vancouver.

12709 B. Tagansky. *The Complexity of Substructures in Arrangements of Surfaces*. Ph.D. thesis, Tel Aviv University, Tel Aviv, 1996. [t-csas-96] *Keywords:* doctoral thesis.

Boaz Tagansky. See also [877, 2215, 2216, 3166, 3167].

S. Tagawa. See also [12638].

A. M. Tai. See also [5832, 5833].

M. Taix. See also [7449, 8519].

M. Takagi. See also [11530].

H. Takahashi. See also [7665, 10518].

12710 Jun ya Takahashi, Hitoshi Suzuki, and Takao Nishizeki. Finding shortest non-crossing rectilinear paths in plane regions. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 98–107. Springer-Verlag, 1993. [tsn-fsncr-93] *Precedes:* tsn-sncrp-97.

12711 J.-Y. Takahashi, H. Suzuki, and T. Nishizeki. Shortest non-crossing rectilinear paths in plane regions. *Internat. J. Comput. Geom. Appl.*, 7:419–436, 1997. [tsn-sncrp-97] *Succeeds:* tsn-fsncr-93.

12712 S. Takahashi, T. Ikeda, Y. Shinagawa, T. L. Kunii, and M. Ueda. Algorithms for extracting correct critical points and constructing topological graphs from discrete geographical elevation data. In *Eurographics'95*, volume 14, pages C–181–C–192, 1995. [tiskuaeccp-95]

J. Takanami. See also [25].

N. Takayama. See also [10279].

F. Takens. See also [1336].

12713 Fumihiko Takeuchi and Hiroshi Imai. Enumerating triangulations for products of two simplices and for arbitrary configurations of points. In *Proc. 3rd Ann. Internat. Conf. Computing and Combinatorics*, volume 1276 of *Lecture Notes Comput. Sci.*, pages 470–481. Springer-Verlag, 1997. [ti-etpts-97]

Fumihiko Takeuchi. See also [8017].

12714 R. Takiyama and N. Ono. A least square error estimation of the center and radii of concentric arcs. *Pattern Recogn. Lett.*, 10:237–242, 1989. [to-lseec-89a]

C. Takizawa. See also [3190].

12715 A. Tal, B. Chazelle, and D. Dobkin. The new-jersey line-segment saw massacre. In *Proc. 8th Annu. ACM Sympos. Comput. Geom.*, 1992. [tcd-njlsm-92] *Keywords:* video review.

12716 A. Tal and D. Dobkin. Gasp: A system for visualizing geometric algorithms. In *Visualization '94*, 1994. [td-gsvga-94]

12717 A. Tal and D. Dobkin. Gasp: A system to facilitate animating geometric algorithms. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 388–389, 1994. [td-gsfag-94] *Keywords:* video review. *Cites:* b-aops-94, ce-oails-92, dg-crd-94, dk-ladsc-85, dk-dsppu-90, dt-buph-93, r-mdbp-91, s-mdbp-93, s-votcb-93, ss-otcbt-93, ZZZ.

12718 A. Tal and D. P. Dobkin. Visualization of geometric algorithms. *IEEE Trans. Visualization and Computer Graphics*, 1(2):194–204, 1995. [td-vga-95] *Keywords:* algorithm animation, visualization, three-dimensional geometric algorithms. *Abstract:* This paper investigates the visualization of geometric algorithms. We discuss how limiting the domain makes it possible to create a system that enables others to use it easily. Knowledge about the domain can be very helpful in building a system which automates large parts of the user's task. A system can be designed to isolate the user from any concern about how graphics is done. The application need only specify "what" happens and need not be concerned with "how" to make it happen on the screen. We develop a conceptual model and a framework for experimenting with it. We also present a system, GASP, which implements this model. GASP allows quick generation of three-dimensional geometric algorithm visualizations, even for highly complex algorithms. It also provides a visual debugging facility for geometric computing. We show the utility of GASP by presenting a variety of examples.

Ayellet Tal. See also [722, 1404, 2942, 2947, 2948, 4272, 4316, 12168, 12653].

M. Talamo. See also [1118, 1512, 1513, 1515, 3717, 5444–5448, 5729, 10058].

D. Tallot. See also [3742].

Dafna Talmor. See also [2075, 2076, 2081, 9621, 9622].

12719 T. K. H. Tam and C. G. Armstrong. 2D finite element mesh generation by medial axis subdivision. *Advances in Engineering Software and Workstations*, 13(5–6):313–324, September 1991. [ta-2dfem-91] *Keywords:* two-dimensional finite element mesh generation, medial axis subdivisions, quadrilateral elements, Delaunay triangulation, Voronoi diagrams, transfinite mapping techniques. *Annote:* Vd of shape is approximated by using extra points on the boundary. Vd is used to decompose shape into simple regions for meshing. *Abstract:* An algorithm for the automatic generation of two-dimensional finite element meshes using quadrilateral elements has been demonstrated. The technique uses information derived from the medial axis of a 2D region, the locus of the centre of an inscribed disc of maximal diameter as it rolls around the region interior. Using this information, an arbitrarily complex object can be subdivided into a series of meshable subregions. Within these subregions relatively conventional meshing patterns are then generated. The resulting meshes are well structured and flow smoothly round the object boundary with minimum mesh irregularity. (Author abstract) 31 Refs.

12720 T. K. H. Tam and C. G. Armstrong. Finite element mesh control by integer programming. *Internat. J. Numer. Methods Eng.*, 36:2581–2605, 1993. [ta-femci-93]

K. Tamaguchi. See also [5652].

12721 Hisao Tamaki and Takeshi Tokuyama. A characterization of planar graphs by pseudoline arrangements. In *Proc. 8th Annu. Internat. Sympos. Algorithms Comput.*, volume 1350 of *Lecture Notes Comput. Sci.*, pages 123–132. Springer-Verlag, 1997. [tt-cpgpl-97]

12722 Hisao Tamaki and Takeshi Tokuyama. How to cut pseudo-parabolas into segments. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 230–237, 1995. [tt-hcpps-95] *Keywords:* levels. *Cites:* a-sdcgp-85, b-gtic-79, cs-arscg-89, e-acg-87, ew-mnemf-86, e-glbpm-95, g-bpstp-79, gs-caa-93, ki-tnprc-83, ks-empac-90, kti-mmstl-92, l-roifc-75, m-gofvc-94, m-lblmp-91, s-ksacs-91, w-mt-76, w-mksfs-86, ZZZ.

12723 Hisao Tamaki and Takeshi Tokuyama. How to cut pseudo-parabolas into segments. *Discrete Comput. Geom.*, 19:265–290, 1998. [tt-hcpps-98]

H. Tamaki. See also [219,452,972,2554, 7424].

12724 R. Tamassia. A dynamic data structure for planar graph embedding. Report UILU-ENG-87-2265, Coordinated Sci. Lab., Univ. Illinois, Urbana, IL, 1987. [t-ddspg-87]

12725 R. Tamassia. A dynamic data structure for planar graph embedding. In T. Lepisto and A. Salomaa, editors, *Automata, Languages and Programming (Proc. 15th ICALP)*, volume 317 of *Lecture Notes Comput. Sci.*, pages 576–590. Springer-Verlag, 1988. [t-ddspg-88]

12726 Roberto Tamassia. A unified approach to dynamic point location, ray shooting, and shortest paths in planar maps. In *Abstracts 8th European Workshop Comput. Geom.*, page 39. Utrecht University, 1992. [t-uadpl-92]

12727 R. Tamassia. Advances in the theory and practice of graph drawing. *Theoret. Comput. Sci.* to appear. [t-atpgd-] *Keywords:* graph drawing, survey.

12728 R. Tamassia. An incremental reconstruction method for dynamic planar point location. *Inform. Process. Lett.*, 37:79–83, 1991. [t-irmdp-91] *Keywords:* point location, triangulation, computational geometry, planar point location. *Abstract:* We present a fully dynamic technique for point location in triangulations that allows a tradeoff between query and update time, and can be used in conjunction with any of the known static point location data structures. Let S be a triangulation whose current number of vertices is n. We show that for any smooth nondecreasing integer function $b(n)$ with $2 \leq b(n) \leq \sqrt{n}$, there exists a dynamic point location data structure for S with space $O(n)$, query time $O((\log^2 n)/\log b(n))$, and update time $O((\log^2 n)b(n)/\log b(n))$. (Author abstract) 15 Refs.

12729 R. Tamassia. Constraints in graph drawing. In *Proc. Int. Workshop on Constraints for Graphics and Visualization*, page 85, 1995. [t-cgd-95] *Keywords:* graph drawing, constraints.

12730 R. Tamassia. Constraints in graph drawing algorithms. *Constraints*, 3(1):89–122, 1998. [t-cgd-98] *Keywords:* graph drawing, constraints, survey.

12731 R. Tamassia. Data structures. *ACM Comput. Surv.*, 28(1):23–26, 1996. [t-ds-96] *URL:* http://www.cs.brown.edu/cgc/papers/t-ds-96.ps.gz. *Keywords:* data structures, survey.

12732 R. Tamassia. Drawing algorithms for planar st-graphs. Technical report, Brown Univ. [t-dapsg] *Precedes:* t-dapsg-90.

12733 R. Tamassia. Drawing algorithms for planar st-graphs. *Australasian Journal of Combinatorics*, 2:217–235, 1990. [t-dapsg-90] *Keywords:* graph drawing. *Succeeds:* t-dapsg.

12734 Roberto Tamassia. Graph drawing. http://www.cs.brown.edu/people/rt/gd.html. [t-gd-] *URL:* http://www.cs.brown.edu/people/rt/gd.html.

12735 R. Tamassia. Graph drawing. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 44, pages 815–832. CRC Press LLC, Boca Raton, FL, 1997. [t-gd-97] *URL:* http://www.cs.brown.edu/cgc/papers/t-gd-97.ps.gz. *Keywords:* graph drawing, survey.

12736 Roberto Tamassia. Graph drawing. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 937–971. Elsevier Science Publishers B.V. North-Holland, Amsterdam, 2000. [t-gd-00] *Keywords:* graph drawing, survey. *Annote:* Chapter 21 of su-hcg-00.

12737 R. Tamassia. Implementing algorithms and data structures: an educational and research perspective. In *Proc. Annu. Internat. Sympos. Algorithms Comput.*, Lect. Not. Comput. Sci. Springer-Verlag, 1998. [t-iadse-98]

12738 R. Tamassia. New layout techniques for entity-relationship diagrams. In *Proc. 4th Internat. Conf. on Entity-Relationship Approach*, pages 304–311, 1985. [t-nlter-85] *Keywords:* graph drawing.

12739 R. Tamassia. On embedding a graph in the grid with the minimum number of bends. *SIAM J. Comput.*, 16(3):421–444, 1987. [t-eggmn-87] *Keywords:* graph drawing.

12740 R. Tamassia. On-line planar graph embedding. *J. Algorithms*, 21(2):201–239, 1996. [t-olpge-96] *Keywords:* graph drawing, planar, embedding, dynamic. *Succeeds:* t-ddspg-88.

12741 R. Tamassia. Planar orthogonal drawings of graphs. In *Proc. IEEE Internat. Sympos. on Circuits and Systems*, 1990. [t-podg-90] *Keywords:* graph drawing.

12742 R. Tamassia, P. Agarwal, N. Amato, D. Chen, D. Dobkin, R. Drysdale, S. Fortune, M. Goodrich, J. Hershberger, J. O'Rourke, F. P. Preparata, J.-R. Sack, S. Suri, I. Tollis, J. Vitter, and S. Whitesides. Strategic directions in computational geometry. *ACM Comput. Surv.*, 28(4):591–606, 1996. [taacddfdhopsstvw-sdcg-96] *Annote:* report of working group formed as part of ACM Workshop on Strategic Directions in Computing Research.

12743 R. Tamassia and B. Cantrill. Data structures. In A. B. Tucker Jr., editor, *Handbook of Computer Science and Engineering*, pages 86–110. CRC Press, 1997. [tc-ds-] *URL:* http://www.cs.brown.edu/cgc/papers/tc-ds-.ps.gz. *Keywords:* data structures, survey.

12744 R. Tamassia, G. Di Battista, and C. Batini. Automatic graph drawing and readability of diagrams. *IEEE Trans. Syst. Man Cybern.*, SMC-18(1):61–79, 1988. [tdb-agdrd-88] *Keywords:* graph drawing.

12745 R. Tamassia, G. Liotta, and F. P. Preparata. Robust proximity queries in implicit Voronoi diagrams. In *Proc. 8th Canad. Conf. Comput. Geom.*, page 1, 1996. [tlp-rpqiv-96] *Annote:* Invited Lecture by Roberto Tamassia.

12746 Roberto Tamassia et al. Strategic directions in computational geometry. *ACM Comput. Surv.*, 28(4):591–606, 1996. http://www.cs.brown.edu/people/rt/sdcr/report.html. [t-sdcg-96] *URL:* http://www.cs.brown.edu/people/rt/sdcr/report.html. *Annote:* short form of taacddfdhopsstvw-sdcg-96.

12747 R. Tamassia and F. P. Preparata. Dynamic maintenance of planar digraphs, with applications. Report UILU-ENG-88-2227, Coordinated Sci. Lab., Univ. Illinois, Urbana, IL, 1988. [tp-dmpda-88] *Precedes:* tp-dmpda-90.

12748 R. Tamassia and F. P. Preparata. Dynamic maintenance of planar digraphs, with applications. *Algorithmica*, 5:509–527, 1990. [tp-dmpda-90] *Succeeds:* tp-dmpda-88.

12749 R. Tamassia and I. G. Tollis. A unified approach to visibility representations of planar graphs. *Discrete Comput. Geom.*, 1(4):321–341, 1986. [tt-uavrp-86] *Keywords:* graph drawing.

12750 R. Tamassia and I. G. Tollis. Centipede graphs and visibility on a cylinder. In G. Tinhofer and G. Schmidt, editors, *Graph Theoretic Concepts in Computer Science: Proc. Internat. Workshop WG '86 (Bernierd June 1986)*, volume 246 of *Lecture Notes Comput. Sci.*, pages 252–263. Springer-Verlag, 1987. [tt-cgvc-87] *Keywords:* graph drawing.

12751 R. Tamassia and I. G. Tollis. Efficient embedding of planar graphs in linear time. In *Proc. IEEE Internat. Sympos. on Circuits and Systems*, pages 495–498, 1987. [tt-eepgl-87] *Keywords:* graph drawing.

12752 R. Tamassia and I. G. Tollis, editors. *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1995. [tt-gd-95] *Keywords:* graph drawing.

12753 R. Tamassia and I. G. Tollis. Planar grid embedding in linear time. *IEEE Trans. Circuits Syst.*, CAS-36(9):1230–1234, 1989. [tt-pgelt-89] *Keywords:* graph drawing.

12754 R. Tamassia and I. G. Tollis. Plane representations of graphs and visibility between parallel segments. Report UILU-ENG 85-2215, Coordinated Sci. Lab., Univ. Illinois, Urbana, IL, 1985. [tt-prgvb-85]

12755 R. Tamassia and I. G. Tollis. Reachability in planar digraphs with one source and one sink. *Theoret. Comput. Sci. A*, 119:331–343, 1993. [tt-rpdos-93]

12756 R. Tamassia and I. G. Tollis. Representations of graphs on a cylinder. *SIAM J. Discrete Math.*, 4(1):139–149, 1991. [tt-rgc-91]

12757 R. Tamassia and I. G. Tollis. Tessellation representations of planar graphs. In *Proc. 27th Allerton Conf. Commun. Control Comput.*, pages 48–57, 1989. [tt-trpg-89] *Keywords:* graph drawing.

12758 R. Tamassia, I. G. Tollis, and J. S. Vitter. Lower bounds and parallel algorithms for planar orthogonal grid drawings. In *Proc. IEEE Symposium on Parallel and Distributed Processing*, pages 386–393, 1991. [ttv-lbpap-91] *Keywords:* graph drawing.

12759 R. Tamassia, I. G. Tollis, and J. S. Vitter. Lower bounds for planar orthogonal drawings of graphs. *Inform. Process. Lett.*, 39:35–40, 1991. [ttv-lbpod-91] *Keywords:* graph drawing.

12760 R. Tamassia and L. Vismara. A case study in algorithm engineering for geometric computing. Technical Report CS-97-18, Center for Geometric Computing, Dept. Computer Science, Brown Univ., December 1997. [tv-csaeg-97] *URL:* ftp://ftp.cs.brown.edu/pub/techreports/97/cs97-18.ps.Z.

12761 Roberto Tamassia, Luca Vismara, and James E. Baker. A case study in algorithm engineering for geometric computing. In *Proc. Workshop on Algorithm Engineering*, pages 136–145, September 1997. [tvb-csaeg-97] *URL:* http://www.dsi.unive.it/~wae97/proceedings/ONLY_PAPERS/pap14.ps.gz.

12762 R. Tamassia and J. S. Vitter. Optimal cooperative search in fractional cascaded data structures. In *Proc. ACM Sympos. Parallel Algorithms Architect.*, pages 307–316, 1990. [tv-ocsfc-90] *Keywords:* point location, fractional cascading. *Precedes:* tv-ocsfc-96.

12763 R. Tamassia and J. S. Vitter. Optimal cooperative search in fractional cascaded data structures. *Algorithmica*, 15(2), 1996. [tv-ocsfc-96] *Keywords:* point location, fractional cascading, cooperative search. *Succeeds:* tv-ocsfc-90.

12764 R. Tamassia and J. S. Vitter. Optimal parallel algorithms for transitive closure and point location in planar structures. Technical Report CS-89-20, Dept. Comput. Sci., Brown Univ., Providence, RI, March 1989. [tv-opatc-89t]

12765 R. Tamassia and J. S. Vitter. Optimal parallel algorithms for transitive closure and point location in planar structures. In *Proc. ACM Sympos. Parallel Algorithms Architect.*, pages 399–408, 1989. [tv-opatc-89] *Keywords:* graph drawing. *Precedes:* tv-ptcpl-91.

12766 R. Tamassia and J. S. Vitter. Optimal parallel algorithms for transitive closure and point location in planar structures. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 169–178, Fukuoka, Japan, November 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [tv-opatc-89i] *Keywords:* graph drawing. *Annote:* invited paper.

12767 R. Tamassia and J. S. Vitter. Parallel transitive closure and point location in planar structures. *SIAM J. Comput.*, 20(4):708–725, 1991. [tv-ptcpl-91] *Keywords:* graph drawing. *Succeeds:* tv-opatc-89.

R. Tamassia. See also [175, 1309–1313, 1400, 1401, 1508, 1512–1515, 1539, 1855–1857, 1864–1866, 2434–2441, 2811, 3174, 3178, 3179, 3183–3189, 3275, 3423–3425, 3428–3433, 3630, 3631, 3938, 4036, 4037, 4118–4130, 4144–4163, 4586–4588, 4599, 4600, 4962–4964, 5193, 5777–5792, 5843, 5844, 6137, 6171, 6172, 6193–6198, 7605, 7720, 7748–7750, 8877–8881, 9657, 9665, 10890–10896, 11527–11529, 13256].

12768 A. Tamir. A class of balanced matrices arising from location problems. *SIAM J. Algebraic Discrete Methods*, 4:363–370, 1983. [t-cbmal-83]

12769 A. Tamir. Improved complexity bounds for center location problems on networks by using dynamic data structures. *SIAM J. Discrete Math.*, 1:377–396, 1988. [t-icbcl-88]

12770 A. Tamir. On the complexity of some classes of location problems. *Transp. Sci.*, 26:352–354, 1992. [t-csclp-92]

12771 A. Tamir. Problem $4-2$. In *4th Computational Geometry Day*. New York Univ., 1987. [t-p4-87]

12772 A. Tamir and Joseph S. B. Mitchell. A maximum b-matching problem arising from median location models with applications to the roommates problem. Technical report, 1995. [tm-mbmpa-95] *Keywords:* geodesic distances, maximum weight matching, odd cycles, shortest paths. *Precedes:* tm-mbmpa-98.

12773 A. Tamir and Joseph S. B. Mitchell. A maximum b-matching problem arising from median location models with applications to the roommates problem. *Math. Program.*, 80:171–194, 1998. [tm-mbmpa-98] *Keywords:* geodesic distances, maximum weight matching, odd cycles, shortest paths. *Succeeds:* tm-mbmpa-95.

A. Tamir. See also [1888, 2830, 9433–9436].

12774 M. Tamminen. Geometric data structures: summary of project plan for the Finnish Academy. *??*, ??:??, ?? [t-gdssp-??]

12775 M. Tamminen. The extendible cell method for closest point problems. *BIT*, 22:27–41, 1982. [t-ecmcp-82]

12776 M. Tamminen. The extendible cell method for fast geometric access. Report HTKK-TKP-A20, Helsinki Univ. Tech., Espoo, Finland, 1980. [t-ecmfg-80]

12777 M. Tamminen, W. K. Luk, P. Sipala, L. S. Woo, and C. K. Wong. Constructing maximal slicings from geometry. *Acta Inform.*, 23:267–288, 1986. [tlsww-cmsg-86]

12778 M. Tamminen and H. Samet. Efficient octree conversion by connectivity labeling. *Comput. Graph.*, 18(3):43–51, July 1984. Proc. SIGGRAPH '84. [ts-eoccl-84]

M. Tamminen. See also [4232, 8237, 11599–11605, 12913].

Filippo Tampieri. See also [8907].

A. Tamura. See also [5664–5667].

D. Tan. See also [5977].

12779 H. L. Tan et al. Inspection of machine parts by back-projection reconstruction. In *Proc. IEEE Robotics and Automat.*, pages 503–508, April 1987. [t-impbp-87]

J. J. M. Tan. See also [8884].

R. Tan. See also [1318].

S. Tan. See also [7200].

S. T. Tan. See also [2789, 13846].

12780 T. S. Tan. An optimal bound for conforming quality triangulations. Technical Report, Det. Inform. Sys. & Comput. Sci., National Univ. Singapore, Singapore, 1994. [t-obcqt-94]

12781 T.-S. Tan. An optimal bound for high-quality conforming triangulations. *Discrete Comput. Geom.*, 15(2):169–193, March 1996. [t-obhqc-96]

12782 T.-S. Tan. An optimal bound for quality conforming triangulations. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 240–249, 1994. [t-obqct-94] *Cites:* ba-acfem-76, bl-tfds-84, bde-tpwla-92, beg-pgmg-90, bepsntp-92, be-mgot-92i, bmr-lsntp-94, b-srpcs-88, c-atapd-74, d-dptd-91, et-ubcdt-93, etw-otama-92, g-eblit-75, l-scsi-77, ms-cinap-92, m-mgpqb-93, m-rtpsl-93, m-fctwm-94, r-nsaq2-93, t-otdt-93, t-obcqt-94, ZZZ.

12783 T. S. Tan. *Optimal two-dimensional triangulations*. PhD thesis, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1993. Technical Report UIUCDCS-R-92-1783. [t-otdt-93] *Keywords:* doctoral thesis.

Tiow Seng Tan. See also [1798–1800, 4769–4774].

12784 Xuehou Tan. On optimal bridges between two convex regions. *Inform. Process. Lett.*, 76:163–168, 2000. [t-obbtc-00]

12785 Xuehou Tan and Tomio Hirata. Constructing shortest watchman routes by divide-and-conquer. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 68–77. Springer-Verlag, 1993. [th-cswrd-93]

12786 Xuehou Tan and Tomio Hirata. On the time analysis of watchman route algorithms. In *Algorithm Workshop of the Information Processing Society of Japan*, pages 53–60, 1997. [th-tawra-97] *Keywords:* watchman route, visibility path. *Comments:* Claims to address and fix an error in the analysis of time complexities in earlier watchman route algorithms, as pointed out by Hammar and Nilsson; this issue is still controversial. *Annote:* IPS of Japan Technical Report 97-AL-55-7.

12787 X. Tan and T. Hirata. Shortest safari routes in simple polygon. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 523–531. Springer-Verlag, 1994. [th-ssrsp-94]

12788 X. Tan, T. Hirata, and Y. Inagaki. Corrigendum to "an incremental algorithm for constructing shortest watchman routes". *Internat. J. Comput. Geom. Appl.*, 9(3):319–323, 1999. [thi-ciacs-99] *Abstract:* This corrigendum fixes an error that appears in the previously published papers concerning the watchman route problem. A modification to our incremental watchman route algorithm previously presented in this journal is made, which gives an $O(n^4)$ time solution to the watchman route problem.

12789 X. H. Tan, T. Hirata, and Y. Inagaki. An incremental algorithm for constructing shortest watchman routes. In *Proc. 2nd Annu. SIGAL Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 163–175. Springer-Verlag, 1991. [thi-iacsw-91] *Precedes:* thi-iacsw-93.

12790 X. H. Tan, T. Hirata, and Y. Inagaki. An incremental algorithm for constructing shortest watchman routes. *Internat. J. Comput. Geom. Appl.*, 3(4):351–365, 1993. [thi-iacsw-93] *Succeeds:* thi-iacsw-91.

12791 X.-H. Tan, T. Hirata, and Y. Inagaki. Reporting intersections of c-oriented polygons. *Trans. IECE Japan*, E73(11):1886–1892, 1990. [thi-ricop-90]

12792 X.-H. Tan, T. Hirata, and Y. Inagaki. Spatial point location and its applications. In *Proc. 1st Annu. SIGAL Internat. Sympos. Algorithms*, volume 450 of *Lecture Notes Comput. Sci.*, pages 241–250. Springer-Verlag, 1990. [thi-splia-90]

X.-H. Tan. See also [6944, 6945].

12793 H. Tanaka and D. H. Ballard. Extension of strip tree operations. Report ??, Dept. Comput. Sci., Univ. Rochester, Rochester, NY, 1980. [tb-esto-80]

K. Tanaka. See also [4628, 4629].

12794 Michikazu Tanaka and Takao Wachi. Computerized marker making. *Journal of The Textile Machinery Society of Japan*, 26(7):74–81, 1973. [tw-cmm-73]

H. Tanemura. See also [8422].

12795 M. Tanemura and M. Hasegawa. Geometrical models of territory I. models for synchronous and asynchronous settlement of territories. *Journal of Theoretical Biology*, 82:477–496, 1980. [th-gmt1m-80] *Annote:* VD as model of animal's territory. Centres move to equalise area. Circumcircle algorithm.

12796 M. Tanemura, T. Ogawa, and W. Ogita. A new algorithm for three-dimensional Voronoi tesselation. *J. Comput. Phys.*, 51:191–207, 1983. [too-natdv-83] *Annote:* Basic circumsphere algorithm (though calcs sphere centres). Compares times with Finney, Brostow algorithms.

P. Tanenbaum. See also [6135].

12797 P. J. Tanenbaum, M. T. Goodrich, and E. R. Scheinerman. Characterization and recognition of point-halfspace and related orders. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 234–245. Springer-Verlag, 1995. [tgs-crphr-95] *Keywords:* graph drawing, order, containment.

12798 P. J. Tanenbaum and S. Whitesides. Simultaneous dominance representations of multiple posets. Research Report 2624, INRIA, Sophia-Antipolis, BP93, 06902 Sophia-Antipolis, France, 1995. [tw-sdrmp-95]

Chi-Keung Tang. See also [3121].

12799 C. Y. Tang and R. C. T. Lee. Optimal speeding up of parallel algorithms based upon the divide and conquer strategy. *Inform. Sci.*, 32:173–186, 1984. [tl-osupa-84]

C. Y. Tang. See also [2848–2850,8885].

D. A. Tang. See also [12355, 12356].

G. Tang. See also [12674].

J. Tang. See also [12437].

J.-M. Tang. See also [12438].

12800 K. Tang, S. Y. Chou, L.-L. Chen, and T. C. Woo. Tetrahedral mesh generation for solids based on alternating sum of volumes. *Comput. Ind. Engin.*, 41(1):65–81, 1999. [tccw-tmgsb-99]

12801 K. Tang, M.-E. Wang, L.-L. Chen, S.-Y. Chou, T. C. Woo, and R. Janardan. Computing planar swept polygons under translation. *Comput. Aided Design*, 29(12):825–836, 1997. [twccwj-cpspt-97]

K. Tang. See also [3259].

12802 J. W. H. Tangelder, J. S. M. Vergeest, and M. H. Overmars. Interference-free nc machining using spatial planning and Minkowski operations. *Comput. Aided Design*, 30(4):277–286, April 1998. [tvo-ifnmu-98]

F. Tangerman. See also [5977].

P. A. Tanguy. See also [3735].

J. Tanida. See also [7430].

H. Taniguchi. See also [25].

12803 S. L. Tanimoto. A method for detecting structure in polygons. *Pattern Recogn.*, 13:389–394, 1981. [t-mdsp-81]

12804 S. L. Tanimoto. Image data structures. In S. L. Tanimoto and A. Klinger, editors, *Structured Computer Vision: Machine Perception through Hierarchical Computation Structures*, page ?? Academic Press, New York, NY, 1980. [t-ids-80]

12805 S. L. Tanimoto. Programming techniques for hierarchical parallel image processors. In K. Preston and L. Uhr, editors, *Multicomputers and Image Processing Algorithms*. Academic Press, 1982. [t-pthpi-82]

12806 S. L. Tanimoto and A. Klinger. *Structured Computer Vision: Machine Perception through Hierarchical Computation Structures*. Academic Press, 1980. [tk-scvmp-80]

S. L. Tanimoto. See also [5441, 7438, 7440].

12807 D. Tank and J. Hopfield. Simple "neural" optimization networks: an A/D converter, signal decision circuit, and a linear programming circuit. *IEEE Trans. Circuits Syst.*, 33:533–541, 1986. [th-snona-86]

D. Tank. See also [7110, 7111].

12808 S. Tarasov and M. Vyalyi. Some pl functions on surfaces are not height functions. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 113–118, 1997. [tv-spfsa-97] *Cites:* elr-ogdi-91, m-spcgt-92, bt-hftcp-75, r-mct-74, a-slddf-21, w-bzv-36, b-cpcep-67, dnf-mg-79, st-vig-38, m-mt-63, ass-ctsp-93, ZZZ.

12809 Sergey P. Tarasov. On hardness of roundness calculation. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 175–180, 1997. [t-hrc-97]

12810 E. Tardos. A strongly polynomial algorithm to solve combinatorial linear programs. *Oper. Res.*, 34:250–256, 1986. [t-spasc-86]

E. Tardos. See also [2861, 6013, 6014, 10189, 10190, 10792, 12167].

Gábor Tardos. See also [1598, 7832, 10546, 12082, 12083].

12811 R. Tarjan and U. Vishkin. An efficient parallel biconnectivity algorithm. *SIAM J. Comput.*, 14:862–874, 1985. [tv-epba-85]

R. Tarjan. See also [5689–5691].

12812 R. E. Tarjan. A class of algorithms which require nonlinear time to maintain disjoint sets. *J. Comput. Syst. Sci.*, 18:110–127, 1979. [t-cawrn-79]

12813 R. E. Tarjan. Algorithm design. *Commun. ACM*, 30(3):205–212, 1987. [t-ad-87] *Keywords:* graph drawing.

12814 R. E. Tarjan. Amortized computational complexity. *SIAM J. Algebraic Discrete Methods*, 6(2):306–318, 1985. [t-acc-85] *Keywords:* design of algorithms, data structuring, amortized analysis, survey paper.

12815 R. E. Tarjan. An improved algorithm for hierarchical clustering using strong components. *Inform. Process. Lett.*, 17:37–41, 1983. [t-iahcu-83]

12816 R. E. Tarjan. Complexity of monotone networks for computing conjunctions. *Ann. Discrete Math.*, 2:121–133, 1978. [t-cmncc-78]

12817 R. E. Tarjan. *Data Structures and Network Algorithms*, volume 44 of *CBMS-NSF Regional Conference Series in Applied Mathematics*. Society for Industrial and Applied Mathematics, Philadelphia, PA, 1983. [t-dsna-83] *Keywords:* graph drawing, disjoint sets, heaps, search trees, linking and cutting trees, minimum spanning trees, shortest paths, network flows, matchings, analysis of algorithms.

12818 R. E. Tarjan. Depth-first search and linear graph algorithms. *SIAM J. Comput.*, 1(2):146–160, 1972. [t-dfslg-72]

12819 R. E. Tarjan. Efficiency of a good but not linear set union algorithm. *J. ACM*, 22:215–225, 1975. [t-egbnl-75]

12820 R. E. Tarjan. Updating balanced search tree in $o(1)$ rotations. *Inf. Proc. Letters*, 16, 1983. [t-ubstr-83]

12821 R. E Tarjan and C. Van Wyk. Triangulation of a simple polygon. *SIAM J. Comput.*, ??, 1987. [tv-tsp-87]

12822 R. E. Tarjan and C. J. Van Wyk. A linear-time algorithm for triangulating simple polygons. In *Proc. 18th Annu. ACM Sympos. Theory Comput.*, pages 380–388, 1986. Erratum in SIGACT News 18:4 (1987), 63. [tv-ltats-86] *Keywords:* design of algorithms, triangulation, visibility, divide-and-conquer, finger search trees, amortized analysis. *Precedes:* tv-otats-88.

12823 R. E. Tarjan and C. J. Van Wyk. An $O(n \log\log n)$-time algorithm for triangulating a simple polygon. *SIAM J. Comput.*, 17:143–178, 1988. Erratum in 17 (1988), 106. [tv-otats-88] *Keywords:* design of algorithms, triangulation, visibility, divide-and-conquer, finger search trees, amortized analysis. *Succeeds:* tv-ltats-86.

12824 R. E. Tarjan and C. J. Van Wyk. An $O(n \log\log n)$ time algorithm for triangulating simple polygons. Report CS-TR-052-86, Princeton Univ., 1986. [tv-otats-86]

12825 R. E. Tarjan and M. Yannakakis. Simple linear time algorithms to test chordality of graphs, test acyclicity of hypergraphs, and selectively reduce acyclic hypergraphs. *SIAM J. Comput.*, 13:566–579, 1984. [ty-sltat-84]

R. E. Tarjan. See also [1619, 2105, 2522, 2642, 3129, 3356–3358, 3370–3372, 3398, 4203, 4204, 4425–4427, 4836, 4962–4964, 5071, 5072, 5569, 5570, 5671, 5672, 5692–5694, 5723, 5772, 5773, 5956, 5958, 6014–6016, 6375, 6397, 6398, 6689, 7052, 7053, 7086, 7087, 7806, 8064, 8088,8089,8142,8899,8901–8904,11146,11400, 11401, 11656, 12264–12269, 13149, 13500].

12826 T. G. Tarján. Complexity of lattice-configurations. *Studia Scientiarum Mathematicarum Hungarica*, 10:203–211, 1975. [t-clc-75]

12827 Alexander G. Tarnowski. Polynomial time solvability of some quillotine cutting stock problems. In *Proc. 3rd Twente Workshop on Graphs and Combinatorial Optimization*, page ??, June 1993. [t-ptssq-93]

12828 A. Tarski. *A decision method for elementary algebra and geometry*. Univ. of California Press, Berkeley, CA, 1951. [t-dmeag-51]

Y. Tarui. See also [10034].

Michael Taschwer. See also [367, 377].

E. Tassinari. See also [2633, 4123–4129].

12829 L. Tassiulas. Worst case length of nearest neighbor tours for the Euclidean traveling salesman problem. *SIAM J. Discrete Math.*, 10:171–179, 1997. [t-wclnn-97]

M. Tasumi. See also [1845].

S. Tate. See also [11108].

12830 S. R. Tate and K. Xu. General-purpose spatial decomposition algorithms: Experimental results. In *Proc. 2nd Workshop Algorithm Eng. Exper.*, pages 197–215, 2000. [tx-gpsda-00]

Stephen R. Tate. See also [7761, 7762, 11134].

12831 G. Taubin, A. Guéziec, W. Horn, and F. Lazarus. Progressive forest split compression. In *Proc. SIGGRAPH '98*, Computer Graphics Proceedings, Annual Conference Series, July 1998. [tghl-pfsc-98]

12832 G. Taubin and J. Rossignac. Geometric compression through topological surgery. Technical Report RC-20340, IBM T. J. Watson Research Center, Yorktown Heights, NY, January 1996. [tr-gctts-96]

12833 G. Taubin and J. Rossignac. Geometric compression through topological surgery. *ACM Trans. Graph.*, 17(2):84–115, April 1998. [tr-gctts-98] *Succeeds:* tr-gctts-96.

G. Taubin. See also [1843].

12834 Timothy J. Tautges, editor. *Proc. 4th International Meshing Roundtable*, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1995. Sandia National Laboratories. Also Sandia Report 95-2301. [t-p4imr-95] *Comments:* copies on request from Ann Sample, wasampl¡at¿sandia.gov.

12835 Timothy J. Tautges and Scott Mitchell. Whisker weaving: Invalid connectivity resolution and primal construction algorithm. In *Proc. 4th International Meshing Roundtable*, pages 115–128, Albuquerque, NM, 1995. Sandia National Laboratories. [tm-wwicr-95]

12836 T. J. Tautges, S. A. Mitchell, and T. D. Blacker. A connectivity based method for representing and constructing all-hexahedral finite element meshes, Part II: Whisker weaving. *Internat. J. Numer. Methods Eng.*, ??, ?? Submitted. [tmb-cbmrc-]

Timothy J. Tautges. See also [1661, 2061, 8942, 9761].

12837 M. S. Tawfik. An efficient algorithm for CSG to B-Rep conversion. In *ACM SIGGRAPH Sympos. on Solid Modeling Foundations and CAD/CAM Applications*, 1991. [t-eacbr-91]

12838 T. S. Tay. Review: problems on the rigidity of bar and joint frameworks and linkage of rigid bodies. *Structural Topology*, 8:33–36, 1983. [t-rprbj-83]

12839 T. S. Tay and W. Whiteley. Recent developments on the generic rigidy of structures. *Structural Topology*, 9:31–38, 1984. [tw-rdgrs-84]

G. K. Tayi. See also [11063].

C. Taylor. See also [6719].

D. L. Taylor. See also [7122].

12840 J. E. Taylor. On the global structure of crystalline surfaces. *Discrete Comput. Geom.*, 6:225–262, 1991. [t-gscs-91]

12841 J. E. Taylor. The structure of singularities in soap-bubble-like and soap-film-like minimal surfaces. *Annals of Math.*, 103:489–539, 1976. [t-sssbl-76]

R. Taylor. See also [9002].

12842 R. H. Taylor. The synthesis of manipulator control programs from task-level specifications. Technical Report AIM-282, Artificial Intelligence Laboratory, Stanford Univ., Stanford, CA, July 1976. [t-smcpt-76]

R. H. Taylor. See also [7690].

R. L. Taylor. See also [13904].

The Java Team. See also [6207].

B. Tebbs. See also [5637].

B. C. Teeter. See also [3380].

J. Teich. See also [5054, 11880, 11881].

12843 M. Teichmann. Probabilistic algorithms for efficient grasping and fixturing. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 277–282, 1996. [t-paegf-96]

12844 M. Teichmann. Shoving a table into a corner. In G. Toussaint, editor, *Snapshots of computational and discrete geometry*, pages 99–118. McGill Univ., 1988. TR-SOCS 88.11. [t-stc-88]

12845 M. Teichmann. Shoving a table into a corner. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 9, 1989. [t-stc-89]

12846 M. Teichmann. Wedge placement optimization problems. Master's thesis, School of Computer Science, McGill University, 1989. [t-wpop-89] *Keywords:* master thesis.

12847 M. Teichmann and B. Mishra. Reactive algorithms for grasping using a modified parallel jaw gripper. In *Proc. IEEE Intl. Conf. on Robotics and Automation*, May 1994. [tm-ragum-94]

M. Teichmann. See also [11770–11773].

S. Teig. See also [12284].

12848 Monique Teillaud. Three dimensional triangulations in CGAL. In *Abstracts 15th European Workshop Comput. Geom.*, pages 175–178. INRIA Sophia-Antipolis, 1999. [t-tdtc-99] *URL:* http://www-sop.inria.fr/prisme/biblio/search.html.

12849 Monique Teillaud. Towards dynamic randomized algorithms in computational geometry. Research Report 1727, INRIA, BP93, 06902 Sophia-Antipolis, France, 1992. English version of a French thesis. [t-tdrac-92] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1727. *Succeeds:* t-vdard-91. *Precedes:* t-tdrac-93.

12850 Monique Teillaud. *Towards dynamic randomized algorithms in computational geometry*, volume 758 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1993. [t-tdrac-93] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1727. *Succeeds:* t-tdrac-92.

12851 Monique Teillaud. Union and split operations on dynamic trapezoidal maps. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 181–186, 1995. [t-usodt-95] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=2486. *Precedes:* t-usodt-00.

12852 M. Teillaud. Union and split operations on dynamic trapezoidal maps. *Comput. Geom. Theory Appl.*, 17:153–163, 2000. [t-usodt-00] *Succeeds:* t-usodt-95.

12853 Monique Teillaud. *Vers des algorithmes randomisés dynamiques en géométrie algorithmique.* Thèse de doctorat en sciences, Université Paris-Sud, Orsay, France, 1991. [t-vdard-91] *URL:* http://www.inria.fr/cgi-bin/wais_ra_sophia?question=1727. *Keywords:* doctoral thesis. *Precedes:* t-tdrac-92.

Monique Teillaud. See also [1689, 1692, 1705, 1706, 2157, 2163–2165, 2187–2195, 2208, 2209, 2219–2221, 2941, 4022, 4023, 4038–4043, 4047, 4053].

T. Teitelbaum. See also [11182].

J. Tejel. See also [5748–5750].

A. Tel. See also [4273].

12854 G. Tel. Total algorithms. *Algorithms Rev.*, 1(1):13–42, 1990. [t-ta-90] *Keywords:* distributed algorithms, design methods, broadcast, mutual exclusion, election, termination detection.

12855 S. Teller and P. Hanrahan. Global visibility algorithms for illumination computations. In *Proc. SIGGRAPH '93*, pages 239–246, 1993. [th-gvaic-93] *Keywords:* visibility.

Seth Teller. See also [3524–3526, 4317, 5674, 8179].

12856 S. J. Teller. A methodology for geometric algorithm development. In *Communicating with Virtual Worlds*, pages 306–317, Lausanne, Switzerland, June 1993. Springer-Verlag. [t-mgad-93]

12857 S. J. Teller. Computing the antipenumbra of an area light source. *Comput. Graph.*, 26(4):139–148, July 1992. Proc. SIGGRAPH '92. [t-caals-92]

12858 S. J. Teller. *Visibility Computations in Densely Occluded Polyhedral Environments.* PhD thesis, Dept. of Computer Science, University of California, Berkeley, 1992. [t-vcdop-92] *Keywords:* graphics, visibility preprocessing, linear programming, spatial decomposition, visibility graphs, Plucker coordinates.

12859 S. J. Teller. Visualizing Fortune's algorithm for planar Voronoi diagrams. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, page 393, 1993. [t-vfapv-93] *Keywords:* video review. *Cites:* d-slsv-34, f-savd-87, ps-cgi-85, ZZZ.

12860 S. J. Teller and C. H. Séquin. Visibility preprocessing for interactive walkthroughs. *Comput. Graph.*, 25(4):61–69, July 1991. Proc. SIGGRAPH '91. [ts-vpiw-91]

A. W. Tempelton. See also [3516].

12861 Shang-Hua Teng. Combinatorial aspects of geometric graphs. *Comput. Geom. Theory Appl.*, 9:277–287, 1998. [t-cagg-98]

12862 S.-H. Teng. *Points, Spheres, and Separators: a unified geometric approach to graph partitioning.* PhD thesis, School of Computer Science, Carnegie-Mellon University, 1990. Report CMU-CS-91-184. [t-pssug-90] *Keywords:* doctoral thesis.

Shang-Hua Teng. See also [641, 1815, 1816, 2708, 3361, 3362, 4965, 5618, 5957, 9621–9627, 12411].

12863 Y. Teng, D. Mount, E. Puppo, and L. Davis. Parallelizing an algorithm for visibility on polyhedral terrain. *Internat. J. Comput. Geom. Appl.*, 7:75–84, 1997. [tmpd-pavpt-97]

12864 Y. Ansel Teng. *Parallel Processing of Geometric Structures: Visibility and Triangulation Algorithms.* PhD thesis, University of Maryland, College Park, 1993. Also published as Center for Automation Research technical report CAR-TR-680. [t-ppgsv-93] *Keywords:* doctoral thesis.

12865 Y. A. Teng and L. S. Davies. Visibility analysis on digital terrain models and its parallel implementation. Technical Report CAR-TR-625, Center for Automation Research, University of Maryland, 1992. [td-vadtm-92]

12866 Y. Ansel Teng, D. DeMenthon, and L. S. Davis. Stealth terrain navigation. Technical Report CAR-TR-532, Center for Automation Research, University of Maryland, January 1991. [tdd-stn-91]

12867 Y. Ansel Teng, Daniel DeMenthon, and Larry S. Davis. Stealth terrain navigation. *IEEE Trans. Syst. Man Cybern.*, 23(1):96–110, 1993. [tdd-stn-93] *Succeeds:* tdd-stn-91.

12868 Y. A. Teng, F. Sullivan, I. Beichl, and E. Puppo. A data-parallel algorithm for three-dimensional Delaunay triangulation and its implementation. *SuperComputing 93*, ??:112–121, 1993. [tsbp-dpatd-93]

12869 K. H. Teo and T. C. Tuan. A tight upper bound for the number of intersections between two rectangular paths. *BIT*, 31:598–606, November 1991. [tt-tubni-91] *Keywords:* interference, intersection, rectangular path.

12870 K. H. Teo and T. C. Tuan. An improved upper bound on the number of intersections between two rectangular paths. *Inform. Process. Lett.*, 37(6):305–309, March 1991. [tt-iubni-91] *Keywords:* interference, intersection, rectangular path.

12871 R. Terada. Fast algorithms for NP-hard problems which are optimal or near-optimal with probability one. Report RT-MAP-8003, Dept. Matemaática Aplicada, Univ. Sao Paulo, Sao Paulo, Brazil, 1980. [t-fanhp-80]

R. Terada. See also [6612, 6613].

Hiroaki Terao. See also [10298].

12872 T. Terlaky. A convergent criss-cross method. *Math. Oper. and Stat. ser. Optimization*, 16:683–690, 1985. [t-cccm-85]

12873 T. Terlaky. A finite criss-cross method for oriented matroids. *J. Combin. Theory Ser. B*, 42:319–327, 1987. [t-fccmo-87]

12874 M. T. Terlien, C. J. Van Westen, and T. W. Van Asch. Deterministic modeling in gis-based landslide hazard assessment. In Norwell, editor, *Geographical Information Systemss in Accessing Natural Hazards*, pages 57–78. Kluwer, 1993. [twv-dmgbl-93]

D. Terzopoulos. See also [13054].

J. Teuhola. See also [7864].

S. Teukolsky. See also [10903].

Saul A. Teukolsky. See also [10904, 10905].

Geetika Tewari. See also [10399].

?? Tezuka. See also [8580].

J. Thackara. See also [13387].

12875 W. C. Thacker. A brief review of techniques for generating irregular computational grids. *Internat. J. Numer. Methods Eng.*, 15:1335–1341, 1980. [t-brtgi-80] *Annote:* Title says it all.

12876 W. C. Thacker. An improved triangulation algorithm. *Appl. Math. Modelling*, 3:471–472, December 1979. [t-ita-79] *Annote:* Wants to use triangulation defined by joining two nodes if there is no shorter intersecting segment. This is the same as GT. Proposes $O(n^2)$ algorithm (which I don't think should work.).

J. I. Thakara. See also [805].

12877 H. Theil. A rank-invariant method of linear and polynomial regression analysis i. In *Proc. Koninklijke Nederlandse Akademie van Wetenschappen*, volume 53, pages 386–392, 1950. [t-mlpra1-50]

12878 H. Theil. A rank-invariant method of linear and polynomial regression analysis ii. In *Proc. Koninklijke Nederlandse Akademie van Wetenschappen*, volume 53, pages 521–525, 1990. [t-mlpra2-50]

12879 H. Theil. A rank-invariant method of linear and polynomial regression analysis iii. In *Proc. Koninklijke Nederlandse Akademie van Wetenschappen*, volume 53, pages 1397–1412, 1990. [t-mlpra3-50]

T. Theoharis. See also [7788].

William Thibault. See also [10082, 10083].

12880 W. C. Thibault and B. F. Naylor. Set operations on polyhedra using binary space partitioning trees. *Comput. Graph.*, 21(4):153–162, 1987. Proc. SIGGRAPH '87. [tn-sopub-87]

12881 C. Thiel. *Effiziente Algorithmen für Probleme der Kollisionserkennung und der geometrischen Optimierung.* Ph.D. thesis, Dept. Comput. Sci., Univ. Saarlandes, Saarbrücken, Germany, 1996. [t-eapkg-96] *Keywords:* doctoral thesis.

Christian Thiel. See also [5362–5364, 11775–11777].

12882 T. Thiele. Extremalprobleme für Punktemengen. Masters thesis, Fachbereich Mathematik, Freie Univ. Berlin, Berlin, Germany, 1991. [t-ep-91] *Keywords:* masters thesis.

Torsten Thiele. See also [10547].

D. G. Thielman. See also [4882].

12883 G. Thiemt. Die numerische Stabilität geometrischer Algorithmen. Master's thesis, Universität Karlsruhe, Karlsruhe, Germany, October 1986. Diploma Thesis. [t-dnsga-86] *Keywords:* master thesis.

G. Thiemt. See also [1557–1559, 10434].

12884 A. H. Thiessen. Precipitation averages for large areas. *Monthly Weather Review*, 39:1082–1084, July 1911. [t-pala-11]

J. F. Thisse. See also [6651].

J. A. Thom. See also [10972].

12885 R. Thom. Sur l'homologie des variétés algébriques reélles. In S. S. Cairns, editor, *Differential and Combinatorial Topology*, pages 255–265. Princeton University Press, Princeton, NJ, 1965. [t-sldva-65]

D. A. Thomas. See also [11469].

F. Thomas. See also [11375, 12952].

J. A. Thomas. See also [3571].

R. Thomas. See also [550, 8950, 11307].

12886 Samuel M. Thomas and Y. T. Chan. A simple approach for the estimation of circular arc and its radius. *Comput. Vision Graph. Image Process.*, 45:362–370, 1989. [tc-saeca-89]

W. Thomas. See also [7490].

T. Thomasma. See also [13669].

12887 C. Thomassen. A theorem on paths in planar graphs. *J. Graph Theory*, 7(2):169–176, 1983. [t-tppg-83]

12888 C. Thomassen. Deformations of plane graphs. *J. Combin. Theory*, ??, 1983. [t-dpg-83]

12889 C. Thomassen. Interval representation of planar graphs. *J. Combin. Theory Ser. B*, 40:9–20, 1986. [t-irpg-86] *Keywords:* graph drawing.

12890 C. Thomassen. Planar acyclic oriented graphs. *Order*, 5(4):349–361, 1989. [t-paog-89] *Keywords:* graph drawing.

12891 C. Thomassen. Planar and infinite hypohamiltonian and hypotraceable graphs. *Discrete Math.*, 14(4):377–389, April 1976. [t-pihhg-76]

12892 C. Thomassen. Planarity and duality of finite and infinite planar graphs. *J. Combin. Theory Ser. B*, 29(2):244–271, 1980. [t-pdfip-80] *Keywords:* graph drawing.

12893 C. Thomassen. Plane representations of graphs. In J. A. Bondy and U. S. R. Murty, editors, *Progress in Graph Theory*, pages 43–69. Academic Press, New York, NY, 1984. [t-prg-84] *Keywords:* graph drawing.

12894 C. Thomassen. Rectilinear drawings of graphs. *J. Graph Theory*, 12:335–341, 1988. [t-rdg-88]

12895 C. Thomassen. The jordan-schönflies theorem and the classification of surfaces. *Amer. Math. Monthly*, 99:116–130, 1992. [t-jstcs-92]

Carsten Thomassen. See also [9799].

12896 C. D. Thomborson, B. Alpern, and L. Carter. Rectilinear Steiner tree minimzation on a workstation. In *Proc. of the DIMACS Workshop on Comput. Support for Discr. Math.*, 1992. [tac-rsmw-92]

12897 C. D. Thomborson, L. L. Deneen, and G. M. Shute. Computing a rectilinear Steiner minimal tree in $n^{O(\sqrt{n})}$ time. In A. Albrecht, H. Jung, and K. Mehlhorn, editors, *Parallel Algorithms and Architectures*, pages 176–83. Akademie-Verlag Berlin, May 1987. [tds-crsmt-87]

C. D. Thomborson. See also [3972, 12190].

Stefan Thome. See also [7206].

B. S. Thompson. See also [5732].

12898 C. D. Thompson. Area-time complexity for VLSI. In *Proc. 11th Annu. ACM Sympos. Theory Comput.*, pages 81–88, 1979. [t-atcv-79] *Precedes:* t-ftv-83.

12899 C. D. Thompson. Fourier transforms in VLSI. *IEEE Trans. Comput.*, C-32:1047–1057, 1983. [t-ftv-83] *Succeeds:* t-atcv-79. *Precedes:* t-vcs-83. *Annote:* Model and upper bounds only.

12900 C. D. Thompson. The VLSI complexity of sorting. *IEEE Trans. Comput.*, C-32:1171–1184, 1983. [t-vcs-83] *Succeeds:* t-ftv-83. *Annote:* Model and upper bounds only.

12901 C. D. Thompson and H. T. Kung. Sorting on a mesh-connected parallel computer. *Commun. ACM*, 20:263–271, 1977. [tk-smcpc-77]

C. D. Thompson. See also [1645].

C. V. Thompson. See also [5623, 5624].

Derek Thompson. See also [8528].

G. L. Thompson. See also [9886].

12902 Joe F. Thompson, Z. U. A. Warsi, and C. Wayne Mastin. *Numerical Grid Generation.* Elsevier Science Publishing Co., Inc., New York, New York, 1985. [twm-ngg-85]

J. F. Thompson. See also [11490].

K. Thompson. See also [11524].

P. A. Thompson. See also [11296].

12903 W. Thompson, H. Pick, B. Bennett, M. Heinrichs, and S. Savitt an K. Smith. Map-based localization: the 'drop-off' problem. In *Proc. DARPA Image Understanding Workshop*, pages 706–719, 1990. [tpbhss-mbldo-90]

W. J. Thompson. See also [10273].

12904 C. E. Thorpe. *FIDO: Vision and Navigation for a Robot Rover.* Ph.D. thesis, Department of Computer Science, Carnegie-Mellon University, 1984. CMU-CS-84-168. [t-fvnrr-84] *Keywords:* doctoral thesis.

12905 C. E. Thorpe. Path relaxation: Path planning for a mobile robot. In *Proc. AAAI National Conference on Artificial Intelligence*, pages 318–321, 1984. [t-prppm-84]

12906 Mikkel Thorup. Undirected single source shortest path in linear time. In *Proc. 38th Annu. IEEE Sympos. Found. Comput. Sci.*, page To appear, 1997. [t-usssp-97]

Mikkel Thorup. See also [671].

R. M. Thrall. See also [9886].

W. Threlfall. See also [11966, 11967].

K. Thulasiraman. See also [7514–7517, 7912].

R. Thurimella. See also [3130, 5685, 5686].

N. Thurston. See also [4268, 4269]

12907 W. Thurston. Hexahedral decomposition of polyhedra, October 1993. [t-hdp-93] *URL:* http://www.ics.uci.edu/~eppstein/gina/Thurston-hexahedra.

12908 William Thurston. *Three-Dimensional Geometry and Topology, Volume 1.* Princeton University Press, New Jersey, 1997. [t-tdgt1-97]

William Thurston. See also [9624–9626, 9628].

12909 W. P. Thurston. The geometry and topology of 3-manifolds. Note, Princeton University, 1988. [t-gt3m-88]

12910 W. P. Thurston. The geometry of circles: Voronoi diagrams, Moebius transformations, convex hulls, Fortune's algorithm, the cut locus, and parametrization of shapes. Technical report, Princeton University, 1986. [t-gcvdm-86]

12911 W. P. Thurston. Three dimensional manifolds, Kleinian groups, and hyperbolic geometry. *Bull. Amer. Math. Soc.*, 6(3):357–381, 1982. [t-tdmkg-82]

W. P. Thurston. See also [4274, 6710, 8003, 12268, 12269].

R. Tibshirani. See also [6715].

Robert Franz Tichy. See also [11422].

12912 W. F. Tichy and F. J. Newbery. Knowledge-based editors for directed graphs. In H. K. Nichols and D. Simpson, editors, *Proc. 1st European Software Engineering Conference*, pages 109–117, Berlin, West Germany, 1987. Springer-Verlag. [tn-kbedg-87] *Keywords:* graph drawing.

W. F. Tichy. See also [10114].

12913 M. Tikkanen, M. J. Mäntylä, and M. Tamminen. GWB/DMS: A geometric data manager. *Proc. Eurographics '83*, ??:99–112, 1983. [tmt-gdgdm-83]

12914 V. S. Tikunov. Anamorphated cartographic images: historical outline and construction technique. *Cartography (Austral.)*, 17:1–8, 1988. [t-aciho-88]

J. Tilford. See also [11142].

12915 J. S. Tilford. Tree drawing algorithms. Technical Report UIUCDCS-R-81-1055, Department of Computer Science, University of Illinois at Urbana-Champaign, 1981. [t-tda-81] *Keywords:* graph drawing.

12916 W. Tiller and E. Hanson. Offsets of two dimensional profiles. *IEEE Comput. Graph. Appl.*, 4(9):36–46, September 1984. [th-otdp-84]

W. Tilles. See also [9826].

12917 R. B. Tilove. A null-object detection algorithm for constructive solid geometry. *Commun. ACM*, 27:684–694, 1984. [t-nodac-84]

12918 R. B. Tilove. A study of geometric set-membership classification. Report TM-30, Production Automat. Project, Univ. Rochester, Rochester, NY, 1980. [t-sgsmc-80]

12919 R. B. Tilove. Line/polygon classification: a case study of the complexity of geometric computation. Report TM-37, Production Automat. Project, Univ. Rochester, Rochester, NY, 1980. [t-lpccs-80]

12920 R. B. Tilove. Set membership classification: a unified approach to geometric intersection problems. *IEEE Trans. Comput.*, C-29:874–883, 1980. [t-smcua-80]

12921 R. B. Tilove and A. A. G. Requicha. Closure of boolean operations on geometric entities. *Comput. Aided Design*, 12:219–220, 1980. [tr-cboge-80]

R. B. Tilove. See also [11189].

12922 ?? Timmer and ?? Stern. Computation of global geometric properties of solid objects. *Comput. Aided Design*, 12:301–304, 1980. [ts-cggps-80]

G. Y. Ting. See also [4452, 7274].

12923 John C. Tipper. FORTRAN programs to construct the planar Voronoi diagram. *Comput. Geosci.*, 17(5):597–632, 1991. [t-fpcpv-91] *Keywords:* Voronoi diagrams, Delaunay triangulation, spatial data structures. *Annote:* Incremental flip algorithm. Points are sorted so that they are outside CH. Triangulates inside polygon by slicing it up into convex pieces, triangulating, then gluing it back together and flipping. *Abstract:* The Voronoi diagram and its geometric dual, the Delaunay triangulation, both have been applied extensively in spatial modeling and analysis. This paper gives two FORTRAN programs which use a new algorithm that creates the Voronoi diagram and Delaunay triangulation rapidly and efficiently for large data sets (N greater than 1000). The first program applies to the special situation of data points lying either in an open domain or in a simply connected closed domain bounded by their convex hull: under certain conditions the running time of this program is linear in the number of data points. The second program applies to the general situation of data points lying in a domain that may be open or closed, simply or multiply connected, and have convex or reentrant boundaries. A GKS-based plotting program to give graphic output also is provided. (Author abstract) 24 Refs.

12924 John C. Tipper. Straightforward iterative algorithm for the planar Voronoi diagram. *Inform. Process. Lett.*, 34(3):155–160, April 1990. [t-siapv-90] *Keywords:* spatial data structures, triangulation, Voronoi diagrams, iterative algorithms, Delaunay triangulation. *Annote:* Your basic incremental algorithm. Points are sorted by X coordinate. *Abstract:* Several published algorithms construct the planar N-point Voronoi diagram by adding the points in turn to a digram already constructed for a subset of those points. The algorithm described here works in this way, but stipulates that every added point be outside the convex hull of the already constructed partial diagram. This stipulation, which is implemented by presorting the points by increasing x-coordinate, ensures that the core of the algorithm runs in almost linear time. The algorithm is inherently iterative, not recursive, and provides a rapid, efficient way to construct the Voronoi diagram for large data sets. (Author abstract) 16 Refs.

N. Tishby. See also [13447].

A. Tits. See also [13258].

12925 D. M. Titterington. Optimal design: some geometrical aspects of D-optimality. *Biometrika*, 62(2):313–320, 1975. [t-odsga-75]

D. M. Titterington. See also [12219].

P. Tiwari. See also [286, 307, 7617].

H. Toben. See also [10557].

R. F. Tobler. See also [11731].

12926 W. R. Tobler. A continous transformation useful for districting. *Ann. New York Acad. Sci.*, 219:215–220, 1973. [t-ctud-73]

W. R. Tobler. See also [3101].

J. G. Toborg. See also [4324].

M. Toda. See also [12638, 12639].

12927 M. Todd. Linear and quadratic programming in oriented matroids. *J. Combin. Theory Ser. B*, 39:105–133, 1985. [t-lqpom-85]

12928 M. J. Todd. Mathematical programming. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 39, pages 711–732. CRC Press LLC, Boca Raton, FL, 1997. [t-mp-97]

12929 M. J. Todd. *The Computation of Fixed Points and Applications*. Springer-Verlag, Berlin, 1976. [t-cfpa-76]

M. J. Todd. See also [99].

12930 P. Todd. A k-tree generalization that characterizes consistency of dimensioned engineering drawings. *SIAM J. Discrete Math.*, 2:255–261, 1989. [t-ktgtc-89]

O. Toeplitz. See also [10946, 10947].

A. W. Toga. See also [13884].

S. Toida. See also [10264].

12931 George W. Tokarsky. Polygonal rooms not illuminable from every point. *Amer. Math. Monthly*, 102:867–879, 1995. [t-prnie-95] *Keywords:* billiards, visibility with reflection, geometric optics, simple polygons. *Comments:* Solves an old geometric problem originally published in [8128] by giving an example of a simple polygon in which there is a placement of a single point light source that does not light up the polygon, if the light is allowed to reflect off the polygon walls according to the laws of geometric optics.

T. Tokieda. See also [13740].

M. Tokoro. See also [13093].

S. Tokumasu. See also [10030].

T. Tokunaga. See also [7431].

12932 T. Tokuyama. Deformation of merged Voronoi diagrams with translation. Report Rep. TR87-0049, IBM Tokyo Research Laboratory, 1988. [t-dmvdt-88]

12933 Takeshi Tokuyama. Minimax parametric optimization problems and multidimensional parametric searching. In *Proc. 33rd Annu. ACM Sympos. Theory Comput.*, pages 75–83, 2001. [t-mpopm-01]

12934 T. Tokuyama. Orthogonal queries in segments. *Algorithmica*, 18:229–245, 1997. [t-oqs-97]

12935 T. Tokuyama. Orthogonal queries in segments and triangles. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 505–513. Springer-Verlag, 1994. [t-oqst-94]

12936 T. Tokuyama and J. Nakano. Geometric algorithms for a minimum cost assignment problem. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 262–271, 1991. [tn-gamca-91] *Keywords:* optimization. *Cites:* ae-tpss-87, clr-ia-90, cw-mmap-87, ff-fn-62, fr-etbs-75, ft-fhtui-87, gt-fsanp-89, nt-scs-90, r-lnra-90, ZZZ.

Takeshi Tokuyama. See also [309, 310, 314, 315, 450, 452, 709, 710, 926, 929, 930, 932–934, 964, 966, 967, 972, 975–977, 5666, 5667, 6944, 6945, 7880–7882, 10208, 12721–12723].

12937 S. Toledo. Approximate parametric search. *Inform. Process. Lett.*, 47:1–4, 1993. [t-aps-93]

12938 S. Toledo. Extremal point containment problems. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 176–185, 1991. [t-epcp-91] *Keywords:* optimization, prune and search, lower envelopes. *Cites:* ab-pcp1s-87, ab-pptr-88, acgoy-pcg-88, ass-sulbl-89, c-pcp-83, c-rcsi-86, ck-plscc-89, ck-hcmpc-90, c-pms-86, e-acg-87, f-fapct-85, grs-kfcg-83, hs-ndssg-86, ks-empac-90, ls-ncfcc-87, ls-pptmc-87, m-apcad-83, py-prp-86, ss-pmp2g-83, v-pcp-75, ZZZ.

12939 S. Toledo. Extremal polygon containment problems and other issues in parametric searching. M.s. thesis, Dept. Comput. Sci., Tel Aviv Univ., Tel Aviv, 1991. [t-epcpo-91] *Keywords:* master thesis. *Succeeds:* st-epcp-91t.

12940 Sivan Toledo. Maximizing non-linear concave functions in fixed dimension. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 676–685, 1992. [t-mnlcf-92]

12941 Sivan Toledo. Maximizing non-linear concave functions in fixed dimension. In Panos M. Pardalos, editor, *Complexity in Numerical Computations*, pages 429–447. World Scientific, Singapore, 1993. [t-mnlcf-93]

S. Toledo. See also [167, 168, 259–261, 7953–7955, 12084–12086].

I. Tollis. See also [7748, 12742].

12942 I. G. Tollis and C. Xia. Drawing telecommunication networks. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 206–217. Springer-Verlag, 1995. [tx-dtn-95] *Keywords:* graph drawing, network visualization.

I. G. Tollis. See also [1855–1857, 1866, 1993, 1994, 3424, 3425, 4119–4122, 4144, 4155–4158, 5873, 7668, 7669, 7749, 7750, 8880, 8881, 10613–10620, 12238, 12749–12759].

Shoji Tominaga. See also [10166].

N. Tomioka. See also [7412].

12943 C. D. Tomlin. *Geographic Information Systems and Cartographic Modeling*. Prentice Hall, Englewood Cliffs, 1990. [t-giscm-90]

12944 R. F. Tomlinson, H. W. Calkins, and D. F. Marble. *Computer Handling of Geographical Data*. The UNESCO Press, Paris, 1976. [tcm-chgd-76]

12945 M. Tompa. An optimal solution to a wire-routing problem. In *Proc. 11th Annu. ACM Sympos. Theory Comput.*, pages 161–176, 1980. [t-oswrp-80] *Precedes:* t-oswrp-81.

12946 M. Tompa. An optimal solution to a wire-routing problem. *J. Comput. Syst. Sci.*, 23:127–150, 1981. [t-oswrp-81] *Succeeds:* t-oswrp-80.

M. Tompa. See also [9156, 9157].

D. Tonnesen. See also [12698].

12947 K. Tönnies and D. Jackél. Automatische dreidimensionale Oberflächenrekonstruktion aus Konturlinien zur Visualisierung von komplexen anatomischen. Manuscript, Inst. Tech. Inform., 1982. [tj-adoak-82]

12948 A. Toomre. On the distibution of matter within highly flattened galaxies. *The astrophysical J.*, 138:385–392, 1963. [t-dmwhf-63]

12949 S. B. Tor and A. E. Middleditch. Convex decomposition of simple polygons. *ACM Trans. Graph.*, 3:244–265, 1984. [tm-cdsp-84]

S. B. Tor. See also [9569].

J. Torán. See also [1325].

12950 F. A. Toranzos. Critical visibility and outward rays. *J. Geom.*, 33:155–167, 1988. [t-cvor-88]

S. Torii. See also [10250].

12951 J. Toriwaki and S. Yokoi. Voronoi and related neighbours on digitized two-dimensional space with applications to texture analysis. In G. T. Toussaint, editor, *Computational Morphology*, pages 207–228. North-Holland, Amsterdam, Netherlands, 1988. [ty-vrndt-88]

H. Toriya. See also [5652, 5653].

J. Törőcsik. See also [8279, 8493, 10548].

İ. Hakkı Toroslu. See also [13094].

12952 C. Torras and F. Thomas. Motion of two convex polyhedra in contact. Technical Report, Institut de Cibernetica, Barcelona, Spain, July 1989. [tt-mtcpc-89] *Keywords:* Spatial Reasoning, Motion Representation, Fine Motion Planning, Contact space, Stratification.

C. Torras. See also [10632, 10633].

V. Torre. See also [10631].

12953 Enric Torres. Optimization of the binary space partition algorithm (BSP) for the visualization of dynamic scenes. In *Eurographics '90*, pages 507–518. North-Holland, 1990. [t-obspa-90]

J. C. Torres. See also [5164].

F. D. Torrisi. See also [1595].

K. Toshimitsu. See also [13741].

12954 Ratko Tošić and Ivan Stojmenović. On pairing points in the plane. *Zb. Rad. Prirod.-Mat. Fak. Univ. u Novom Sadu, Ser. Mat.*, 21(2):157–160, 1991. [ts-ppp-91] *Keywords:* points, matching, segments, intersection. *Abstract:* Given a set of n red and n blue points in the plane, it is requred to find a nonintersecting red-blue matching, i.e., a set of n nonintersecting line segments that connect red and blue points in pairs.

An $O(n \log^2 n)$ time algorithm for the problem was proposed in a-mpp-85. The paper under review presents a simpler algorithm within the same time complexity bound.

12955 Csaba David Tóth. A note on binary plane partitions. In *Proc. 17th Annu. ACM Sympos. Comput. Geom.*, pages 151–156, 2001. [t-nbpp-01]

12956 C. D. Tóth. Art gallery problem with guards whose range of vision is 180°. *Comput. Geom. Theory Appl.*, 17:121–134, 2000. [t-agpgr-00]

12957 Csaba D. Tóth. Guarding disjoint triangles and claws in the plane. In *Abstracts 17th European Workshop Comput. Geom.*, pages 137–139. Freie Universität Berlin, 2001. [t-gdtcp-01]

12958 Csaba D. Tóth. Illuminating polygons with vertex π-floodlights. In V. N. Alexandrov et al., editors, *Proc. Int. Conf. on Comput. Sci.*, volume 2073 of *Lecture Notes Comput. Sci.*, pages 772–781. Springer-Verlag, 2001. [t-ipvpl-01] *Comments:* (3/4)n.

Cs. D. Tóth. See also [12373].

12959 D. L. Toth. On ray tracing parametric surfaces. *Comput. Graph.*, 19(3):171–179, July 1986. [t-rtps-86]

12960 Géza Toth. Point sets with many k-sets. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 37–42, 2000. [t-psmks-00]

12961 Géza Toth. Point sets with many k-sets. *Discrete Comput. Geom.*, 26(2):187–194, 2001. [t-psmks-01]

12962 G. Tóth. The shortest distance among points in general position. *Comput. Geom. Theory Appl.*, 8:33–38, 1997. [t-sdpgp-97]

12963 G. Tóth and P. Valtr. Note on the Erdős-Szekeres theorem. *Discrete Comput. Geom.*, 19:457–450, 1998. [tv-nest-98]

G. Toth. See also [3636, 7832–7836, 10542, 10547, 10549].

12964 G. F. Tóth. New results in the theory of packing and covering. In P. M. Gruber and J. M. Wills, editors, *Convexity and its applications*, pages 318–359. Birkhäuser, Basel, Switzerland, 1983. [t-nrtpc-83]

12965 G. Fejes Tóth. Packing and covering. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 2, pages 19–42. CRC Press LLC, Boca Raton, FL, 1997. [ft-pc-97]

G. Fejes Tóth. See also [2046].

12966 C. Touma and C. Gotsman. Triangle mesh compression. In *Graphics Interface*, pages 26–34, 1998. [tg-tmc-98]

12967 G. Tourlakis. Some results in computational topology. Report 50, Dept. Comput. Sci., Univ. Toronto, Toronto, ON, 1973. [t-srct-73] *Precedes:* tm-srct-72.

12968 G. Tourlakis and J. Mylopoulos. Some results in computational topology. In *Proc. 13th Annu. IEEE Sympos. Switching Automata Theory*, pages 40–51, 1972. [tm-srct-72] *Succeeds:* t-srct-73. *Precedes:* tm-srct-73.

12969 G. Tourlakis and J. Mylopoulos. Some results in computational topology. *J. ACM*, 20:439–455, 1973. [tm-srct-73] *Succeeds:* tm-srct-72.

E. Tournier. See also [3812].

12970 G. Toussaint. An output-complexity-sensitive polygon triangulation algorithm. Technical Report SOCS-88.11, McGill Univ., Montreal, PQ, 1988. [t-ocspt-88]

12971 G. Toussaint. Approximating polygonal curves in three-dimensions. Manuscript, School Comput. Sci., McGill Univ., Montreal, PQ, ?? [t-apctd-]

12972 G. Toussaint. Computational geometry and computer vision. Technical Report SOCS 90.7, McGill Univ., Montreal, PQ, 1990. [t-cgcv-90]

12973 G. Toussaint. Computational geometry and morphology. Technical Report SOCS-86.3, McGill Univ., Montreal, PQ, 1986. [t-cgm-86]

12974 G. Toussaint, editor. *Computational Morphology*. North-Holland, 1988. [t-cm-88]

12975 G. Toussaint. Computing geodesic properties inside a simple polygon. Technical Report ??, School of Computer Science, McGill University, 1990. [t-cgpis-90]

12976 G. Toussaint. Efficient triangulation of simple polygons. *Visual Comput.*, 7:280–295, 1991. [t-etsp-91] *Keywords:* computational geometry, triangulation. *Abstract:* This paper considers the topic of efficiently triangulating a simple polygon with emphasis on practical and easy-to-implement algorithms. It also describes a new adaptive algorithms for triangulating a simple n-sided polygon. The algorithm runs in time O(n(1 plus t//0)) with t//0 less than n. The quantity t//0 measures the shape-complexity of the triangulation delivered by the algorithm. More precisely t//0 is the number of obtained triangles contained in the triangulation that share zero edges with the input polygon and is, furthermore, related to the shape-complexity of the input polygon. Although the worst-case complexity of the algorithm is O(n**2), for several classes of polygons it runs in linear time. The practical advantages of the algorithm are that it is simple and does not require sorting or the use of balanced tree structures. On the theoretical side, it is of interest because it is the first polygon triangulation algorithm where the computational complexity is a function of the output complexity. As a side benefit, we introduce a new measure of the complexity of a polygon triangulation that should find application in other contexts as well. (Author abstract) Refs.

12977 G. Toussaint. On separating two simple polygons by a single translation. *Discrete Comput. Geom.*, 4:265–278, 1989. [t-stsps-89]

12978 G. Toussaint. Quadrangulations of planar sets. In *Proc. 4th Workshop Algorithms Data Struct.*, volume 955 of *Lecture Notes Comput. Sci.*, pages 218–227. Springer-Verlag, 1995. [t-qps-95]

12979 G. Toussaint and L. Devroye. Convex hulls for random lines. Technical Report SOCS 90.11, McGill Univ., Montreal, PQ, 1990. [td-chrl-90]

12980 G. Toussaint, C. Verbrugge, C. Wang, and B. Zhu. Tetrahedralization of simple and non-simple polyhedra. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 24–29, 1993. [tvwz-tsnsp-93] *Cites:* aap-ptem-86, b-ip-48a, c-tsplt-91a, cp-tncp-90, gp-cdpb-88, l-tsfpp-11, o-agta-87, rs-dttdn-92, s-udzvd-28, ZZZ.

G. Toussaint. See also [978, 983, 984, 1141, 1163, 1938–1941, 1943, 1948–1951, 1979, 1980, 2297–2299, 2315, 2317, 2321, 2322, 2329–2337, 3672, 5048, 5226, 6072, 6073, 7980, 10979, 10980, 11297, 11300, 11301].

12981 G. T. Toussaint. A geodesic Helly-type theorem. In G. T. Toussaint, editor, *Snapshots of Computational and Discrete Geometry*. McGill University, Montreal, PQ, 1988. Technical Report SOCS-88.11. [t-ghtt-88]

12982 G. T. Toussaint. A graph-theoretical primal sketch. In G. T. Toussaint, editor, *Computational Morphology*, pages 229–260. North-Holland, Amsterdam, Netherlands, 1988. [t-gtps-88]

12983 G. T. Toussaint. A historical note on convex hull finding algorithms. *Pattern Recogn. Lett.*, 3:21–28, 1985. [t-hnchf-85]

12984 G. T. Toussaint. A linear-time algorithm for solving the strong hidden-line problem in a simple polygon. Report SOCS-86.2, School Comput. Sci., McGill Univ., Montreal, PQ, 1986. [t-ltass-86t] *Precedes:* t-ltass-86a.

12985 Godfried T. Toussaint. A linear-time algorithm for solving the strong hidden-line problem in a simple polygon. *Pattern Recogn. Lett.*, 4:449–451, 1986. [t-ltass-86a] *Succeeds:* t-ltass-86t. *Abstract:* A linear-time algorithm is presented for solving the strong hidden-line problem in a simple polygon P, or alternately, determining the region in P weakly visible from a specified edge of P. The algorithm combines results from visibility and shortest paths with the linear-time polygon triangulation algorithm discovered recently by Tarjan and Van Wyk. Previous published algorithms for the strong hidden-line problem require O(n log n) steps even after triangulation, where n is the cardinality of P.

12986 Godfried T. Toussaint. A new class of stuck unknots in pol-6. *Contributions to Algebra and Geometry*, 42(2):301–306, 2001. [t-ncsup-01]

12987 G. T. Toussaint. A new class of stuck unknots in Pol_6. Technical Report SOCS-99.1, School of Comput. Sci., McGill Univ., April 1999. [t-ncsup6-99]

12988 G. T. Toussaint. A new linear algorithm for triangulating monotone polygons. Technical Report SOCS 83.9, McGill University, 1983. [t-nlatm-83] *Annote:* $O(n)$ algorithm for decomposing monotone into edge-visible (which can be done in linear time).

12989 G. T. Toussaint. A new look at Euclid's second proposition. Report SOCS-90.21, School Comput. Sci., McGill Univ., Montreal, PQ, 1990. [t-nlesp-90]

12990 G. T. Toussaint. A simple linear algorithm for intersecting convex polygons. *Visual Comput.*, 1:118–123, 1985. [t-slaic-85]

12991 G. T. Toussaint. A simple proof of Pach's extremal theorem for convex polygons. *Pattern Recogn. Lett.*, 1:85–86, 1982. [t-sppet-82]

12992 G. T. Toussaint. Algorithms for computing relative neighbourhood graph. *Electron. Lett.*, 16(22):860, 1980. [t-acrng-80]

12993 G. T. Toussaint. An optimal algorithm for computing the minimum vertex distance between two crossing convex polygons. In 457-458, editor, *Proc. 21st Allerton Conf. Commun. Control Comput.*, 1983. [t-oacmv-83]

12994 G. T. Toussaint. An optimal algorithm for computing the minimum vertex distance between two crossing convex polygons. In *Proc. IEEE Internat. Conf. Pattern Recogn.*, pages 465–467, 1984. [t-oacmv-84i] *Precedes:* t-oacmv-84a.

12995 G. T. Toussaint. An optimal algorithm for computing the minimum vertex distance between two crossing convex polygons. *Computing*, 32:357–364, 1984. [t-oacmv-84a] *Keywords:* Voronoi diagrams. *Succeeds:* t-oacmv-84i. *Annote:* Linear algorithm. Exploits the fact that VD outside and above semi-circle polygon can be constructed in linear time.

12996 G. T. Toussaint. An optimal algorithm for computing the relative convex hull of a set of points in a polygon. In *Signal Processing III: Theories and Applications*, pages 853–856. Proc. 3rd European Signal Process. Conf., 1986. [t-oacrc-86]

12997 G. T. Toussaint. An output-complexity-sensitive polygon triangulation algorithm. Report SOCS-90.1, School Comput. Sci., McGill Univ., Montreal, PQ, February 1990. [t-ocspt-90] *Comments:* Replaces report SOCS-88.10 (June 1988).

12998 G. T. Toussaint. Comment on algorithms for computing relative neighbourhood graph. *Electron. Lett.*, 16:860, 1980. [t-cacrn-80]

12999 G. T. Toussaint. Complexity, convexity, and unimodality. In *Proc. 2nd World Conf. Math.*, 1984. [t-ccu-84]

13000 G. T. Toussaint. Complexity, convexity, and unimodality. *Internat. J. Comput. Inform. Sci.*, 13(3):197–217, June 1984. [t-ccu-84a]

13001 G. T. Toussaint. Computational geometric problems in pattern recognition. In J. Kittler, K. S. Fu, and L. F. Pau, editors, *Pattern Recognition Theory and Application*, pages 73–91. D. Reidel Publishing Company, Boston, MA, 1982. [t-cgppr-82]

13002 G. T. Toussaint, editor. *Computational Geometry*. North-Holland, Amsterdam, Netherlands, 1985. [t-cg-85] *Keywords:* book.

13003 G. T. Toussaint. Computational geometry: recent developments. In *New Advances in Computer Graphics: Proceedings of Computer Graphics International '89*, pages 23–51. Springer-Verlag, 1989. [t-cgrd-89] *Keywords:* survey paper.

13004 Godfried T. Toussaint. Computing geodesic properties inside a simple polygon. *Revue D'Intelligence Artificielle*, 3(2):9–42, 1989. also available as technical report SOCS 88.20, School of Computer Science, McGill University. [t-cgpis-89]

13005 G. T. Toussaint. Computing geodesic properties of polygons. Manuscript, School Comput. Sci., McGill Univ., Montreal, PQ, 1986. [t-cgpp-86]

13006 G. T. Toussaint. Computing largest empty circles with location constraints. *Internat. J. Comput. Inform. Sci.*, 12:347–358, 1983. [t-clecl-83]

13007 G. T. Toussaint. Decomposing a simple polygon with the relative neighborhood graph. In *Proc. 18th Allerton Conf. Commun. Control Comput.*, pages 20–28, 1980. [t-dsprn-80]

13008 G. T. Toussaint. Movable separability of sets. Technical Report SOCS-84.17, School Comput. Sci., McGill Univ., Montreal, PQ, November 1984. [t-mss-84]

13009 G. T. Toussaint. Movable separability of sets. In G. T. Toussaint, editor, *Computational Geometry*, pages 335–375. North-Holland, Amsterdam, Netherlands, 1985. [t-mss-85]

13010 G. T. Toussaint. New results in computational geometry relevant to pattern recognition in practice. In E. S. Gelsema and L. N. Kanal, editors, *Pattern Recognition in Practice II*, pages 135–146. North-Holland, Amsterdam, Netherlands, 1986. [t-nrcgr-86]

13011 G. T. Toussaint. On the application of the convex hull to histogram analysis in threshold selection. *Pattern Recogn. Lett.*, 2:75–77, 1983. [t-achha-83]

13012 G. T. Toussaint. On the complexity of approximating polygonal curves in the plane. In *Proc. IASTED, International Symposium on Robotics and Automation*, 1985. [t-capcp-85]

13013 G. T. Toussaint. Pattern recognition and geometrical complexity. In *Proc. 5th IEEE Internat. Conf. Pattern Recogn.*, pages 1324–1347, 1980. [t-prgc-80]

13014 G. T. Toussaint. Shortest path solves edge-to-edge visibility in a polygon. Technical Report SOCS-85.19, School of Computer Science, McGill University, Montreal, Quebec, Canada, 1985. [t-spsee-85]

13015 G. T. Toussaint. Shortest path solves edge-to-edge visibility in a polygon. *Pattern Recogn. Lett.*, 4:165–170, 1986. [t-spsee-86]

13016 G. T. Toussaint. Shortest path solves translation separability of polygons. Report SOCS-85.27, School Comput. Sci., McGill Univ., Montreal, PQ, 1985. [t-spsts-85]

13017 G. T. Toussaint. Solving geometric problems with the rotating calipers. In *Proc. IEEE MELECON '83*, pages A10.02/1–4, 1983. [t-sgprc-83] *Abstract:* M. I. Shamos (1978) recently showed that the diameter of a convex n-sided polygon could be computed in $O(n)$ time using an elegant and simple procedure which resembles rotating a set of calipers once around the polygon. It is shown that this simple idea can be generalized in two ways: several sets of calipers can be used simultaneously on one convex polygon, or one set of calipers can be used on several convex polygons simultaneously. These generalizations make it possible to obtain simple $O(n)$ algorithms for solving a variety of problems defined on convex polygons. Such problems include (1) finding the minimum-area rectangle enclosing a convex polygon, (2) computing the maximum distance between two polygons, (3) performing the vector-sum of two convex polygons, (4) merging convex polygons in convex hull finding algorithms, and (5) finding the critical support lines between two convex polygons. Finding the critical support lines leads to obtaining solutions of several additional problems concerned with visibility, collision avoidance, range fitting, linear separability, and computing the Grenander distance between sets.

13018 G. T. Toussaint. Some collision avoidance problems in the plane. In R. A. Earnshaw, editor, *Theoretical Foundations of Computer Graphics and CAD*, volume 40 of *NATO ASI Series F*, pages 639–672. Springer-Verlag, Berlin, West Germany, 1988. [t-scapp-88]

13019 G. T. Toussaint. The convex hull as a tool in pattern recognition. In *Proc. AFOSR Workshop Comm. Theory Appl.*, pages 43–46, 1978. [t-chtpr-78]

13020 G. T. Toussaint. The Erdős-Nagy theorem and its ramifications. In *Proc. 11th Canad. Conf. Comput. Geom.*, pages 9–12, 1999. [t-entir-99] *Comments:* Fuller version in Electronic proceedings http://www.cs.ubc.ca/conferences/CCCG/elecproc.html.

13021 G. T. Toussaint. The planar furthest-point Voronoi diagram in the L_1 (L_∞) metrics can be computed in $O(n)$ worst-case time. Report SOCS 81.10, School Comput. Sci., McGill Univ., Montreal, PQ, 1981. [t-pfpvd-81]

13022 G. T. Toussaint. The relative neighbourhood graph of a finite planar set. *Pattern Recogn.*, 12:261–268, 1980. [t-rngfp-80]

13023 G. T. Toussaint. The symmetric all-furthest-neighbor problem. Report SOCS 81.5, School Comput. Sci., McGill Univ., Montreal, PQ, 1981. [t-safnp-81]

13024 G. T. Toussaint. The symmetric all-furthest neighbor problem. *J. Comp. Math. Appl.*, 9(6):747–754, 1983. [t-safnp-83]

13025 G. T. Toussaint, S. G. Akl, and L. P. Devroye. Efficient convex hull algorithms for points in two and more dimensions. Report SOCS 78.5, School Comput. Sci., McGill Univ., Montreal, PQ, 1978. [tad-echap-78]

13026 G. T. Toussaint and D. Avis. On a convex hull algorithm for polygons and its application to triangulation problems. *Pattern Recogn.*, 15(1):23–29, 1982. [ta-chapi-82] *Keywords:* polygons, triangulation, convex hull.

13027 G. T. Toussaint and B. K. Bhattacharya. Fast algorithms for computing the diameter of a finite planar set. Report ??, ??, ?? [tb-facdf-??]

13028 G. T. Toussaint and B. K. Bhattacharya. On geometric algorithms that use the furthest-neighbor pair of a finite planar set. Technical report, School of Computer Science, McGill University, 1981. [tb-gaufn-81]

13029 G. T. Toussaint and B. K. Bhattacharya. On geometric algorithms that use the furthest-point Voronoi diagram. Report 81.3, School Comput. Sci., McGill Univ., Montreal, PQ, 1981. [tb-gatuf-81] *Precedes:* bt-gatuf-85.

13030 G. T. Toussaint and B. K. Bhattacharya. Optimal algorithms for computing the minimum distance between two finite planar sets. *Pattern Recogn. Lett.*, 2:79–82, 1983. [tb-oacmd-83]

13031 G. T. Toussaint, B. K. Bhattacharya, and R. S. Poulsen. The application of Voronoi diagrams to nonparametric decision rules. In *Computer Science and Statistics: The Interface*, pages 97–108, 1985. [tbp-avdnd-85] *Annote:* NN-rule classifies a point according to class of nearest point. That is VD of point sets. Redundant points for this can be discarded.

13032 G. T. Toussaint and H. ElGindy. A counterexample to an algorithm for computing monotone hulls of simple polygons. *Pattern Recogn. Lett.*, 1:219–222, 1983. [te-cacmh-83]

13033 G. T. Toussaint and H. ElGindy. Separation of two monotone polygons in linear time. *Robotica*, 2:215–220, 1984. [te-stmpl-84]

13034 G. T. Toussaint and H. ElGindy. Traditional galleries are star-shaped if every two paintings are visible from some common point. Report SOCS-81.10, School Comput. Sci., McGill Univ., Montreal, PQ, 1981. [te-tgass-81]

13035 G. T. Toussaint and M. A. McAlear. A simple $O(n \log n)$ algorithm for finding the maximum distance between two finite planar sets. *Pattern Recogn. Lett.*, 1:21–24, 1982. [tm-soafm-82]

13036 G. T. Toussaint and R. Menard. Fast algorithms for computing the planar relative neighborhood graph. In *Proc. 5th Sympos. Methods Oper. Res.*, page ??, 1980. [tm-facpr-80]

13037 G. T. Toussaint and R. S. Poulsen. Some new algorithms and software implementation methods for pattern recognition research. In *Proc. IEEE Internat. Comput. Software Applications Conf.*, pages 55–63, 1979. [tp-snasi-79]

13038 G. T. Toussaint and J.-R. Sack. Some new results on moving polygons in the plane. In *Proc. Robotics, Intelligence and Productivity Conf.*, pages 158–163, 1983. [ts-snrmp-83] *Keywords:* robotics, motion planning, separation, path planning, polygons, two-dimensional.

G. T. Toussaint. See also [379, 380, 433–436, 979, 1172–1174, 1945, 1957, 1961, 1964–1969, 1981, 2312, 2316, 2318, 4072, 4073, 4864, 4871–4873, 4875–4878, 5049–5051, 7144, 7145, 7421, 7422, 7507, 7975, 8705, 8706, 9172–9174, 9374, 9375, 9390, 9391, 10420, 11042, 11043, 11045, 11046, 11511–11513, 12133, 12380, 12381].

C. Tovey. See also [2825, 2826].

P. Townsend. See also [3077].

13039 B. M. Trager. *Integration of algebraic functions*. PhD thesis, MIT, 1984. [t-iaf-84] *Keywords:* doctoral thesis.

N. Tralli. See also [5991].

A. Treasurywala. See also [5883].

J. P. Tremblay. See also [10914].

13040 L. Trevisan. A note on minimum-area upward drawing of complete and Fibonacci trees. *Inform. Process. Lett.*, 57(5):231–236, 1996. [t-nmaud-96]

13041 L. Trevisan. When Hamming meets Euclid: The approximability of geometric TSP and MST. In *Proc. 29th Annu. ACM Sympos. Theory Comput.*, pages 21–29, 1997. [t-whmet-97]

Joan Trias. See also [7234].

13042 H. Trickey. Drag: A graph drawing system. In *Proc. Internat. Conf. on Electronic Publishing*, pages 171–182. Cambridge University Press, 1988. [t-dgds-88] *Keywords:* graph drawing.

H. Trickey. See also [4338, 4339].

E. Triendl. See also [6816].

E. Trimble. See also [2061].

J. C. Trinkle. See also [5132].

Gerhard Trippen. See also [5332].

13043 Anne Sjerp Troelstra and Dirk van Dalen. *Constructivism in Mathematics*. Studies in Logic and the Foundations of Mathematics. Elsevier Science Publishers, North Holland, Amsterdam, 1988. [td-cm-88]

L. E. Trotter, Jr. See also [10099].

W. Trotter, Jr. See also [12700,12701].

13044 William T. Trotter. *Combinatorics and Partially Ordered Sets: Dimension Theory*. Johns Hopkins Series in the Mathematical Sciences. The Johns Hopkins University Press, 1992. [t-cpos-92]

13045 W. T. Trotter and J. Moore. The dimension of planar posets. *J. Combin. Theory Ser. B*, 22:54–67, 1977. [tm-dpp-77]

W. T. Trotter. See also [2443–2445, 2447, 2841, 5207, 5208, 6069, 8035, 9818, 11763, 12409].

I. J. Trotts. See also [5937].

S. Troubetzkoy. See also [5725].

K. Trovato. See also [4391].

J. J. Troy. See also [8951].

B. Trumbore. See also [9807].

W. B. Trumbore. See also [8451].

13046 Kuo-Hui Tsai and Da-Wei Wang. Optimal algorithm for circle partitioning. In *Proc. 3rd Ann. Internat. Conf. Computing and Combinatorics*, volume 1276 of *Lecture Notes Comput. Sci.*, pages 304–310. Springer-Verlag, 1997. [tw-oacp-97]

R. C. Tsai. See also [8652].

Wen-Hsiang Tsai. See also [3258].

A. Tsakalidis. See also [476,2042–2044, 2375, 2376, 5616, 8105, 9142, 9485].

P. D. Tsanakas. See also [496].

Jeffrey C. F. Tsang. See also [3110].

Jyh-Jong Tsay. See also [1026, 1027, 1052, 6199].

R. S. Tsay. See also [13246].

13047 L.-H. Tseng. *Some Polygon Visibility and Link Distance Problems*. PhD thesis, Department of Electrical Engineering and Computer Science, Northwest University, June 1993. [t-pvldp-93] *Keywords:* doctoral thesis.

13048 L. H. Tseng, P. Heffernan, and D. T. Lee. Two-guard walkability of simple polygons. *Internat. J. Comput. Geom. Appl.*, 8(1):85–116, 1998. [thl-tgwsp-98] *URL:* http://www.ece.nwu.edu/~dtlee/IJCGA_twoguard.ps.Z. *Succeeds:* tl-tgwsp-93.

13049 L. H. Tseng and D. T. Lee. Two-guard walkability of simple polygons. Manuscript, Department of Electrical and Computer Engineering, Northwestern University, 1993. [tl-tgwsp-93] *Precedes:* thl-tgwsp-98.

13050 Y.-J. Tseng and S. Joshi. Determining feasible tool-approach directions for machining Bézier curves and surfaces. *Comput. Aided Design*, 23:367–379, 1991. [tj-dftad-91]

13051 N. Tsikopoulos. A linear triangulation algorithm for weakly-visible polygons. Technical Report 89.03.81, Univ. of Patras, Greece, 1989. [t-ltawv-89]

13052 T. Tsiligirides. Heuristic methods applied to orienteering. *Journal of the Operational Research Society*, 35(9):797–809, 1984. [t-hmao-84]

P. Y. Tsin. See also [13350].

13053 Y. H. Tsin and C. A. Wang. Finding geodesic Voronoi diagrams of points in the presence of rectilinear barriers. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 227–231, 1990. [tw-fgvdp-90] *Cites:* ZZZ.

Y. H. Tsin. See also [13351–13354].

J. Tsitsiklis. See also [10582].

J. N. Tsitsiklis. See also [1874].

J. K. Tsotsos. See also [10629].

M. Tsoukalas. See also [10205,10206].

H. Tu. See also [7276].

H.-Y. Tu. See also [3219, 6619, 7280].

Hung-Yi Tony Tu. See also [3055–3057, 6620].

L. W. Tu. See also [2341].

13054 X. Tu and D. Terzopoulos. Artificial fishes: Physics, locomotion, perception, behavior. *Comput. Graph.*, ??:43–50, 1994. Proc. SIGGRAPH '94. [tt-afplp-94]

A. Tuan. See also [11447].

T. C. Tuan. See also [12869, 12870].

13055 M. Tuceryan and T. Chorzempa. Relative sensitivity of a family of closest-point graphs in computer vision applications. *Pattern Recogn.*, ??:361–373, 1990. [tc-rsfcp-90] *Keywords:* Voronoi tessellation, Delaunay triangulation, minimum spanning tree, relative neighborhood graph, Gabriel graph, closest-point graph, Hough transform, perceptual grouping, computer vision.

13056 M. Tuceryan and A. K. Jain. Texture segmentation using Voronoi polygons. *IEEE Trans. Pattern Anal. Mach. Intell.*, 12(2):211–216, 1990. [tj-tsuvp-90] *Annote:* Compute DT of points and area elongation etc for VPs. Break edges connecting dissimilar polygons.

A. Tuchman. See also [12166].

U. Tucholke. See also [12104].

13057 A. Tucker and D. Wilson. An $O(N^2)$ algorithm for coloring perfect planar graphs. *J. Algorithms*, 5:60–68, 1984. [tw-oacpp-84]

T. W. Tucker. See also [6320].

W. Tucker. See also [6321].

D. S. Tudhope. See also [6830].

13058 E. R. Tufte. *Envisioning Information*. Graphics Press, Cheshire, Connecticut, 1990. [t-ei-90]

13059 E. R. Tufte. *The Visual Display of Quantative Information*. Graphics Press, Cheshire, Connecticut, 1983. [t-vdqi-83]

J. W. Tukey. See also [3659].

13060 D. Tunkelang. A practical approach to drawing undirected graphs. Technical Report CMU-CS-94-161, School Comput. Sci., Carnegie Mellon University, June 1994. [t-padug-94]

13061 Daniel Tunkelang, Roy J. Byrd, and James W. Cooper. Lexical navigation: Using incremental graph drawing for query refinement. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 316–321. Springer-Verlag, 1997. [tbc-lnuig-97] *Keywords:* graph drawing.

13062 S. T. Tuohy. A simulation model for auv navigation. In *Proc. 1994 Symposium on Autonomous Underwater Vehicle Technology*, pages 470–478, 1994. [t-sman-94]

13063 S. T. Tuohy. *Geophysical Map Representation, Abstraction and Interrogation for Autonomous Underwater Vehicle Navigation*. Ph.D. thesis, Massachusetts Institute of Technology, Cambridge, Massachusetts, 1993. [t-gmrai] *Keywords:* doctoral thesis.

13064 S. T. Tuohy and L. Bardis. Low degree approximation of high degree B-spline surfaces. *Engineering with Computers*, 9(4):198–209, 1993. [tb-ldahd-93]

13065 S. T. Tuohy, J. J. Leonard, J. G. Bellingham, N. M. Patrikalakis, and C. Chryssostomidis. Map based navigation for autonomous underwater vehicles. *International Journal of Offshore and Polar Engineering*, ??, June/September 1995. To appear. [tlbpc-mbnau-94]

13066 S. T. Tuohy, T. Maekawa, and N. M. Patrikalakis. Interrogation of geophysical maps with uncertainty for auv micro-navigation. In *Proc. Oceans '93: Engineering in Harmony with the Ocean*, 1993. [tmp-igmua-93]

13067 S. T. Tuohy and N. M. Patrikalakis. Geometric representation of marine propulsors. In *Proc. Marine Computers '91*, page CC5, 1991. [tp-grmp-91]

13068 S. T. Tuohy and N. M. Patrikalakis. Representation of geophysical maps with uncertainty. In N. Magnenat-Thalmann and D. Thalmann, editors, *Proc. CG International '93*, pages 179–192, 1993. [tp-rgmu-93]

13069 S. T. Tuohy, N. M. Patrikalakis, J. J. Leonard, J. G. Bellingham, and C. Chryssostomidis. Auv navigation using geophysical maps with uncertainty. In *Proc. 8th International Symposium on Unmanned Untethered Submersible Technology*, pages 265–276, 1993. [tplbc-anugm-93]

13070 S. T. Tuohy, J. W. Yoon, and N. M. Patrikalakis. Interrogation of 3-d nonlinear geophysical databases. In J. A. Vince and R. A. Earnshaw, editors, *Proc. CG International '95*, 1995. To appear. [typ-i3dng-95]

13071 S. T. Tuohy, J. W. Yoon, and N. M. Patrikalakis. Volumetric splines for visualization of ocean data. In *Proc. of Oceans '95*, 1995. To appear. [typ-vsvod-95]

S. T. Tuohy. See also [77, 553, 5248, 7135, 10657, 10663, 13663, 13664].

J. Tuomi. See also [10209].

13072 P. Turán. A note of welcome. *J. Graph Theory*, 1:7–9, 1977. [t-nw-77]

P. Turán. See also [5004, 8298].

13073 V. Turau. Fixed-radius near neighbors search. *Inform. Process. Lett.*, 39:201–203, 1991. [t-frnns-91]

13074 G. Turk. Interactive collision detection for molecular graphics. Technical Report 90-014, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, January 1990. [t-icdmg-90]

13075 G. Turk. Re-tiling polygonal surfaces. *Comput. Graphics*, 26(2):55–64, 1992. Proc. SIGGRAPH '92. [t-rtps-92] *Keywords:* model simplification, automatic mesh generation, constrained triangulation, levels-of-detail, shape interpolation, approximation. *Annote:*

G. Turk. See also [3414, 5637, 6030].

Alain Turki. See also [2329].

George Turkiyyah. See also [11087].

13076 G. M. Turkiyyah, D. W. Storti, M. Ganter, H. Chen, and M. Vimawala. An accelerated triangulation method for computing the skeletons of free-form solid models. *Comput. Aided Design*, 29(1):5–19, January 1997. [tsgcv-atmcs-97]

13077 J. U. Turner. Precise solid modeling with a faceted modeler. Report ??, Dept. A74, IBM Corporation, 1985. [t-psmfm-85]

P. R. Turner. See also [3376, 5192].

G. Tusnády. See also [393].

13078 W. Tutte. The factorization of linear graphs. *J. London Math. Soc.*, 22:107–111, 1947. [t-flg-47]

13079 W. T. Tutte. A census of planar triangulation. *Canad. J. Math.*, 14:21–38, 1962. [t-cpt-62]

13080 W. T. Tutte. A theorem on planar graphs. *Trans. Amer. Math. Soc.*, 82:99–116, 1956. [t-tpg-56]

13081 W. T. Tutte. Bridges and Hamiltonian circuits in planar graphs. *Aequationes Mathematicae*, 15:1–33, 1977. [t-bhcpg-77]

13082 W. T. Tutte. *Connectivity in Graphs*. University of Toronto Press, 1966. [t-cg-66]

13083 W. T. Tutte. Convex representations of graphs. *Proceedings London Mathematical Society*, 10(38):304–320, 1960. [t-crg-60] *Keywords:* graph drawing.

13084 W. T. Tutte. *Graph Theory*. Addison-Wesley, 1984. [t-gt-84]

13085 W. T. Tutte. How to draw a graph. *Proceedings London Mathematical Society*, 13(52):743–768, 1963. [t-hdg-63] *Keywords:* graph drawing.

13086 W. T. Tutte. On the symmetry of cubic graphs. *Proc. London Math. Soc.*, 10:304–320, 1959. [t-scg-59]

13087 W. T. Tutte. Toward a theory of crossing numbers. *J. Combin. Theory*, 8:45–53, 1970. [t-ttcn-70]

13088 W. T. Tutte. What is a map? In *New Directions in the Theory of Graphs*. Academic Press, 1973. [t-wim-73]

W. T. Tutte. See also [6674].

H. Tuy. See also [610].

13089 Z. Tuza. Covering of graphs by complete bipartite subgraphs: complexity of $0-1$ matrices. *Combinatorica*, 4:111–116, 1984. [t-cgcbs-84]

13090 H. Tverberg. A generalization of Radon's theorem. *J. London Math. Soc.*, 41:123–128, 1966. [t-grt-66]

13091 H. Tverberg. A separation property of plane convex sets. *Math. Scand.*, 45:225–260, 1979. [t-sppcs-79]

13092 H. Tverberg. Proof of Grünbaum's conjecture on common transversals for translates. *Discrete Comput. Geom.*, 4:191–203, 1989. [t-pgcct-89]

Oren J. Tversky. See also [11652].

J. P. Twarog. See also [3632].

A. Tyagi. See also [11109].

J. Tygar. See also [11110].

J. D. Tyger. See also [11135].

A. Ubema. See also [2068].

13093 T. Uchiki, T. Ohashi, and M. Tokoro. Collision detection in motion simulation. *Comput. & Graphics*, 7(3–4):285–293, 1983. [uot-cdms-83]

13094 Göktürk Üçoluk and İ. Hakkı Toroslu. Reconstruction of 3–D surface object from its pieces. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 187–192, 1997. [ut-r3dso-97]

J. K. Udupa. See also [610].

13095 S. Udupa. Collision detection and avoidance in computer controlled manipulators. In *Proc. Internat. Joint Conf. Artif. Intell.*, pages 737–748, 1977. [u-cdacc-77]

13096 J. L. Udy et al. Computation of interferences between three-dimensional objects and the optimal packing problem. *Adv. Eng. Softw.*, 10(1):8–12, 1988. [uo-cibtd-88]

M. Ueda. See also [12712].

H. Uehara. See also [7416].

J. J. Uhl. See also [10729].

13097 L. Uhr. *Algorithms- Structured Computer Arrays and Networks*. Academic Press, 1984. [u-ascan-84]

13098 L. Uhr. Layered "recognition cone" networks that preprocess, classify and describe. *IEEE Trans. Comput.*, C-21:758–768, 1972. [u-lrcnt-72]

L. Uhr. See also [10906].

C. Uhrig. See also [576, 577, 2614, 9453, 9454, 9468–9473, 10023].

J. J. Uicker, Jr. See also [5741].

13099 S. M. Ulam. A problem in the calculus of variations. In *A Collection of Mathematical Problems*, chapter VI, Section 9. Interscience Publishers, 1960. [u-pcv-60]

13100 S. M. Ulam. *Problems of Modern Mathematics*. Science Editions, New York, 1964. [u-pmm-64]

J. Ullman. See also [10701, 10702].

13101 J. D. Ullman. *Computational Aspects of VLSI*. Computer Science Press, 1984. [u-cav-84]

13102 J. D. Ullman. *Computational Aspects of VLSI*. Morgan-Kaufmann, San Mateo, CA, 1992. [u-cav-92]

J. D. Ullman. See also [342–344, 4336, 4337, 6452, 6690, 7101].

S. Ullman. See also [7260–7262].

J. D. Ullmann. See also [7574].

C. Ullrich. See also [2135, 10434].

13103 Christopher Umans and William Lenhart. Hamiltonian cycles in solid grid graphs. In *Proc. 38th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 496–507, 1997. [ul-hcsgg-97]

13104 H. Umemoto. Searching a polygon by 1-searchers. Master's thesis, Hiroshima Univ., Hiroshima, Japan, 1995. [u-sp1s-95] *Keywords:* master thesis.

H. Umemoto. See also [13746].

H. Umeo. See also [980–982].

Y. Umetani. See also [6947].

13105 P. Ungar. 2n noncollinear points determine at least 2n directions. *J. Combin. Theory Ser. A*, 33:343–347, 1982. [u-2nnpd-82]

Hiroshi Unno. See also [9780].

E. Upfal. See also [2460, 7812, 10703].

L. Upson. See also [9198].

13106 M. Urabe. On a partition into convex polygons. *Discrete Appl. Math.*, 64:179–191, 1996. [u-opcp-96]

13107 Masatsugu Urabe. On a partition of point sets into convex polygons. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 21–24, 1997. [u-ppscp-97]

13108 M. Urabe. Partitioning point sets into disjoint convex polytopes. *Comput. Geom. Theory Appl.*, 13:173–178, 1999. [u-ppsdc-99]

13109 M. Urabe and M. Watanabe. On a counterexample to a conjecture of Mirzaian. *Comput. Geom. Theory Appl.*, 2(1):51–53, 1992. [uw-ccm-92]

M. Urabe. See also [7132].

13110 R. Urquhart. Graph theoretical clustering based on limited neighbourhood sets II. Manuscript, Dept. Electron. Elect. Engrg., Univ. Glasgow, Glasgow, Scotland, ?? [u-gtcbl-??]

13111 R. B. Urquhart. A note on graphs defined by a region. Internal Report, Dept. Electron. Elect. Engrg., Univ. Glasgow, Glasgow, Scotland, 1980. [u-ngdr-80]

13112 R. B. Urquhart. A note on the computation of subgraphs of the Delaunay triangulation. Internal Report, Dept. Electron. Elect. Engrg., Univ. Glasgow, Glasgow, Scotland, 1980. [u-ncsdt-80]

13113 R. B. Urquhart. Algorithms for computation of relative neighborhood graph. *Electron. Lett.*, 16:556–557, 1980. [u-acrng-80]

13114 R. B. Urquhart. Graph theoretical clustering based on limited neighbourhood sets. *Pattern Recogn.*, 15:173–187, 1982. [u-gtcbl-82]

13115 R. B. Urquhart. Some properties of the planar Euclidean relative neighbourhood graph. *Pattern Recogn. Lett.*, 1:317–332, 1983. [u-spper-83]

13116 R. B. Urquhart and J. E. S. Macleod. Interactive hierarchic clustering: a display based on graph-theoretical methods. In *Proc. Internat. Conf. Cybernet. Soc.*, pages 11–15, 1981. [um-ihcdb-81]

V. Urrutia-Galicia. See also [11265, 11266].

13117 Jorge Urrutia. Art gallery and illumination problems. In Jörg-Rüdiger Sack and Jorge Urrutia, editors, *Handbook of Computational Geometry*, pages 973–1027. North-Holland, 2000. [u-agip-00] *Keywords:* visibility. *Annote:* Chapter 22 of su-hcg-00.

13118 J. Urrutia. *Intersection Graphs of Some Families of Plane Curves*. PhD thesis, University of Waterloo, 1980. [u-igfpc-80] *Keywords:* doctoral thesis.

13119 Jorge Urrutia. On the number of internal and external visibility edges of polygons. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 17–20, 1997. [u-nieve-97]

13120 J. Urrutia. Partial orders and Euclidean geometry. In I. Rival, editor, *Algorithms and Order*, pages 387–434. Kluwer Academic Publishers, 1989. [u-poeg-89] *Keywords:* combinatorial geometry, two-dimensional, three-dimensional. *Annote:* studies containment relations arising from families of points, circles, spheres, triangles, rectangles, etc.

13121 J. Urrutia and J. Zaks. Illuminating convex sets. Technical Report TR-89-31, Dept. Comput. Sci., Univ. Ottawa, Ottawa, ON, 1989. [uz-ics-89]

J. Urrutia. See also [30, 34–37, 47, 48, 409, 410, 454, 1382, 1520, 1521, 1586, 1938–1940, 2173–2175, 2237, 2238, 2313, 2314, 2747, 3050, 3126, 3668, 3669, 3672, 3675–3678, 3681–3694, 3696, 5038, 5039, 5043, 5044, 5082, 5352, 5353, 7232, 7233, 7235, 8303, 8311, 8312, 9827, 10109, 10196, 10197, 11250, 11251, 11267, 11506, 11514, 11632–11634, 12692].

13122 S. Ursic. The ellipsoid algorithm for linear inequalities in exact arithmetic. In *Proc. 23rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 321–326, 1982. [u-ealie-82]

S. P. Uselton. See also [5636].

13123 J. V. Uspensky. *Theory of Equations*. McGraw-Hill, 1948. [u-te-48]

13124 A. Y. Uteshev and S. G. Shulyak. Hermite's method of separation of solutions of systems of algebraic equations and its applications. *Linear Algebra and its Applications*, 177:49–88, 1992. [us-hmsss-92]

13125 H. Vaccaro. *Alternative Techniques for Modeling Travel Distance*. PhD thesis, MIT, 1974. [v-atmtd-74] *Keywords:* doctoral thesis.

13126 M.-E. Vafiadou and N. M. Patrikalakis. Interrogation of offsets of polynomial surface patches. In F. H. Post and W. Barth, editors, *Eurographics '91, Proc. 12th Annual European Association for Computer Graphics Conference and Exhibition*, pages 247–259, 1991. [vp-iopsp-91]

13127 Jan Vahrenhold and Klaus H. Hinrichs. Fast and simple external-memory planar point-location. In *Abstracts 14th European Workshop Comput. Geom.*, pages 139–140. Universitat Polytènica de Catalunya, Barcelona, 1998. [vh-fsemp-98]

Jan Vahrenhold. See also [749].

P. M. Vaida. See also [3363].

P. Vaidya. See also [3776].

13128 P. M. Vaidya. A fast approximation for minimum spanning trees in k-dimensional space. In *Proc. 25th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 403–407, 1984. [v-famst-84] *Precedes:* v-mstkd-88.

13129 P. M. Vaidya. A new algorithm for minimizing convex functions over convex sets. In *Proc. 30th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 338–343, 1989. [v-namcf-89]

13130 P. M. Vaidya. A sparse graph almost as good as the complete graph on points in K dimensions. *Discrete Comput. Geom.*, 6:369–381, 1991. [v-sgagc-91]

13131 P. M. Vaidya. An algorithm for linear programming which requires $O(((m+n)n^2+(m+n)^{1.5}n)L)$ arithmetic operations. In *Proc. 19th Annu. ACM Sympos. Theory Comput.*, pages 29–38, 1987. [v-alpwr-87] *Precedes:* v-alpwr-90.

13132 P. M. Vaidya. An algorithm for linear programming which requires $O(((m+n)n^2+(m+n)^{1.5}n)L)$ arithmetic operations. *Math. Program.*, 47:175–201, 1990. [v-alpwr-90] *Succeeds:* v-alpwr-87.

13133 P. M. Vaidya. An $O(n \log n)$ algorithm for the all-nearest-neighbors problem. *Discrete Comput. Geom.*, 4:101–115, 1989. [v-oaann-89] *Succeeds:* v-oaann-86.

13134 P. M. Vaidya. An optimal algorithm for the all-nearest-neighbors problem. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 117–122, 1986. [v-oaann-86] *Precedes:* v-oaann-89.

13135 P. M. Vaidya. Approximate minimum weight matching on points in k-dimensional space. *Algorithmica*, 4:569–583, 1989. [v-amwmp-89] *Keywords:* matchings, approximation, d-dimensional.

13136 P. M. Vaidya. Geometry helps in matching. In *Proc. 20th Annu. ACM Sympos. Theory Comput.*, pages 422–435, 1988. [v-ghm-88] *Precedes:* v-ghm-89.

13137 P. M. Vaidya. Geometry helps in matching. *SIAM J. Comput.*, 18:1201–1225, 1989. [v-ghm-89] *Succeeds:* v-ghm-88.

13138 P. M. Vaidya. Minimum spanning trees in k-dimensional space. *SIAM J. Comput.*, 17:572–582, 1988. [v-mstkd-88] *Succeeds:* v-famst-84. *Annote:* He gives an $O(\epsilon^{-d} n \log n)$ algorithm to get within factor $(1+\epsilon)$ of optimal, for the L_q metrics. He also gives a nearly linear expected time algorithm for n points uniformly distributed in a d-cube; time is $O(n\alpha(cn, n)$, where α is the inverse Ackermann function, and s depends on d. See also [3340].

13139 P. M. Vaidya. Reducing the parallel complexity of certain linear programming problems. In *Proc. 31st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 583–589, 1990. [v-rpccl-90]

13140 P. M. Vaidya. Space-time tradeoffs for orthogonal range queries. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 169–174, 1985. [v-sttor-85] *Precedes:* v-sttor-89.

13141 P. M. Vaidya. Space-time tradeoffs for orthogonal range queries. *SIAM J. Comput.*, 18:748–758, 1989. [v-sttor-89] *Succeeds:* v-sttor-85.

P. M. Vaidya. See also [3364, 7783].

13142 A. Vainshtein. Finding minimal enclosing parallelograms. *Diskretnaya Matematika*, 2:72–81, 1990. In Russian. [v-fmep-90]

Alek Vainshtein. See also [4245, 11880].

13143 V. K. Vaishnavi. Computing point enclosures. *IEEE Trans. Comput.*, C-31:22–29, 1982. [v-cpe-82]

13144 V. K. Vaishnavi. Multidimensional height-balanced trees. *IEEE Trans. Comput.*, C-32:334–343, 1983. [v-mhbt-83]

13145 V. K. Vaishnavi. Optimal worst-case algorithms for rectangle intersection and batched range searching problems. Report 79-CS-12, Unit Comput. Sci., McMaster Univ., Hamilton, ON, 1979. [v-owcar-79]

13146 V. K. Vaishnavi, H. P. Kriegel, and D. Wood. Space and time optimal algorithms for a class of rectangle intersection problems. *Inform. Sci.*, 21:59–67, 1980. [vkw-stoac-80]

13147 V. K. Vaishnavi and D. Wood. Data structures for the rectangle containment and enclosure problems. *Comput. Graph. Image Process.*, 13:372–384, 1980. [vw-dsrce-80]

13148 V. K. Vaishnavi and D. Wood. Rectilinear line segment intersection, layered segment trees and dynamization. *J. Algorithms*, 3:160–176, 1982. [vw-rlsil-82]

V. K. Vaishnavi. See also [8350, 8351, 11028].

13149 J. Valdes, R. E. Tarjan, and E. L. Lawler. The recognition of series-parallel digraphs. *SIAM J. Comput.*, 11(2):298–313, 1982. [vtl-rspd-82]

P. Valentin. See also [8445].

13150 F. Valentine. Minimal sets of visibility. In *Proc. Amer. Math. Soc.*, volume 4, pages 917–921, 1953. [v-msv-53]

13151 Frederick Albert Valentine. *Convex Sets*. McGraw-Hill, New York, 1964. [v-cs-64]

13152 F. A. Valentine. Local convexity and L_n sets. *Proc. Amer. Math. Soc.*, 16:1305–1310, 1965. [v-lcls-65]

F. A. Valentine. See also [2569, 7119].

C. R. Valenzuela. See also [9501].

Jesús Valenzuela. See also [3553].

13153 L. Valiant. Completeness classes in algebra. In *Proc. 11th Annu. ACM Sympos. Theory Comput.*, pages 249–261, 1979. [v-cca-79]

13154 L. Valiant. Parallelism in comparison problems. *SIAM J. Comput.*, 4(3):348–355, 1975. [v-pcp-75]

13155 L. Valiant. Short monotone formulae for the majority function. *J. Algorithms*, 5:363–366, 1984. [v-smfmf-84]

13156 L. Valiant. Universality considerations in VLSI circuits. *IEEE Trans. Comput.*, C-30(2):135–140, 1981. [v-ucvc-81] *Keywords:* graph drawing.

L. Valiant. See also [7534].

13157 L. G. Valiant. A bridging model for parallel computation. *Commun. ACM*, 33(8):103–111, 1990. [v-bmpc-90]

13158 L. G. Valiant. A theory of the learnable. *Commun. ACM*, 27(11):1134–1142, 1984. [v-tl-84]

13159 L. G. Valiant. General purpose parallel architectures. In J. van Leeuwen, editor, *Handbook of Theoretical Computer Science*, pages 943–972. Elsevier/The MIT Press, Amsterdam, 1990. [v-gppa-90]

13160 L. G. Valiant and V. V. Vazirani. Np is as easy as detecting unique solutions. *Theoret. Comput. Sci.*, 47:85–93, 1986. [vv-niedu-86]

L. G. Valiant. See also [696, 5856, 11136].

N. Valiveti. See also [3902, 3903].

R. Valiveti. See also [3891].

13161 O. Vallarino. On the use of bit maps for multiple key retrieval. *SIGPLAN Notices*, 11:108–114, 1976. [v-ubmmk-76]

D. Vallejo. See also [616].

M. G. Vallet. See also [5853].

13162 P. Valtr. Convex independent sets and 7-holes in restricted planar point sets. *Discrete Comput. Geom.*, 7:135–152, 1992. [v-cis7h-92]

13163 Pavel Valtr. Graph drawings with no k pairwise crossing edges. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 205–218. Springer-Verlag, 1997. [v-gdkpc-97] *Keywords:* graph drawing.

13164 P. Valtr. Lines, line-point incidences and crossing families in dense sets. *Combinatorica*, 16:269–294, 1996. [v-llpic-96]

13165 P. Valtr. On the minimum number of empty polygons in planar point sets. *Studia Sci. Math. Hungar.*, 30:155–163, 1995. [v-mnepp-92]

13166 P. Valtr. *Planar point sets with bounded rations of distances*. PhD thesis, Fachbereich Mathematik, Freie Universität Berlin, Berlin, Germany, 1994. [v-ppsbr-94] *Keywords:* doctoral thesis.

13167 P. Valtr. Sets in R^d with no large empty convex subsets. *Discrete Appl. Math.*, 108:115–124, 1992. [v-srnle-92]

13168 P. Valtr. Unit squares intersecting all secants of a square. *Discrete Comput. Geom.*, 11:235–239, 1994. [v-usias-94]

P. Valtr. See also [84, 1385, 4775, 4776, 7835, 7836, 8122, 9311, 9312, 10101–10103, 12963].

M. K. Vamanamurthy. See also [12313].

Dirk van Dalen. See also [13043].

A. Van Gelder. See also [13580].

P. Van Hentenryk. See also [3631].

13169 J. van Leeuwen. Graph algorithms. In J. van Leeuwen, editor, *Handbook of Theoretical Computer Science*, volume A, pages 525–631. Elsevier, Amsterdam, 1990. [l-ga-90]

J. van Leeuwen. See also [4777].

C. Van Wyk. See also [1644, 12821].

13170 C. J. Van Wyk. *A language for typesetting graphics*. PhD thesis, Sept. Comput. Sci., Stanford Univ., Stanford, CA, June 1980. Technical Report STAN-CS-80-803. [v-ltg-80] *Keywords:* doctoral thesis.

13171 C. J. Van Wyk and J. S. Vitter. The complexity of hashing with lazy deletion. *Algorithmica*, 1:17–29, 1986. [vv-chld-86]

C. J. Van Wyk. See also [3370–3372, 4314, 4315, 5405, 5406, 5671, 5672, 10685, 11687, 12184, 12185, 12392–12395, 12822–12824].

13172 J. Vandergraft. *Introduction to Numerical Computation*. Academic Press, New York, NY, 1978. [v-inc-78]

13173 A. B. VanderLugt. Signal detection by complex spatial filtering. *IEEE Trans. Inform. Theory*, IT-10(2):139–145, April 1964. [v-sdcsf-64]

13174 G. N. Vanderplaats. *Numerical Optimization Techniques for Engineering Design*. McGraw-Hill, 1984. [v-noted-84]

Denis Vandorpe. See also [7466, 10837].

G. Vaněček. See also [7030].

13175 G. Vaněček, Jr. Back-face culling applied to collision detection of polyhedra. *J. Visualizat. and Comput. Animation*, 5(1), 1994. [v-bfcac-94]

13176 G. Vaněček Jr. Brep-index: a multidimensional space partitioning tree. *Internat. J. Comput. Geom. Appl.*, 1(3):243–261, 1991. [v-bimsp-91] *Keywords:* classification, Brep, BSP tree, data structures.

G. Vaněček Jr. See also [2345, 2346].

Sreedhar Vangavolu. See also [4079].

R. Vanisree. See also [8366].

13177 V. N. Vapnik and A. Y. Chervonenkis. On the uniform convergence of relative frequencies of events to their probabilities. *Theory Probab. Appl.*, 16:264–280, 1971. [vc-ucrfe-71]

13178 K. Varadarajan. A divide and conquer algorithm for min-cost perfect matching in the plane. In *Proc. 39th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 320–329, 1998. [v-dcamc-98]

13179 K. Varadarajan and P. K. Agarwal. Approximating shortest paths on a polyhedron. unpublished manuscript, 1996. [va-aspp-96]

13180 Kasturi R. Varadarajan. Approximating monotone polygonal curves using the uniform metric. In *Proc. 12th Annu. ACM Sympos. Comput. Geom.*, pages 311–318, 1996. [v-ampcu-96] *Cites:* aaas-cvgbr-93, abosy-fmcnp-85, as-anspt-93, as-pm-92, ak-nthld-93, bks-lsctp-95, b-tcl-85, c-vsanl-88, cc-apcmn-92, dp-arnpr-73, et-apctt-94, fm-cpgcs-91, g-eplfa-94, ghms-apsml-93, h-patmn-93, hs-cmlpg-91, hs-sudpl-92, hs-fpfsp-91, ii-pacfa-88, kd-pamm-82, ks-ebago-93, lo-aalgb-92, m-alg-87, m-olcch-87, m-roass-91, mo-pca-88, s-ltaml-86, t-capcp-85, ZZZ.

13181 Kasturi R. Varadarajan and Pankaj Agarwal. Approximating shortest paths on an nonconvex polyhedron. In *Proc. 38th Annu. IEEE Sympos. Found. Comput. Sci.*, page To appear, 1997. [va-aspnp-97]

13182 K. R. Varadarajan and Pankaj K. Agarwal. Approximation algorithms for bipartite and non-bipartite matching in the plane. In *Proc. 10th ACM-SIAM Sympos. Discrete Algorithms*, pages 805–814, 1999. [va-aabnb-99]

13183 Kasturi R. Varadarajan and P. K. Agarwal. Linear approximation of simple objects. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 13–18, 1995. [va-laso-95]

13184 Kasturi R. Varadarajan and P. K. Agarwal. Linear approximation of simple objects. *Inform. Process. Lett.*, 62:89–94, 1997. [va-laso-97]

K. R. Varadarajan. See also [133, 183, 184, 267, 6669, 7904].

R. Varadarajan. See also [13225].

13185 T. Varady. Surface-surface intersections for double-quadratic parametric patches in a solid modeller. Technical report, Comput. Automation Res. Inst., Hungarian Academy of Science, ?? [v-ssidq-]

13186 A. N. Varchenko. Combinatorics and topology of the disposition of affine hyperplanes in real space. *Funk. Anal. i Prilozhen.*, 21(N 1):11–22, 1987. [v-ctdah-87]

13187 A. N. Varchenko and I. M. Gelf́and. On Heavyside functions of a configuration of hyperplanes. *Funk. Anal. i Prilozhen.*, 21(N-4):1–18, 1987. [vg-hfch-87]

F. Vargiu. See also [2633, 4123–4129, 4133–4136, 4143, 8882, 10651, 13256].

13188 A. Varshney. *Hierarchical Geometric Approximations*. Ph.D. thesis, Department of Computer Science, University of North Carolina, Chapel Hill, NC 27599-3175, 1994. TR-050-1994. [v-hga-94] *Keywords:* doctoral thesis.

13189 A. Varshney, P. K. Agarwal, F. P. Brooks, Jr., W. Wright, and H. Weber. Multiresolution hierarchy generation for polygonal models, 1994. Manuscript. [vabww-mhgpm-94]

13190 A. Varshney and F. P. Brooks, Jr. Fast analytical computation of Richard's smooth molecular surface. In *Proc. Visualization '93*, pages 300–307, 1993. [vb-facrs-93]

13191 A. Varshney, F. P. Brooks, Jr., and W. V. Wright. Computing smooth molecular surfaces. *IEEE Comput. Graph. Appl.*, 15(5):19–25, September 1994. [vbw-csms-94] *Keywords:* Connolly surfaces, solvent-accessible surfaces, alpha shapes, alpha hulls.

13192 A. Varshney, F. P. Brooks, Jr., and W. V. Wright. Interactive visualization of weighted three-dimensional alpha hulls. In *Proc. 10th Annu. ACM Sympos. Comput. Geom.*, pages 395–396, 1994. [vbw-ivwtd-94] *Keywords:* video review. *Cites:* a-pdpaa-87, c-amsc-83, e-was-92, eks-sspp-83, em-tdas-94, ec-eargd-92, fpeggemtti-pp5hm-89, r-avpps-77, s-lpchm-90, vb-facrs-93, vwb-bnusi-93, ZZZ.

13193 A. Varshney, W. V. Wright, and F. P. Brooks, Jr. Bounding the number of unit spheres inside a larger sphere. Technical Report UNC-CS-TR-93-039, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, 1993. [vwb-bnusi-93]

A. Varshney. See also [3414, 4846, 5059, 13722, 13723].

13194 V. A. Vassiliev. Complements of discriminants of smooth maps: topology and applications. *Tansl. of math. monographs*, 98, 1992. Am. Math. Soc., Providence, Rhode Island. [v-cdsmt-92]

13195 B. R. Vatti. A generic solution to polygon clipping. *Commun. ACM*, 35(7):56–63, 1992. [v-gspc-92]

R. Vatti. See also [3374].

13196 J. Vaucher. Pretty printing of trees. *Softw. – Pract. Exp.*, 10(7):553–561, 1980. [v-ppt-80] *Keywords:* graph drawing.

13197 S. Vavasis. Qmg: a finite element mesh generation package. [v-qfemg-95] *URL:* http://www.cs.cornell.edu/Info/People/vavasis/qmg-home.html.

13198 S. A. Vavasis. Automatic domain partitioning in three dimensions. Technical Report TR 90-1082, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, January 1990. [v-adptd-90]

13199 S. A. Vavasis. Automatic domain partitioning in three dimensions. *SIAM J. Sci. Statist. Comput.*, ??, 1991. To appear. [v-adptd-91]

13200 S. A. Vavasis. Stable finite elements for problems with wild coefficients. Technical Report 93-1364, Cornell University, Ithaca, NY, 1993. [v-sfepw-93]

13201 Stephen A. Vavasis and Yinyu Ye. An accelerated interior point method whose running time depends only on a. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, 1994. [vy-aipmw-94]

S. A. Vavasis. See also [9624–9627, 9629, 9630, 9769–9773].

U. Vazirani. See also [3705].

U. V. Vazirani. See also [10600].

V. Vazirani. See also [7534].

V. V. Vazirani. See also [10051,13160].

A. M. Vazques. See also [1449].

13202 Eric Veach and Leonidas J. Guibas. Metropolis light transport. In *SIGGRAPH 97 Conference Proceedings*, Annual Conference Series, pages 65–76. ACM SIGGRAPH, Addison-Wesley, 1997. [vg-mlt-97]

13203 Eric Veach and Leonidas J. Guibas. Optimally combining sampling techniques for Monte Carlo rendering. In Robert Cook, editor, *SIGGRAPH 95 Conference Proceedings*, Annual Conference Series, pages 419–428. ACM SIGGRAPH, Addison-Wesley, August 1995. [vg-ocstm-95]

Eric Veach. See also [180].

M. P. Vecchi. See also [8096].

Jack A. A. van der Veen. See also [2592].

13204 J. Veenstra and N. Ahuja. Line drawings of octree-represented objects. *ACM Trans. Graph.*, 7:61–75, 1988. [va-ldoro-88]

J. Veenstra. See also [353].

13205 Gert Vegter. Computational complexity of combinatorial surfaces. In *Abstracts 6th Intern. Workshop Comput. Geom.*, page 25. Universität Siegen, 1990. [v-cccs-90]

13206 G. Vegter. Computational topology. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 28, pages 517–536. CRC Press LLC, Boca Raton, FL, 1997. [v-ct-97]

13207 G. Vegter. Computing the bounded region determined by finitely many lines in the plane. Report CS 8703, Dept. Math. and Comput. Sci., Univ. of Groningen, Groningen, Netherlands, 1987. [v-cbrdf-87]

13208 G. Vegter. Dynamically maintaining the visibility graph. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 425–436. Springer-Verlag, 1991. [v-dmvg-91] *Keywords:* visibility, geometric graph.

13209 G. Vegter. Kink-free deformation of polygons. *Algorithms Rev.*, 1(3):125–137, 1990. [v-kfdp-90]

13210 G. Vegter. Kink-free deformations of polygons. In *Proc. 5th Annu. ACM Sympos. Comput. Geom.*, pages 61–68, 1989. [v-kfdp-89] *Cites:* d-tdkaz-12, gkp-cm-89, my-chthu-88, s-rcrm-58, w-rccp-37, ZZZ.

13211 G. Vegter. The visibility diagram: A data structure for visibility problems and motion planning. In *Proc. 2nd Scand. Workshop Algorithm Theory*, volume 447 of *Lecture Notes Comput. Sci.*, pages 97–110. Springer-Verlag, 1990. [v-vddsv-90]

13212 G. Vegter and C. Yap. Minimal circumscribing simplices. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 58–61, August 1991. [vy-mcs-91] *Cites:* k-fcvm-86, kl-fstcg-85, mc-uafet-88, o-fmeb-84, oamb-oafme-86, ZZZ.

13213 G. Vegter and C. K. Yap. Computational complexity of combinatorial surfaces. In *Proc. 6th Annu. ACM Sympos. Comput. Geom.*, pages 102–111, 1990. [vy-cccs-90] *Cites:* b-sctdm-22, ff-ict-34, h-gt-69, m-ati-77, my-chthu-88, m-eat-84, s-ctcgt-80, v-kfdp-89, ZZZ.

Gert Vegter. See also [8560, 10799–10811].

13214 M. Veldhorst. A bibliography on network flow problems. *Algorithms Rev.*, 1(2):97–117, 1990. [v-bnfp-90] *Keywords:* bibliography, network flow.

13215 M. Veldhorst. The optimal representation of disjoint iso-oriented rectangles in two-dimensional trees. *J. Algorithms*, 7:1–34, 1986. [v-ordio-86]

G. R. Veldkamp. See also [2342].

13216 L. Velho, L. H. de Figueiredo, and J. Gomes. Hierarchical generalized triangle strips. *Visual Comput.*, 15(1):21–35, 1999. [vdg-hgts-99]

R. Velicescu. See also [7240].

Remco Veltkamp. See also [6548, 11725].

13217 R. C. Veltkamp. 3d computational morphology. *Comput. Graph. Forum*, 12(3):115–127, 1993. [v-3dcm-93]

13218 R. C. Veltkamp. Boundaries through scattered points of unknown density. *Graphics Models and Image Processing*, 57(6):441–452, November 1995. [v-bspud-95]

13219 R. C. Veltkamp. *Closed object boundaries from scattered points*. PhD thesis, Center for Mathematics and Computer Science, Amsterdam, 1992. [v-cobsp-92] *Keywords:* doctoral thesis. *Precedes:* v-cobsp-94. *Annote:* Reconstruction of polyhedra from points in space.

13220 R. C. Veltkamp. *Closed Object Boundaries from Scattered Points*, volume 885 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1994. [v-cobsp-94] *ISBN:* 3-540-58808-6. *Succeeds:* v-cobsp-92.

13221 Remco C. Veltkamp. Generic programming in CGAL, the Computational Geometry Algorithms Library. In F. Arbab and Ph. Slusallek, editors, *Proceedings of the 6th Eurographics Workshop on Programming Paradigms in Graphics, Budapest, Hungary, 8 September 1997*, pages 127–138, 1997. [v-gpccg-97]

13222 Remco C. Veltkamp. The flintstones: Hierarchical approximation and localization. In *Abstracts 8th European Workshop Comput. Geom.*, pages 69–72. Utrecht University, 1992. [v-fhal-92]

13223 R. C. Veltkamp. The γ-neighborhood graph. *Comput. Geom. Theory Appl.*, 1(4):227–246, 1992. [v-gng-92] *Keywords:* neighborhood graph, Delaunay triangulation, Hamilton cycle.

Remco C. Veltkamp. See also [6547, 6549].

S. Vempala. See also [1192–1194, 2096, 7385, 9728].

13224 B. C. Vemuri, Y. Cao, and L. Chen. Fast collision detection algorithms with applications to particle flows. *Comput. Graph. Forum*, 17(2):121–134, June 1998. [vcc-fcdaa-98]

13225 B. C. Vemuri, R. Varadarajan, and N. Mayya. An efficient expected time parallel algorithm for Voronoi construction. In *Proc. 4th ACM Sympos. Parallel Algorithms Architect.*, pages 392–400, 1992. [vvm-eetpa-92]

V. Vemuri. See also [12282].

13226 D. E. Vengroff and J. S. Vitter. Efficient 3-d range searching in external memory. In *Proc. 28th Annu. ACM Sympos. Theory Comput.*, May 1996. [vv-e3drs-96]

13227 D. E. Vengroff and J. S. Vitter. I/O-efficient computation: The TPIE approach. In *Proceedings of the Goddard Conference on Mass Storage Systems and Technologies*, NASA Conference Publication 3340, Volume II, pages 553–570, September 1996. [vv-ioect-96]

D. E. Vengroff. See also [750, 3174, 6199, 7717].

C. Veni Madhavan. See also [8402].

13228 C. E. Veni Madhavan. Secondary attribute retrieval using tree data structures. *Theoret. Comput. Sci.*, 33:107–116, 1984. [v-sarut-84]

C. E. Veni Madhavan. See also [3777, 5910–5915, 5919, 5920, 10560, 10561].

K. N. Venkataraman. See also [3660].

R. Venkataraman. See also [2838].

13229 R. Venkatasubramanian. On the area of intersection of two closed 2d objects. *Inform. Sci.*, 82:25–44, 1995. [v-aitco-95]

13230 R. Venkatasubramanian and A. Cullum. Grazing inside a convex polygon. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 228–234, 1993. [vc-gicp-93] *Cites:* o-agta-87, nt-opg-91, nt-opg, gv-oacmg-92, ZZZ.

R. Venkatasubramanian. See also [5875].

S. Venkatasubramanian. See also [5266, 5267].

S. Venkatsubramanian. See also [5265].

13231 Jose A. Ventura and Jen-Ming Chen. A new approach to determine the pose and dimension of polygonal shapes. In Günter Fandel, Thomas Gulledge, and Albert Jones, editors, *Operations Research in Production Planning and Control, Proc. Joint German/US Conf., Hagen, Germany, June 25–26, 1992*, pages 151–166. Springer-Verlag, 1993. [vc-nadpd-92] *Abstract:* ... Algorithmically, the image boundary data is partitioned into n segments, and the best-fitting polygon is found using a non-ordinary least-squares technique. The algorithm is well-suited for on-line implementation in an automated environment due to its flexibility and demonstrated speed.

13232 Knut Verbarg. Approximate center points in dense point sets. In *Abstracts 11th European Workshop Comput. Geom.*, page 65. Universität Linz, 1995. [v-acpdp-95]

13233 Knut Verbarg. Approximate center points in dense point sets. In *Abstracts 13th European Workshop Comput. Geom.*, pages 55–56. Universität Würzburg, 1997. [v-acpdp-97]

13234 Knut Verbarg and A. Hensel. Hierarchical motion planning using a spatial index. In *Abstracts 12th European Workshop Comput. Geom.*, pages 87–90. Universität Münster, 1996. [vh-hmpus-96]

K. Verbarg. See also [7804, 10181].

P. W. Verbeek. See also [6310].

13235 S. Verblunsky. On the shortest path through a number of points. *Proc. Amer. Math. Soc.*, 2:904–913, 1951. [v-sptnp-51]

C. Verbrugge. See also [12980].

J. S. M. Vergeest. See also [12802].

M. Las Vergnas. See also [4471].

13236 J. J. Verkuil. Idual: Visualizing duality transformations. Technical report, Dept. Comput. Sci., Univ. Utrecht, 1992. [v-ivdt-92]

13237 P. Vermeer. Assembling objects through parts correlation. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 385–387, 1997. [v-aotpc-97] *Cites:* dh-ceg-95, hv-scp-95, nwm-dkssp-90, ZZZ.

13238 P. J. Vermeer. *Medial Axis Transform to Boundary Representation Conversion*. PhD thesis, CS Dept., Purdue University, West Lafayette, Indiana 47907-1398, USA, 1994. [v-matbr-94] *Keywords:* doctoral thesis.

Pamela J. Vermeer. See also [7031–7034].

13239 D. Vernon. *Machine Vision, automated visual inspection and robot vision*. Prentice Hall, 1991. [v-mvavi-91]

13240 Colin Verrilli. One source Voronoi diagrams with barriers: a computer implementation. Master's thesis, Electrical, Computer, and Systems Engineering Dept., Rensselaer Polytechnic Institute, May 1984. [v-osvdb-84] *Keywords:* master thesis, Voronoi diagrams.

Colin Verrilli. See also [5473].

Anne Verroust. See also [8560].

A. M. Vershik. See also [1370].

K. Vesztergombi. See also [4996].

W. Vetterling. See also [10903].

William T. Vetterling. See also [10904, 10905].

13241 J. W. Vick. *Homology Theory: An Introduction to Algebraic Topology*. Academic Press, New York, NY, 1973. [v-htiat-73]

C. Vidal. See also [1756].

13242 J. Viegas and P. Hansen. Finding shortest paths in the plane in the presence of barriers. *European J. Oper. Res.*, 20:373–381, 1985. [vh-fsppp-85]

Antoine Vigneron. See also [337, 2222, 2223].

13243 J. Vignes. New methods for evaluating the validity of the results of mathematical computations. *Mathematics and Computers in Simulation*, 20:227–249, 1978. [v-nmevr-78]

13244 J. Vignes and M. La Porte. Error analysis in computing. In *Proc. IFIP Congress*, pages 610–614, 1974. [vl-eac-74]

J. Vignes. See also [3136, 5153].

13245 G. Vijayan. *Design implementation and theory of a VLSI layout language*. PhD thesis, Department of EECS, Princeton University, 1983. [v-ditvl-83] *Keywords:* doctoral thesis.

13246 G. Vijayan and R. S. Tsay. Floorplan by topological constraint reduction. In *IEEE Int. Conf. On Computer-Aided-Design*, pages 106–109, 1990. [vt-ftcr-90]

13247 G. Vijayan and A. Wigderso. Planarity of edge-ordered graphs. Technical report, Department of EECS, Princeton University, 1982. [vw-peog-82]

13248 G. Vijayan and A. Wigderson. Rectilinear graphs and their embeddings. *SIAM J. Comput.*, 14:355–372, 1985. [vw-rgte-85]

G. Vijayan. See also [6967].

13249 V. Vijayan. Geometry of planar graphs with angles. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 116–124, 1986. [v-gpga-86] *Keywords:* graph drawing. *Cites:* as-ptass-79, b-aancp-83, bm-gta-76, c-ig-61, f-slrpg-48, gs-gpg-81, j-nccog-82, k-nptal-84i, lns-vlp-83, mc-ivs-80, t-dpg-83, v-ditvl-83, vw-rgte-85, vw-peog-82, y-gt-61, y-gt-68, ZZZ.

P. I. Vijaykumar. See also [8364].

A. Vijh. See also [10629].

M. Vimawala. See also [13076].

13250 A. Vinacua, I. Navazo, and B. Brunet. Octree detection of closed compartments. *Internat. J. Comput. Geom. Appl.*, 1(3):263–280, 1991. [vnb-odcc-91] *Keywords:* connected component, octree, geometric model, nonmanifold boundary.

A. Vinacua. See also [7632].

A. Vince. See also [7242, 7243].

13251 P. Vincensini. Sur une extension d'un théorème de M. J. Radon sur les ensembles de corps convexes. *Bull. Soc. Math. France*, 67:115–119, 1939. [v-etrec-39]

F. Vincent. See also [11444].

I. Vincent. See also [10497, 10498].

13252 I. M. Vinogradov. On the number of integer points in a sphere. *1 zv. Akad. Nauk SSSR, Ser. Mat.*, 27:957–968, 1963. [v-nips-63]

M. Virmani. See also [10421].

13253 U. Vishkin. Implementation of simultaneous memory address access in models that forbid it. *J. Algorithms*, 4:45–50, 1983. [v-ismaa-83]

13254 U. Vishkin. Structural parallel algorithmics. Technical Report UMIACS-TR-91-53, April 1991. [v-spa-91]

13255 U. Vishkin. Synchronous parallel computation - a survey. Technical Report 71, Dept. Comput. Sci., New York Univ., New York, NY, 1983. [v-spcs-83]

U. Vishkin. See also [1768, 3461–3466, 5943, 6175, 6176, 8466, 8467, 9182, 9250, 9486, 10678, 11706, 12152, 12811].

S. Vishwanathan. See also [2827].

V. Visivanathan. See also [8921].

13256 L. Vismara, G. Di Battista, A. Garg, G. Liotta, R. Tamassia, and F. Vargiu. Experimental studies on graph drawing algorithms. *Softw. – Pract. Exp.*, 30(11):1235–1284, 2000. [vdgltv-esgda-00] *Annote:* Special Issue on Discrete Algorithm Engineering.

Luca Vismara. See also [2434, 2435, 2439–2441, 2633, 4123–4125, 4129, 4159–4165, 12760, 12761].

D. Vista. See also [3510, 6705].

13257 V. Visvanathan and L. S. Milor. An efficient algorithm to determine the image of a parallelepiped under a linear transformation. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 207–215, 1986. [vm-eadip-86] *Cites:* mv-psafs-86, vst-rsbtt-84, ls-smm-85, w-rsbtt-84, lp-cgs-84, r-ca-70, s-cm-65, lsv-cacsc-86, lsv-cacsc-86, dmbs-lug-79, ck-acp-70, s-fchff-85, ZZZ.

13258 V. Visvanathan, E. Szeto, and A. Tits. A robust simulation-before-test technique for dc analog fault diagnosis. In *Proc. of the International Symposium of Circuits and Systems*, pages 689–692, 1984. [vst-rsbtt-84]

V. Visvanathan. See also [9656].

13259 S. Viswanathan. The edge guard problem for spiral polygons. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 103–108, 1993. [v-egpsp-93] *Keywords:* Computational Geometry, visibility, edge guards, spiral polygon. *Cites:* c-ctpg-75, o-agta-87, b-vagt-93, ZZZ.

R. A. Vitale. See also [9352].

13260 P. M. B. Vitanyi and D. Wood. Computing the perimeter of a set of rectangles. Report 79-CS-23, Unit Comput. Sci., McMaster Univ., Hamilton, ON, 1979. [vw-cpsr-79]

13261 J. Vitter and E. Shriver. Algorithms for parallel memory I: two-level memories. Research Report CS-1993-01, Dept. of Comp. Sc., Duke Univ., Durham, NC, 1993. [vs-apm1t-93]

13262 J. Vitter and E. Shriver. Algorithms for parallel memory II: hierarchical multilevel memories. Research Report CS-1993-01, Dept. of Comp. Sc., Duke Univ., Durham, NC, 1993. [vs-apm2h-93]

J. Vitter. See also [214, 215, 12742].

13263 J. S. Vitter. Communication issues in large-scale geometric computation. *ACM Comput. Surv.*, 28A(4), December 1996. [v-cilsg-96]

13264 J. S. Vitter. Efficient memory access in large-scale computation. In *Proc. 8th Sympos. Theoret. Aspects Comput. Sci.*, Lecture Notes Comput. Sci. Springer-Verlag, 1991. [v-emals-91]

13265 Jeffrey Scott Vitter. Geometric searching in massive data. In *Abstracts 15th European Workshop Comput. Geom.*, pages 25–30. INRIA Sophia-Antipolis, 1999. [v-gsmd-99]

13266 J. S. Vitter and Ph. Flajolet. Average-case analysis of algorithms and data structures. In J. van Leeuwen, editor, *Algorithms and Complexity*, volume A of *Handbook of Theoretical Computer Science*, pages 431–524. Elsevier, Amsterdam, 1990. [vf-acaad-90]

13267 J. S. Vitter and J.-H. Lin. Learning in parallel. In *Proceedings of the 1st Annual ACM Workshop on Computational Learning Theory*, pages 106–124, 1988. [vl-lp-88] *Precedes:* vl-lp-92.

13268 J. S. Vitter and J.-H. Lin. Learning in parallel. *Inform. Comput.*, 92:179–202, 1992. [vl-lp-92] *Succeeds:* vl-lp-88.

13269 J. S. Vitter and M. H. Nodine. Large-scale sorting in uniform memory hierarchies. *J. Parallel Distrib. Comput.*, 17:107–114, 1993. [vn-lssum-93]

13270 J. S. Vitter and E. A. M. Shriver. Algorithms for parallel memory I: Two-level memories. *Algorithmica*, 12(2–3):110–147, 1994. [vs-apm1t-94]

13271 J. S. Vitter and E. A. M. Shriver. Algorithms for parallel memory II: Hierarchical multilevel memories. *Algorithmica*, 12:148–169, 1994. [vs-apmhm-94]

13272 J. S. Vitter and E. A. M. Shriver. Optimal disk I/O with parallel block transfer. In *Proc. 22nd Annu. ACM Sympos. Theory Comput.*, pages 159–169, 1990. [vs-odiop-90]

J. S. Vitter. See also [130, 132, 133, 175–177, 181, 316, 748, 750, 751, 1472, 3174, 3428, 5936, 6199, 6330, 6331, 7717, 8004–8007, 8815, 8816, 9251–9253, 9657, 10167–10171, 10897–10902, 11356, 11527–11529, 11704, 11924, 11925, 12758, 12759, 12762–12767, 13171, 13226, 13227].

13273 J. Vleugels. *On Fatness and Fitness — Realistic Input Models for Geometric Algorithms*. Ph.D. thesis, Dept. Comput. Sci., Univ. Utrecht, Utrecht, The Netherlands, 1997. [v-ffrim-97] *Keywords:* doctoral thesis.

13274 J. Vleugels, V. Ferrucci, M. Overmars, and A. Rao. Hunting Voronoi vertices. *Comput. Geom. Theory Appl.*, 6:329–354, 1996. [vfor-hvv-96] *Succeeds:* forv-hvvnp-94.

13275 J. Vleugels and M. Overmars. Approximating Voronoi diagrams of convex sites in any dimension. *Internat. J. Comput. Geom. Appl.*, 8:201–222, 1998. [vo-avdcs-98]

Jules Vleugels. See also [828, 829, 1714, 1715, 5222, 11896, 11897, 12467, 12684].

J. Vlissides. See also [5730, 10679].

K. P. Vo. See also [5738–5740].

K. Vob. See also [7185].

P. Vocca. See also [5792, 8880, 8881].

13276 H. Voelcker. Current perspective on tolerancing and metrology. *Manufacturing Review*, 6(4):258–268, 1993. [v-cptm-93]

13277 H. B. Voelcker and W. A. Hunt. The role of solid modeling in machining - process modeling and NC verification. SAE Technical Paper 810195, SAE, 1981. [vh-rsmmp-81]

13278 H. B. Voelcker and A. A. G. Requicha. Geometric modeling of mechanical parts and processes. *Computer*, 1977:48–57, 1978. [vr-gmmpp-78]

H. B. Voelcker. See also [2503, 4882, 7213, 9538, 11184, 11190–11193, 11410, 11411, 12440, 12655].

V. Vogelmann. See also [5601].

13279 F. Vogt and R. Wille. TOSCANA — a graphical tool for analyzing and exploring data. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 226–233. Springer-Verlag, 1995. [vw-tgtae-95] *Keywords:* graph drawing, nested diagram, order, system.

Rakesh Vohra. See also [6025].

H. Voigt. See also [4913].

13280 A. Voigtmann. Hierarchische repräsentation diskreter geometrischer daten. Master's thesis, Fachbereich Mathematik, Universität-GH Siegen, 1993. Diplomarbeit. [v-hrdgd-93] *Keywords:* master thesis.

13281 A. Voigtmann, L. Becker, and K. Hinrichs. A hierarchical model for multiresolution surface reconstruction. *Graph. Models Image Process.*, 59(5):333–348, September 1997. [vbh-hmmsr-97]

13282 Andreas Voigtmann, Ludger Becker, and Klaus Hinrichs. Hierachical surface representation using constrained Delaunay triangulations. In *Abstracts 10th European Workshop Comput. Geom.*, pages 16–19. Universidad de Cantabria, Santander, 1994. [vbh-hsruc-94]

13283 A. Voigtmann, L. Becker, and K. Hinrichs. The constrained Delaunay pyramid: a model for reconstructingsurfaces at multiple resolutions. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 177–182, 1994. [vbh-cdpmr-94] *Cites:* bkss-rtera-90, bv-hmrr-84, c-cdt-89, ct-qrdt-86, dfnp-hssa-84, d-srbtg-87, d-pdstb-89, dp-olacd-92, gg-dmtds-79, g-rtdis-84, ls-tacdt-80, mv-cdtr-93, nhs-gfasm-84, fp-ochr3-84, ps-cgi-85, s-asdsc-90, s-dasds-90, sg-apads-85, w-cabds-85, sp-htucc-92, w-ebdss-85, v-hrdgd-93, ZZZ.

13284 A. Volčič. A three-point solution to Hammer's x-ray problem. *J. London Math. Soc.*, 2(27):349–359, 1986. [v-tpshp-86]

A. Volčič. See also [8245].

P. Volino. See also [9849].

13285 R. Volpe and P. Khosla. Artificial potential with elliptical isopotential contours for obstacle avoidance. In *Proc. 26th IEEE Conf. on Decision and Control*, pages 180–185, 1987. [vk-apeic-87]

D. J. Volper. See also [5571, 5572, 6952, 7887].

Richard A. Volz. See also [13665].

B. von Hohenbalken. See also [5027, 8136].

13286 S. M. von Rump. How reliable are results of computers. In *Jahrbuch Überblicke Mahtematik*, pages 163–168. 1983. Trans. from German: Wie zuverlässig sind die Ergebnisse unserer Rechenanlagen. [r-hrrc-83]

13287 K. Vophi. Perturbation de lines et circles et pr
xb4eservation de la topologie. In *Journ
xb4ees de g
xb4eometrie algorithmique du Val d'Ajol.* [v-plcpt-]

13288 Nicolai Vorobjov. Improved lower bound on testing membership to a polyhedron by algebraic decision trees. In *Proc. 36th Annu. IEEE Sympos. Found. Comput. Sci.*, page To appear, 1995. [v-ilbtm-95]

Nicolai Vorobjov. See also [2704, 5696, 6279, 6281, 6282].

13289 G. F. Voronoï. Deuxième mémoire: recherches sur les paralléloedres primitifs. *J. Reine Angew. Math.*, 136:67–181, 1909. [v-dmrsl-09]

13290 G. M. Voronoi. Nouvelles applications des paramètres continus à la théorie des formes quadratiques. deuxième Mémoire: Recherches sur les parallélloèdres primitifs. *J. Reine Angew. Math.*, 134:198–287, 1908. [v-nadpc-08] *Keywords:* Voronoi diagrams.

13291 G. M. Voronoi. Nouvelles applications des paramètres continus à la théorie des formes quadratiques. premier Mémoire: Sur quelques propriétés des formes quadratiques positives parfaites. *J. Reine Angew. Math.*, 133:97–178, 1907. [v-nadpc-07]

J. Vorsatz. See also [8228].

13292 K. Voss and R. Klette. In the maximum number of edges of convex digital polygons included into a square. Technical Report N/82/6, Friedrich Schiller Univ., Jena, 1982. [vk-mnecd-82]

D. Vossler. See also [12039–12041].

13293 D. L. Vossler. Sweep-to-CSG conversion using pattern recognition techniques. *IEEE Comput. Graph. Appl.*, 5(8):61–66, August 1985. [v-sccup-85]

D. L. Vossler. See also [12042].

B. Voxman. See also [4192].

J. K. Vranch. See also [4078].

13294 S. Vrećica and R. Živaljević. The colored Tverberg's problem and complexes of injective functions. *J. Combin. Theory Ser. A*, 61:309–318, 1992. [vz-ctpci-92] *Comments:* implies $o(n^d)$ bound for k-sets in any dimension d.

S. T. Vrećica. See also [13913].

13295 G. Vriend and C. Sander. Detection of common three-dimensional substructures in proteins. *PROTEINS: Structure, Funcion, and Genetics*, 11:52–58, 1991. [vs-dctds-91]

I. Vrt'o. See also [4210, 12011–12013].

13296 J. Vuillemin. A unifying look at data structures. *Commun. ACM*, 23:229–239, 1980. [v-ulds-80]

Jean Vuillemin. See also [1854, 11991, 12028].

M. Vyalyi. See also [12808].

J. Vygen. See also [8275].

O. Waarts. See also [4518].

Takao Wachi. See also [12794].

13297 E. Wachspress. *A Rational Finite Elemente Basis*. Academic Press, New York, NY, ?? [w-rfeb-]

A. J. H. Wachters. See also [3382].

Koichi Wada. See also [3044, 3081–3083].

13298 B. L. van der Waerden. *Einführung in die Algebraische Geometrie*. Springer-Verlag, New York, NY, 2nd edition, 1973. [w-eidag-73]

13299 B. von der Waerden. *Modern Algebras*. Ungar, 1953. Volumes 1-2. [w-ma-53]

13300 H. Wagener. Optimal parallel hull construction for simple polygons in $O(\log\log n)$ time. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 593–599, 1992. [w-ophcs-92]

13301 H. Wagener. Optimally parallel algorithms for convex hull determination. Manuscript, ??, 1985. [w-opach-85]

13302 H. Wagener. *Parallel Computational Geometry Using Polygonal Order*. PhD thesis, Technical University of Berlin, FRG, 1985. [w-pcgup-85] *Keywords:* doctoral thesis.

13303 H. Wagener. Parallele Triangulierung von einfachen Polygonen. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [w-ptep-89]

13304 H. Wagener. Triangulating a monotone polygon in parallel. In *Computational Geometry and its Applications*, volume 333 of *Lecture Notes Comput. Sci.*, pages 136–147. Springer-Verlag, 1988. [w-tmpp-88] *Annote:* 4th Intern. Workshop Comput. Geom.

H. Wagener. See also [570, 571, 596, 597, 1022, 1698, 1699, 10678].

Warren N. Waggenspack Jr. See also [3662].

13305 Dorothea Wagner. A new approach to knock-knee channel routing. In *Proc. 2nd Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 83–93. Springer-Verlag, 1991. [w-nakkc-91] *Precedes:* w-ortdc-93.

13306 D. Wagner. Optimal routing through dense chanels. *Internat. J. Comput. Geom. Appl.*, 3:269–289, 1993. [w-ortdc-93] *Keywords:* VLSI design, knock knee chanel routing, wire length, number of bends, layer assignment. *Succeeds:* w-nakkc-91.

13307 D. Wagner and F. Wagner. A generalization of the zero-one-principle for sorting algorithms. *Discrete Appl. Math.*, 30:265–273, 1991. [ww-gzops-91]

13308 D. Wagner and F. Wagner. An efficient parallel logarithmic time algorithm for the channel routing problem. *Discrete Appl. Math.*, 40:73–81, 1992. [ww-eplta-92]

13309 D. Wagner and F. Wagner. Between min cut and graph bisection. In *Proc. 18th Internat. Sympos. Math. Found. Comput. Sci.*, volume 711 of *Lecture Notes Comput. Sci.*, pages 744–750, 1993. [ww-bmcgb-93]

13310 D. Wagner and K. Weihe. A linear-time algorithm for edge-disjoint paths in planar graphs. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 384–395. Springer-Verlag, 1993. [ww-ltaed-93]

13311 D. Wagner and K. Weihe. A linear-time algorithm for edge-disjoint paths in planar graphs. *Combinatorica*, 15(1):135–150, 1995. [ww-ltaed-95] *Succeeds:* ww-ltaed-93.

13312 Dorothea Wagner and Karsten Weihe. An animated library of combinatorial VLSI-routing algorithms. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages C28–C29, 1995. [ww-alcvr-95] *Keywords: Cites:* bb-vrfls-84, fww-rtdcm-93, f-dprg-82, kww-aotlc-89, l-caicl-90, mp-rtr-86, mps-crkkm-86, pl-otlcr-84, swww-wkklg-94, w-ortdc-93, ZZZ.

D. Wagner. See also [2394, 5209, 5375, 5376, 7335, 8391, 11658, 11659].

13313 F. Wagner. Approximate map labeling is in $\Omega(n\log n)$. *Inform. Process. Lett.*, 52:161–165, 1994. [w-amlon-94]

13314 Frank Wagner and Barbara Wolfers. Short wire routing in convex grids. In *Proc. 2nd Internat. Sympos. Algorithms*, volume 557 of *Lecture Notes Comput. Sci.*, pages 72–82. Springer-Verlag, 1991. [ww-swrcg-91]

13315 F. Wagner and A. Wolff. A practical map labeling algorithm. *Comput. Geom. Theory Appl.*, 7:387–404, 1997. [ww-pmla-97]

13316 F. Wagner and A. Wolff. An efficient and effective approximation algorithm for the map labeling problem. In *Proc. 3rd Annu. European Sympos. Algorithms*, volume 979 of *Lecture Notes Comput. Sci.*, pages 420–433. Springer-Verlag, 1995. [ww-eeaam-95]

13317 F. Wagner and A. Wolff. Fast and reliable map labeling. In *Proc. 9th Internat. Symp. on Computer Science for Environment Protection*, pages 667–675, 1995. [ww-frml-95]

13318 Frank Wagner and Alexander Wolff. Map labeling heuristics: Provably good and practically useful. In *Proc. 11th Annu. ACM Sympos. Comput. Geom.*, pages 109–118, 1995. [ww-mlhpg-95] *Keywords:* experimental, approximation algorithm. *Cites:* aik-vspca-89, eis-ctmfp-76, f-agpsp-92, fw-ppalm-91, i-pnm-75, kr-pcr-92, mn-lledt-89, ia-eaggs-86, kmps-eagpp-93, w-amlon-94, wka-appma-94, ZZZ.

F. Wagner. See also [1102, 5375–5379, 7335, 8391, 11658, 11659, 12534, 13307–13309].

13319 K. Wagner. Bemerkungen zum Vierfarbenproblem. *Jahresbericht der Deutschen Mathematiker-Vereinigung*, 46:26–32, 1936. [w-bzv-36] *Keywords:* graph drawing. *Annote:* Shows that any triangulation can be transformed into any other by flips.

R. A. Wagner. See also [4410].

S. L. Wagner. See also [12320].

T. J. Wagner. See also [4061].

13320 Uli Wagner and Emo Welzl. Origin-embracing distributions, or a continuous analogue of the upper bound theorem. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 50–56, 2000. [ww-oedca-00]

Stan Wagon. See also [8138].

13321 G. Wahba. Surface fitting with scattered noisy data on Euclidean *d*-space and on the sphere. *Rocky Mountain J. Math.*, 14(1):281–299, 1984. [w-sfsnd-84]

Thomas Wahl. See also [7805].

13322 J. A. Wald and C. J. Colbourn. Steiner trees, partial 2-trees, and minimum IFI networks. *Networks*, 13:159–167, 1983. [wc-stp2t-83]

13323 J. A. Wald and P. G. Sorenson. Resolving the query inference problem using Steiner trees. *ACM Trans. Database Syst.*, 9:348–368, 1986. [ws-rqipu-86]

K. J. Waldron. See also [10039].

13324 A. Walfisz. *Gitterpunkte in mehrdimensionalischen Kugeln*. Panstwowe Wydawnictwo Naukowe, Warszawa, Poland, 1957. [w-gimk-57]

13325 J. Q. Walker II. A node-positioning algorithm for general trees. *Softw. – Pract. Exp.*, 20(7):685–705, 1990. [w-npagt-90] *Keywords:* graph drawing.

13326 R. Walker. *Algebraic Curves*. Dover, 1962. [w-ac-62]

13327 R. Walker. *Algebraic Curves*. Springer-Verlag, New York, NY, 1978. [w-ac-78]

13328 R. J. Walker and J. Snoeyink. Practical point-in-polygon tests using CSG representations of polygons. In M. T. Goodrich and C. C. McGeoch, editors, *Algorithm Engineering and Experimentation (Proc. ALENEX '99)*, volume 1619 of *Lecture Notes Comput. Sci.*, pages 114–123. Springer-Verlag, 1999. [ws-ppptu-99]

13329 R. K. Walker and V. Srinivasan. Creation and evolution of the ASME Y14.5.1M standard. In *Proc. 1993 Int. Forum on Dimensional Tolerancing and Metrology*, pages 19–30, 1993. [ws-ceays-93]

13330 R. K. Walker and V. Srinivasan. Creation and evolution of the ASME Y14.5.1M standard. *Manufacturing Review*, 7(4):16–23, 1994. [ws-ceays-94]

Noel Walkington. See also [9621, 9622].

D. Walkup. See also [8139, 9389].

J. Wallace. See also [3419].

13331 J. R. Wallace, K. A. Elmquist, and E. A. Haines. A ray tracing algorithm for progressive radiosity. *Comput. Graph.*, 23(3):315–324, 1989. Proc. SIGGRAPH '89. [weh-rtapr-89]

J. R. Wallace. See also [3420].

13332 R. S. Wallace, B. B. Bederson, and E. L. Schwartz. Voice bandwidth visual communication through logmaps: The Telecortex. In *Workshop on Applications of Computer Vision*, pages 4–10, 1992. [wbs-vbvct-92]

13333 A. Wallack and J. Canny. Planning for modular and hybrid fixtures. In *Proc. 11th IEEE Internat. Conf. Robot. Autom.*, May 1994. [wc-pmhf-94]

13334 A. S. Wallack and J. F. Canny. Planning for modular and hybrid fixtures. *Algorithmica*, 19(1–2):40–60, September 1997. [wc-pmhf-97]

Andrew Wallis. See also [2526, 8536].

H. Wallman. See also [7217].

R. A. Walpole. See also [1070].

T. R. S. Walsch. See also [1057].

13335 J. Walsh. The simulation of directional sound sources in rooms by means of a digital computer. Master's thesis, Univ. Western Ontario, London, Ontario, Canada, 1979. M. Mus. Thesis. [w-sdssr-79] *Keywords:* master thesis.

13336 J. Walsh and N. Dadoun. The design and development of GODOT: A system for room acoustics modelling. Presented at 101st Meeting of the Acoustical Society of America, May 1981. [wd-ddgsr-81]

13337 J. Walsh and N. Dadoun. What are we waiting for? Development of GODOT II. Presented at 103rd Meeting of the Acoustical Society of America, April 1982. [wd-wawwd-82]

J. P. Walsh. See also [3701–3703].

T. R. S. Walsh. See also [1058].

13338 C. F. Walton and T. J. Opar, editors. *Iron castings handbook*. Iron Casting Society, Inc., 1981. [wo-ich-81]

P.-J. Wan. See also [4442].

13339 S. J. Wan, S. K. M. Wong, and P. Prusinkiewicz. An algorithm for multidimensional data clustering. *ACM Trans. Math. Softw.*, 14(2):153–162, 1988. [wwp-amdc-88]

13340 C. Wang. *A new generalization of Voronoi diagrams in the plane*. PhD thesis, University of Alberta, Edmonton, Alberta, Canada, 1987. [w-ngvdp-87] *Keywords:* doctoral thesis.

13341 C. Wang. An optimal algorithm for greedy triangulation of a set of points. Technical report, Memorial University of Newfoundland, 1983. [w-oagts-93] *Succeeds:* w-oagts-94.

13342 C. Wang. *Intersection and minimum distance problems for planar polygons*. PhD thesis, University of Alberta, Department of Computing Science, 1983. [w-imdpp-83] *Keywords:* doctoral thesis.

C. Wang. See also [3228, 7560, 8756, 12980].

13343 C. A. Wang. An optimal algorithm for greedy triangulation of a set of points. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 332–338, 1994. [w-oagts-94] *Succeeds:* w-oagts-93. *Cites:* a-lncg-88, cg-vippg-89, ddmw-fgta-94, g-segta-89, k-ndot-80, l-seagt-87a, ll-abgtc-87, ll-fagt-92, ll-gtaoc-91, ps-cgi-85, s-cdtvd-88, hs-parss-93, w-eucdt-93, w-oagts-93, g-nrpt-79, ls-tacdt-80, ZZZ.

13344 C. A. Wang. Collision detection of a moving polygon in the presence of polygonal obstacles in the plane. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 35, 1989. [w-cdmpp-89]

13345 C. A. Wang. Efficiently updating the constrained Delaunay triangulations. *BIT*, 33:238–252, 1993. [w-eucdt-93]

13346 C. A. Wang and E. P. F. Chan. Finding the minimum visible vertex distance between two nonintersecting simple polygons. Technical report, Department of Computing Science, University of Alberta, 1986. [wc-fmvvd-86t] *Precedes:* wc-fmvvd-86.

13347 C. A. Wang and E. P. F. Chan. Finding the minimum visible vertex distance between two nonintersecting simple polygons. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 34–42, 1986. [wc-fmvvd-86] *Succeeds:* wc-fmvvd-86t. *Cites:* abosy-fmcnp-85, bo-arcgi-79, be-nlcha-84, cd-diec-80, cw-oaimd-83, csw-uacpc-85, e-cedbt-82, fm-tspep-84, gjpt-tsp-78, k-eccs-79, lp-cgs-84, ld-gvdp-81, mt-fmvdb-83, so-fmnp-85t, t-oacmv-83, w-imdpp-83, www-dpcgf-85, wc-fmvvd-86t, ZZZ.

13348 C. A. Wang and F. Y. Chin. On greedy tetrahedralization of points in 3-D. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 532–540. Springer-Verlag, 1994. [wc-gtp3d-94]

13349 C. A. Wang and L. Schubert. An optimal algorithm for constructing the Delaunay triangulation of a set of line segments. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 223–232, 1987. [ws-oacdt-87] *Cites:* ahu-daca-74, ae-oacwv-84, bo-arcgi-79, c-tpca-82, cgl-pgd-83, cw-oaimd-83, dk-ladsc-85, egs-oplms-86, eos-calha-83, f-savd-86, gjpt-tsp-78, k-eccs-79, k-osps-83, l-ccit-76, ls-tacdt-80, lp-cgs-84, l-prp-78, l-tdvdl-80, ll-gdtpg-86, ph-chfsp-77, ps-cgi-85, sh-cpp-75, ta-chapi-82, w-ngvdp-87, y-oavds-84, ZZZ.

13350 C. A. Wang and P. Y. Tsin. Finding constrained and weighted Voronoi diagrams in the place. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 200–203, 1990. [wt-fcwvd-90] *Cites:* ae-oacwv-84, eos-calha-86, ZZZ.

13351 C. A. Wang and Y. H. Tsin. An $O(\log n)$ time parallel algorithm for triangulating a set of points in the plane. *Inform. Process. Lett.*, 25:55–60, 1987. [wt-otpat-87]

13352 C. A. Wang and Y. H. Tsin. Efficiently updating constrained Delaunay triangulations. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 176–181, 1992. [wt-eucdt-92] *Cites:* aw-cg-88, agss-ltacv-89, a-vdsfg-91, c-cdt-87, dl-cvdrp-91, jw-dcvdd-88, ll-gdtpg-86, ll-abgtc-87, ll-fagt-90, l-seagt-87, l-vdbsd-89, ps-cgi-85, s-cdtvd-88, ws-oacdt-87, ZZZ.

13353 Cao An Wang and Yung H. Tsin. Finding constrained and weighted Voronoi diagrams in the plane. *Comput. Geom. Theory Appl.*, 10:89–104, 1998. [wt-fcwvd-98] *Succeeds:* wt-fcwvd-90.

13354 C. A. Wang and Y. H. Tsin. Finding the closest and visible sites for a line in the presenc e of barriers. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 92–95, August 1991. [wt-fcvsl-91] *Cites:* aaghi-vdp-86, at-oadvp-81, ea-lacvp-81, bkt-dsvp-89, ps-cgi-85, gt-ltasc-83, ZZZ.

13355 C. A. Wang and B. Yang. A lower bound for β-skeleton belonging to minimum weight triangulations. *Comput. Geom. Theory Appl.*, 19:35–46, 2001. [wy-lbbsb-01]

13356 Cao An Wang and Boting Yang. Optimal tetrahedralizations of some convex polyhedra. In *Abstracts 16th European Workshop Comput. Geom.*, pages 5–9. Ben-Gurion University of the Negev, 2000. [wy-otscp-00]

13357 Cao An Wang and Bo-Ting Yang. On some polyhedra covering problems. In *Abstracts 15th European Workshop Comput. Geom.*, pages 119–122. INRIA Sophia-Antipolis, 1999. [wy-pcp-99]

13358 Cao An Wang and Binhai Zhu. Shooter location problems revisited. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 223–228, 1997. [wz-slpr-97]

C. A. Wang. See also [3201–3206, 3208, 9681, 13053].

C.-C. Wang. See also [7154].

13359 C.-H. Wang. *Manufacturability-driven decomposition of sheet metal products*. PhD thesis, Carnegie Mellon University, The Robotics Institute, 1997. [w-mddsmp-97] *Keywords:* manufacturing,polytopes.

13360 D. Wang and J. A. Goldak. Correcting topological defects of tessellations. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 50–55, 1996. [wg-ctdt-96]

13361 D. Wang and R. Lee. An optimal algorithm for solving the restricted minimal convex nested polygonal section problem. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 334–339, 1993. [wl-oasrm-93] *Succeeds:* wl-oasrm-92. *Cites:* abosy-fmcnp-89, ll-ccmp-84, ps-cgi-85, wl-oasrm-92, ZZZ.

13362 D. P. Wang. An optimal algorithm for constructing an optimal bridge between two simple rectilinear polygons. *Inform. Process. Lett.*, 79:229–236, 2001. [w-oacob-01]

13363 D. P. Wang, N. F. Huang, H. S. Chao, and R. C. T. Lee. Plane sweep algorithms for polygonal approximation problems with applications. In *Proc. 4th Annu. Internat. Sympos. Algorithms Comput.*, volume 762 of *Lecture Notes Comput. Sci.*, pages 515–522. Springer-Verlag, 1993. [whcl-psapa-93]

13364 D. P. Wang and R. C. T. Lee. An optimal algorithm for solving the restricted minimal convex nested polygonal separation problem. Technical report, 1992. [wl-oasrm-92] *Precedes:* wl-oasrm-93.

13365 D. W. Wang and Y. S. Kuo. A study of two geometric location problems. *Inf. Proc. Letters*, 28(6):281–286, August 1988. [wk-stglp-88]

Da-Wei Wang. See also [13046].

13366 F. Wang. A parallel intersection algorithm for vector polygon overlay. *IEEE Comput. Graph. Appl.*, 13(2):74–81, March 1993. [w-piavp-93]

13367 G. Wang. The subdivision method of finding the intersection between two Bezier curves or surfaces. *Zhejiang Univ. J., Special issue on Computational Geometry*, ??, 1984. [w-smfib-84]

G. Wang. See also [11915].

13368 H. Wang. Games, logic and computers. *Scientific Amer.*, ??, 1965. [w-glc-65]

13369 H. Wang and P. K. Agarwal. Approximation algorithms for curvature constrained shortest paths. In *Proc. 7th ACM-SIAM Sympos. Discrete Algorithms*, pages 409–418, 1996. [wa-aaccs-96] *Keywords:* shortest paths, approximation, configuration space, path planning, curvature, robust paths.

H. Wang. See also [9622, 11111, 11112, 11137].

13370 H.-P. Wang et al. On the efficiency of NC tool path planning for face milling operations. *Trans. of the ASME, J. of Engineering for Industry*, 109(4):370–376, November 1987. [wo-entpp-87]

J.-S. Wang. See also [3226, 3227].

K. Wang. See also [2721, 11555].

K. K. Wang. See also [12227].

K.-Y. Wang. See also [8358].

13371 L. Wang, M. C. Leu, and D. Blackmore. Generating swept solids for NC verification using the SEDE method. In *Proc. 4th Sympos. Solid Modeling Found. Applications*, pages 364–375, May 1997. [wlb-gssnv-97]

L. Wang. See also [7538].

M. Wang. See also [9252].

13372 M.-E. Wang, T. C. Woo, L.-L. Chen, and S.-Y. Chou. Computing spanning line segments in three dimensions. *Visual Comput.*, 12(4):173–180, 1996. [wwcc-cslst-96]

M.-E. Wang. See also [12801].

S. Wang. See also [11339].

S. Z. Wang. See also [11340, 11341].

13373 T. Wang. A C^2-quintic spline interpolation scheme on triangulation. *Comput. Aided Geom. Design*, 9:379–386, 1992. [w-cqsis-92]

13374 W. Wang and G. G. Grinstein. A survey of 3D solid reconstruction from 2D projection line drawings. *Comput. Graph. Forum*, 12(2):137–158, June 1993. [wg-s3dsr-93]

13375 W. Wang, B. Joe, and R. Goldman. Rational quadratic parameterizations of quadrics. *Internat. J. Comput. Geom. Appl.*, 7:599–, 1997. [wjg-rqpq-97]

13376 Y. Wang, E. L. Gursoz, J.-M. Chen, F. B. Prinz, and N. M. Patrikalakis. Intersections of parametric surfaces for next generation geometric modeling systems. In J. Pegna J. Turner and M. Wozny, editors, *Proc. of the International Federation of Information Processing TC5/WG 5.2 Working Conference on Geometric Modeling for Product Engineering: Product Modeling for Computer-Aided Design and Manufacturing*, pages 75–96, 1990. [wgcpp-ipsng-90]

13377 Y. F. Wang and J. K. Aggarwal. Surface reconstruction and representation for 3-d scenes. *Pattern Recogn.*, 19:197–207, 1986. [wa-srr3d-86]

13378 Y. L. Wang, R. C. T. Lee, and J. S. Chang. The number of intersections between two rectangular paths. *IEEE Trans. Comput.*, 38(11):1564–1571, 1989. [wlc-nibtr-89]

13379 Z. Wang. A conformal elimination free algorithm for oriented matroid programming. *Chinese Annals of Mathematics*, 8, 1987. [w-cefao-87]

Zhengyan Wang. See also [11426].

13380 Z. J. Wang. Proof of concept: An automated cfd computing environment with a cartesian/prism grid generator, grid adaptor and flow solver. In *Proc. 4th International Meshing Roundtable*, pages 87–101, Albuquerque, NM, 1995. Sandia National Laboratories. [w-pcacc-95]

13381 G. E. Wangdahl, S. M. Pollock, and J. B. Woodward. Minimum-trajectory pipe routing. *Journal of Ship Research*, 18(1):46–49, March 1974. [wpw-mtpr-74]

A. Wanka. See also [8010].

E. Wanke. See also [5033].

13382 A. R. Warburton. Worst-case analysis of some convex hull heuristics for the Euclidean travelling salesman problem. *Oper. Res. Lett.*, 13:37–42, 1993. [w-wcach-93] *Keywords:* travelling salesman problem, heuristic, approximation algorithms, convex hulls. *Comments:* It is well known that the nearest insertion and cheapest insertion are a factor 2 apx for TSP, and this is tight. Interestingly, for pts in the plane, if you start with a tour consisting of the convex hull vertices, and continue with nearest or cheapest insertion this is a factor 3 apx, and this is tight!

13383 Greg Ward. A contrast-based scalefactor for luminance display. In Paul Heckbert, editor, *Graphics Gems IV*, pages 415–421. Academic Press, Boston, MA, 1994. [w-cbsld-94] *Keywords:* brightness, color, image display, perception, Radiance system. *Annote:* Presents a simple technique for displaying pictures that have a dynamic range (ratio of brightest to dimmest pixel) beyond that of the display.

13384 G. J. Ward, F. M. Rubinstein, and R. D. Clear. A ray tracing solution for diffuse interreflection. *Comput. Graph.*, 22(4):85–92, 1988. Proc. SIGGRAPH '88. [wrc-rtsdi-88]

13385 James E. Ward and Richard E. Wendell. Using block norms for location modeling. *Oper. Res.*, 33:1074–1090, 1985. [ww-ubnlm-85]

13386 M. O. Ward and Y. T. Chien. Analysis of time-varying imagery through the representation of position and shape changes. In *Proc. 5th IEEE Internat. Conf. Pattern Recogn.*, pages 1236–1238, 1980. [wc-atvit-80]

N. Ward. See also [7605].

R. Ward. See also [11196].

13387 C. Warde and J. Thackara. Operating modes of the microchannel spatial light modulator. *Optical Engineering*, 22(6):695–703, 1983. [wt-ommsl-83]

W. H. Warden, III. See also [1462].

J. M. Ware. See also [7596].

H. Todd Wareham. See also [5196].

13388 J. Warfield. Crossing theory and hierarchy mapping. *IEEE Trans. Syst. Man Cybern.*, SMC-7(7):502–523, 1977. [w-cthm-77] *Keywords:* graph drawing.

13389 J. Warga. *Optimal Control of differential and functional equations*. Academic Press, 1972. [w-ocdfe-72]

D. M. Warme. See also [11550, 11551].

M. Warmuth. See also [2113, 2114].

M. K. Warmuth. See also [665].

13390 T. T. Warnock. Computational investigations of low-discrepancy point sets. In S. K. Zaremba, editor, *Applications of Number Theory to Numerical Analysis*, pages 319–344. Academic Press, 1971. [w-cildp-71]

13391 William Warntz. Transportation, social physics, and the law of refraction. *The Professional Geographer*, 9(4):2–7, 1957. [w-tsplr-57] *Keywords:* weighted region problem, shortest paths, GIS, Snell's Law.

13392 Charles W. Warren. A vector based approach to robot path planning. In *Proc. 1991 IEEE Internat. Conf. Robot. Autom.*, pages 1021–1026, April 1991. [w-vbarp-91] *Abstract:* A vector-based algorithm for planning the path of a robot among irregularly shaped obstacles is presented. This algorithm combines many of the desirable features of graph searching and potential field approaches to path planning. In this technique, a vector is created from the start position to the goal of the robot. If this vector crosses forbidden space, a second vector is used to determine a new intermediate goal and the previous goal is stored on a stack. The procedure is repeated until the latest intermediate goal can be reached, at which point the robot can be moved to this goal. This procedure is repeated by popping a goal off of the stack and continuing until the ultimate goal is reached. Preliminary results show much promise for quickly planning paths of robots in two or more dimensions. Examples of planning around multiple two-dimensional obstacles of convex and concave shapes are shown.

13393 H. E. Warren. Lower bound for approximation by nonlinear manifolds. *Trans. Amer. Math. Soc.*, 133:167–178, 1968. [w-lbanm-68]

13394 J. Warren. Blending quadric surfaces with quadric and cubic surfaces. In *Proc. 3rd Annu. ACM Sympos. Comput. Geom.*, pages 341–347, 1987. [w-bqsqc-87] *Cites:* d-sagd-64, l-padps-76, hh-asgca-85a, hh-qbs-85, hh-pmbsc-85, ms-bsstv-85a, ro-bssgm-85, r-bosm-85, rr-crbsm-84, w-asmgc-86, w-cpgvl-70, ZZZ.

13395 J. Warren. *On Algebraic Surfaces Meeting with Geometric Continuity*. PhD thesis, Dept. Comput. Sci., Cornell Univ., Ithaca, NY, August 1986. [w-asmgc-86] *Keywords:* doctoral thesis.

J. Warren. See also [1254, 1261, 3990, 5803, 6575, 8980, 9834].

Z. U. A. Warsi. See also [12902].

R. Washington. See also [10393, 10394, 10422].

G. W. Wasilkowski. See also [7508–7510].

13396 Glen Y. Watabayishi and J. A. Galt. An optimized triangular mesh system from random points. In J. Häuser and C. Taylor, editors, *Numerical Grid Generation in Computational Fluid Dynamics*, pages 437–448, 1986. [wg-otmsr-86] *Annote:* Algorithm is generate initial triangulation and improve with flips. Flip criterion is to maximize minimum value of area over perimeter squared. One method of generating initial triangulation is straight insertion, join to visible points. Other method is to construct greedy triangulation by a rather involved $O(n^6)$ algorithm. (Authors make two mistakes in their analysis and claim $O((n!)^2)$.) This is a bit a slow so they compute an approximation to GT by only looking at $O(n)$ short lines, giving an $O(n^2)$ algorithm.

13397 H. Watanabe. Heuristic graph displayer for G-BASE. Technical Report 17, Ricoh Software Research Center, Tokyo, Japan, 1988. [w-hgdgb-88] *Keywords:* graph drawing.

M. Watanabe. See also [13109].

13398 G. S. Watkins. A real-time visible surface algorithm. Report UTEC-CS-70-101, Dept. Comput. Sci., Univ. Utah, Salt Lake City, UT, 1970. [w-rtvsa-70]

13399 M. E. Watkins. Graphical regular representations of alt., symm., and misc. small groups. *Aequationes Math.*, 11:40–50, ?? [w-grras-]

13400 M. E. Watkins. On the action of non-abelian groups on graphs. *J. Combin. Theory Ser. B*, 1:95–104, 1971. [w-anagg-71]

M. E. Watkins. See also [6245].

13401 D. F. Watson. Automatic contouring of raw data. *Comput. Geosci.*, 8(1):97–101, 1982. [w-acrd-82] *Annote:* FORTRAN used for DT f point set. $O(N^2)$ on average, $O(N^3)$ worst case. Stores in array for each triangle indices of vertices, circumcentre, circumradius. No adjacency information. Incremental—new point is checked against every circumcircle.

13402 D. F. Watson. Computing the n-dimensional Delaunay tesselation with applications to Voronoi polytopes. *Comput. J.*, 24(2):167–172, 1981. [w-cnddt-81]

13403 David F. Watson. *Contouring: A Guide to the Analysis and Display of Spatial Data*. Pergamon, 1992. [w-cgads-92] *Comments:* source code to calculate Voronoi diagram in 2-d or 3-d available from Watson at maths.uwa.edu.au.

13404 D. F. Watson. Natural neighbor sorting on the N-dimensional sphere. *Pattern Recogn.*, 21(1):63–67, 1988. [w-nnsnd-88] *Annote:* Your basic Watson algorithm for DT on n-dimensional sphere.

13405 D. F. Watson. Natural neighbour sorting. *Australian Computer Journal*, 17(4):189–193, 1985. [w-nns-85] *Annote:* Survey of algorithms for DT.

13406 D. F. Watson. *nngridr: An implementation of natural neighbor interpolation*. David Watson, 1994. [w-ninni-94] *Comments:* source code and discussion about the natural neighbor gridding package nngridr, available from Watson at maths.uwa.edu.au.

13407 D. F. Watson and C. M. Philip. Survey: Systematic triangulations. *Comput. Vision Graph. Image Process.*, 26:217–223, 1984. [wp-sst-84] *Annote:* Compares Optimal, Greedy and Delaunay triangulations. Shows that they are different and suggests Delaunay is best because of the equiangular property and efficient implementation.

13408 D. F. Watson and G. M. Philip. Neighborhood-based interpolation. *Geobyte*, 2(2):12–16, 1987. [wp-nbi-87] *Annote:* Description of natural neighbor interpolation.

G. A. Watson. See also [12402].

13409 A. Watt. *3D Computer Graphics*. Addison-Wesley, Reading, MA, 1993. [w-3dcg-93]

C. Watt. See also [10239, 10240].

Stephen M. Watt. See also [2855–2857].

Harley Wattrick. See also [4079].

E. Waupotitsch. See also [4778].

R. Waupotitsch. See also [4773, 4774, 4779, 4780].

B. M. Waxman. See also [7371].

P. Wayener. See also [7263].

D. Weaire. See also [8009].

13410 N. P. Weatherill. Integrity of geometrical boundaries in the two-dimensional Delaunay triangulation. *Communications in Applied Numerical Methods*, 6(2):101–109, February 1990. [w-igbtd-90] *Keywords:* geometrical boundaries, Delaunay triangulation, computational meshes. *Annote:* Adds extra points so that boundary is part of DT. *Abstract:* The Delaunay triangulation has recently received attention as a viable method for constructing computational meshes. However, an arbitrary boundary definition which must be preserved in the triangulation process will not, in general, satisfy the geometrical definition on which the Delaunay construction is founded. The effect of this is that the integrity of the given boundary edges will be violated and the computational mesh will not conform to the applied geometrical shape. A method is proposed whereby boundary data are supplemented with points to ensure that imposed boundary edges are preserved during the Delaunay triangulation. The method is illustrated on a geometry of an estuary which exhibits highly complex geometrical features. (Author abstract) 12 Refs.

13411 N. P. Weatherill. Mixed structured-unstructured meshes for aerodynamic flow simulation. *Aeronautical Journal*, ??:111–123, April 1990. [w-msuma-90]

13412 N. P. Weatherill. Numerical grid generation. *Lecture Series*, 1990(06):66–135, June 1990. Rhode Saint Genese, Belgium. von Karman Institute for Fluid Dynamics. [w-ngg-90]

13413 R. Webb and M. Gigante. Using dynamic bounding volume hierarchies to improve efficiency of rigid body simulation. *Visual Comput.*, ??:825–842, 1992. [wg-udbvh-92]

13414 R. Webber and A. Scott. GOVE: Grammar-Oriented Visualisation Environment. In F. J. Brandenburg, editor, *Graph Drawing (Proc. GD '95)*, volume 1027 of *Lecture Notes Comput. Sci.*, pages 516–519. Springer-Verlag, 1996. [ws-ggove-96] *Keywords:* graph drawing, 3D.

Richard Webber. See also [4576].

13415 R. E. Webber and H. Samet. Linear-time border-tracing algorithms for quadtrees. *Algorithmica*, 8(?):39–54, 1992. (also Computer Science TR 2309). [ws-ltbta-92]

R. E. Webber. See also [11394, 11395, 11588, 11592–11594, 11598, 11606–11614].

13416 G. Weber, L. Knipping, and H. Alt. An application of point pattern matching in astronautics. *J. Symbolic Comput.*, 17:321–340, 1994. [wka-appma-94]

Gerald Weber. See also [578–580].

H. Weber. See also [3414, 13189].

Jacques Weber. See also [11315].

G. Wechsung. See also [10869].

13417 C. E. Wee and R. N. Goldman. Elimination and bivariate resultants. *IEEE Comput. Graph. Appl.*, 15(1):69–77, January 1995. [wg-ebr-95]

N. S. Wee. See also [3236].

13418 Y. C. Wee and S. Chaiken. An optimal parallel L_1-metric Voronoi diagram algorithm. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 60–65, 1990. [wc-oplmv-90] *Cites:* b-dsp-79, acgoy-pcg-88, cd-vdbcd-85, cg-opapp-88, c-aaspm-87, c-pms-86, e-acg-87, es-vda-86, es-vda-86, gbt-srtgp-84, gs-canen-83, k-racrn-88, k-cavd-89, l-tdvdl-80, pm-toacv-89, sh-cpp-75, s-rngam-83, wcr-sagnn-89, ww-qvrqi-88, y-cmstk-82, ZZZ.

13419 Y. C. Wee, S. Chaiken, and S. S. Ravi. Some applications of geographic nearest neighbor approach. In *Proc. 27th Allerton Conf. Commun. Control Comput.*, 1989. [wcr-sagnn-89]

13420 Y. C. Wee, S. Chaiken, and D. E. Willard. General metrics and angle restricted Voronoi diagrams. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 44, 1989. [wcw-gmarv-89]

Y. C. Wee. See also [13611].

J. Weeks. See also [1810].

13421 H. Weghorst, G. Hooper, and D. P. Greenberg. Improved computational methods for ray tracing. *ACM Trans. Graph.*, 3(1):52–69, 1984. [whg-icmrt-84]

13422 Bernd Wegner. Partial inflation of closed polygons in the plane. *Beiträge zur Algebra und Geometrie*, 34(1):77–85, 1993. [w-picpp-93]

13423 G. Wegner. d-collapsing and nerves of families of convex sets. *Arch. Math.*, 26:317–321, 1975. [w-dcnfc-75]

13424 G. Wegner. Über eine kombinatorisch-geometrische Frage von Hadwiger und Debrunner. *Israel J. Math.*, 3:187–198, 1965. [w-uekgf-65]

13425 G. Wegner. Über Helly-Gallaische Stichzahlprobleme. *Koll. Diskrete Geom. Salzburg*, 3:277–282, 1985. [w-uhgs-85]

S.-S. Wei. See also [8450].

13426 R. Weibel. Generalization of spatial data: Principles and selected algorithms. In *Lecture notes from CISM Advanced School on Algorithmic Foundations of Geographic Information Systems*, pages 99–152. Springer-Verlag, 1996. [w-gsdps-96]

R. Weibel. See also [2408].

13427 B. Weide. *Statistical methods for the analysis of algorithms*. PhD thesis, School Comput. Sci., Carnegie Mellon Univ., Pittsburgh, PA, 1978. [w-smaa-78] *Keywords:* doctoral thesis.

B. Weide. See also [5573].

13428 B. W. Weide. Statistical methods in algorithm design and analysis. Report CMU-CS-78-142, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1978. [w-smada-78]

13429 B. W. Weide. Very fast information update and retrieval using cells. In *Proc. 17th Allerton Conf. Commun. Control Comput.*, pages 245–254, 1979. [w-vfiur-79]

B. W. Weide. See also [1659].

13430 J. Weight. Binary logic by spatial filtering. *Optical Engineering*, 26(1):28–33, 1987. [w-blsf-87]

13431 C. Weigle and D. Banks. Complex-valued contour meshing. In *Proceedings of Visualization '96*. IEEE Computer Society Press, 1996. [wb-cvcm-96]

13432 Karsten Weihe. Reuse of algorithms: Still a challenge to object-oriented programming. In *Proc. OOPSLA '97*, pages 34–48, 1997. [w-ra-97]

13433 K. Weihe and T. Willhalm. Reconstructing the topology of a cad model - a discrete approach. *Algorithmica*, 26(1):126–147, 2000. [ww-rtcmd-00]

Karsten Weihe. See also [9802, 9803, 9938, 9939, 11658, 11659, 13310–13312].

13434 K. Weihrauch. *Computability*. Springer-Verlag, Berlin, Heidelberg, 1987. [w-c-87]

13435 K. Weihrauch and Ch. Kreitz. A unified approach to constructive and recursive analysis. In M. M. Richter et al., editors, *Computation and proof theory*. Springer-Verlag, Berlin, Heidelberg, 1984. [wk-uacra-84]

K. Weihrauch. See also [6898].

13436 A. Weil. Sur les théorèmes de de Rham. *Comment. Math. Helvetici*, 26:119–145, 1952. [w-sltdd-52]

Helmut Weil. See also [5210].

F. Weiler. See also [11760].

13437 Kevin Weiler. An incremental angle point in polygon test. In Paul Heckbert, editor, *Graphics Gems IV*, pages 16–23. Academic Press, Boston, MA, 1994. [w-iappt-94] *Keywords:* computational geometry, inclusion testing. *Annote:* Provides an algorithm for testing if a point is inside a concave polygon, a task known as point inclusion testing in computational geometry. Point-in-polygon testing is a basic task when ray tracing polygonal models, so these methods are useful for 3D as well as 2D graphics. Contains C code.

13438 K. Weiler. Edge-based data structures for solid modeling in a curved surface environment. *IEEE Comput. Graph. Appl.*, 5(1):21–40, 1985. [w-ebdss-85]

13439 K. Weiler. Non-manifold geometric modeling. Report ??, General Electric Corporate Res. and Develop., Schenectady, NY, 1985. [w-nmgm-85]

13440 K. Weiler. Polygon comparison using a graph representation. *Comput. Graph.*, 14(3):10–18, 1980. Proc. SIGGRAPH '80. [w-pcugr-80]

13441 K. Weiler. The radial-edge data structure: A topological representation for non-manifold geometric boundary modeling. In *Proc. IFIP WG 5.2 Working Conference*, 1986. [w-redst-86]

13442 K. Weiler. The radial edge structure: a topological representation for non-manifold geometric boundary modeling. In M. J. Wozny, H. W. McLaughlin, and J. L. Encarnacao, editors, *Geometric Modeling for CAD Applications*, pages 217–254. North-Holland, 1988. [w-restr-88]

13443 K. Weiler. *Topological Structures for Geometric Modeling*. PhD thesis, Rensselaer Polytechnic Institute, Troy, NY, August 1986. [w-tsgm-86] *Keywords:* doctoral thesis.

13444 K. Weiler. Topology as a framework for solid modeling. In *Proc. Graphics Interface '84*, pages 53–56, 1984. [w-tfsm-84]

13445 K. Weiler and P. Atherton. Hidden surface removal using polygon area sorting. *Comput. Graph.*, 11(2):214–222, 1977. Proc. SIGGRAPH '77. [wa-hsrup-77]

K. Weiler. See also [1055, 4612].

J. Wein. See also [317].

13446 L. Weinberg. On the maximum order of the automorphism group of a planar triply connected graph. *SIAM J.*, 14:729–738, 1966. [w-moagp-66]

Karin Weinbrecht. See also [5189].

N. Weingarten. See also [9663].

S. Weingram. See also [9051].

13447 D. Weinshall, M. Werman, and N. Tishby. Stability and likelihood of views of three dimensional objects. In *Computing Supplement*, volume 11, pages 237–256, 1996. [wwt-slvtd-96]

D. Weinshall. See also [13492].

C. Weisbin. See also [7614].

C. R. Weisbin. See also [6042, 7434, 11022–11024].

R. Weiskircher. See also [10002].

13448 Volker Weispfennig. A new approach to quantifier elimination for real algebra and geometry. In *Abstracts 9th European Workshop Comput. Geom.*, pages 31–35. FernUniversität Hagen, 1993. [w-naqer-93]

13449 Volker Weispfennig. Parametric linear and quadratic optimization by elimination. In *Abstracts 11th European Workshop Comput. Geom.*, page 41. Universität Linz, 1995. [w-plqoe-95]

13450 A. I. Weiss. Incidence-polytopes with toroidal cells. *Discrete Comput. Geom.*, 4:55–73, 1989. [w-iptc-89]

A. Ivić Weiss. See also [2047].

13451 Gerhard Weiss, Albert Gräf, and Martin Stumpf. On coloring unit disk graphs. In *Proc. 3rd Twente Workshop on Graphs and Combinatorial Optimization*, page ??, June 1993. [wgs-cudg-93]

I. Weiss. See also [523].

M. Weiss. See also [7994].

M. A. Weiss. See also [4243].

R. Weiss. See also [4334].

13452 S. F. Weiss. A probabilistic algorithm for nearest neighbour searching. In *Proc. ACM-BCS Sympos. Res. Develop. Inform. Retrieval*, page ??, 1980. [w-panns-80]

D. K. Weisser. See also [507].

Ansgar Weißler. See also [7315–7317, 10127, 10128].

13453 E. W. Weisstein. *CRC Concise Encylopedia of Mathematics*. CRC Press LLC, Boca Raton, FL, 1999. [w-cem-99]

13454 L. Weitzman and K. Wittenburg. Automatic generation of multimedia documents using relational grammars. In *Proc. ACM MultiMedia '94*, pages 254–261, 1995. [ww-agmdu-95] *Keywords:* graph drawing, planar, visual language.

13455 T. Welch. Bounds on the information retrieval efficiency of static file structures. Technical Report 88, Massachusetts Inst. Tech., Cambridge, MA, June 1971. [w-bires-71]

13456 Frank Weller. Stability of Voronoi neighborship under perturbations of the sites. In *Proc. 9th Canad. Conf. Comput. Geom.*, pages 251–256, 1997. [w-s5nps-97]

13457 Frank Weller and Carsten Kirstein. Computing the convex hull of a simple polygon on the sphere. In *Abstracts 12th European Workshop Comput. Geom.*, pages 5–6. Universität Münster, 1996. [wk-cchsp-96] *Cites:* l-fchsp-83, g-eadch-72, ZZZ.

13458 David Wells. *The Penguin Directory of Curious and Interesting Geometry*. Penguin, London, 1991. [w-pdcig-91]

Markus Welsch. See also [11774].

13459 D. J. A. Welsh. *Matroid Theory*. Academic Press, London, UK, 1976. [w-mt-76]

13460 Emo Welzl. Constructing smallest enclosing disks (balls and ellipsoids). Technical Report, Freie Universität Berlin, 1991. To appear. [w-csedb-91]

13461 Emo Welzl. Constructing the visibility graph for n line segments in $O(n^2)$ time. Technical Report, Inst. Appl. Math. Comput. Sci., Univ. Leiden, Leiden, Netherlands, 1984. [w-cvgnl-84]

13462 Emo Welzl. Constructing the visibility graph for n line segments in $O(n^2)$ time. *Inform. Process. Lett.*, 20:167–171, 1985. [w-cvgnl-85] *Keywords:* motion planning, construction, detection, visibility, plane-sweep, line segments.

13463 E. Welzl. Entering and leaving j-facets. *Discrete Comput. Geom.*, 25(3):351–364, 2001. [w-eljf-01]

13464 Emo Welzl. Geometric graphs with small stabbing numbers: Combinatorics and applications. In *Proc. 9th Internat. Conf. Fund. Comput. Theory*, Lecture Notes Comput. Sci., page ?? Springer-Verlag, 1993. [w-ggssn-93]

13465 Emo Welzl. More on k-sets of finite sets in the plane. *Discrete Comput. Geom.*, 1:95–100, 1986. [w-mksfs-86] *Keywords:* combinatorial geometry.

13466 E. Welzl. On spanning trees with low crossing numbers. Technical Report B92-02, Free University Berlin, Berlin, Germany, 1992. [w-stlcn-92t]

13467 Emo Welzl. On spanning trees with low crossing numbers. In *Data Structures and Efficient Algorithms, Final Report on the DFG Special Joint Initiative*, volume 594 of *Lecture Notes Comput. Sci.*, pages 233–249. Springer-Verlag, 1992. [w-stlcn-92]

13468 Emo Welzl. Partition trees for triangle counting and other range searching problems. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 23–33, 1988. [w-pttco-88] *Cites:* ahw-pgers-87, a-ded-83, c-prsig-87, d-cltem-78, d-brdnc-79, e-acg-87, ew-hrsls-86, hw-ensrq-87, m-mdscg-84, ps-cgi-85, s-dfs-72, vc-ucrfe-71, ww-sfrs-87, w-pr-82, ZZZ.

13469 Emo Welzl. Smallest enclosing disks (balls and ellipsoids). In H. Maurer, editor, *New Results and New Trends in Computer Science*, volume 555 of *Lecture Notes Comput. Sci.*, pages 359–370. Springer-Verlag, 1991. [w-sedbe-91a] *Succeeds:* w-sedbe-91.

13470 Emo Welzl. Smallest enclosing disks, balls and ellipsoids. Report B 91-09, Fachbereich Mathematik, Freie Universität Berlin, Berlin, Germany, 1991. [w-sedbe-91]

13471 Emo Welzl. Unique sink orientations of cubes. In *Abstracts 17th European Workshop Comput. Geom.*, page 11. Freie Universität Berlin, 2001. [w-usoc-01]

13472 E. Welzl and G. Wöginger. On shatter functions of range spaces. Manuscript, ??, 1987. [ww-sfrs-87]

13473 Emo Welzl and Barbara Wolfers. Surface reconstruction between simple polygons via angle criteria. In *Proc. 1st Annu. European Sympos. Algorithms*, volume 726 of *Lecture Notes Comput. Sci.*, pages 397–408. Springer-Verlag, 1993. [ww-srbsp-93]

13474 Emo Welzl and B. Wolfers. Surface reconstruction between simple polygons via angle criteria. *J. Symbolic Comput.*, 17:351–369, 1994. [ww-srbsp-94]

Emo Welzl. See also [106, 163, 164, 262, 538, 574, 596, 597, 599, 600, 687, 931, 974, 1117, 2965, 3024, 3025, 3027, 3028, 3166, 3167, 3332, 3359, 3360, 4182, 4481, 4695, 4696, 4725, 4734, 4740, 4747, 4748, 4775, 4776, 4781–4789, 4911, 5330, 5331, 5372–5374, 5815–5817, 6520, 6521, 6556, 6723, 6724, 7322–7325, 9296, 9299, 9300, 9308–9310, 9313–9316, 9478–9482, 9749, 9750, 10506–10509, 10527, 10528, 11880, 11881, 11892, 11893, 12087, 12088, 13320].

13475 James Wen. A three dimensional browser for visualizing orthogonal hierarchies. Brown University, 1992. [w-tdbvo-92]

R. Wendell. See also [7236].

Richard E. Wendell. See also [13385].

U. Wendt. See also [8481].

J. Weng. See also [67].

J. F. Weng. See also [4453–4455].

13476 R. Wenger. A generalization of Hadwiger's transversal theorem to intersecting sets. *Discrete Comput. Geom.*, 5:383–388, 1990. [w-ghtti-90]

13477 Rephael Wenger. Extremal graphs with no C^4's, C^6's or C^{10}'s. *J. Combin. Theory Ser. A*, 52:113–116, 1991. [w-egncf-91]

13478 R. Wenger. Geometric permutations and connected components. Technical Report 90-50, DIMACS, Rutgers Univ., 1990. [w-gpcc-90]

13479 R. Wenger. Helly-type theorems and geometric transversals. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 4, pages 63–82. CRC Press LLC, Boca Raton, FL, 1997. [w-httgt-97]

13480 Rephael Wenger. Randomized quickhull. *Algorithmica*, 17:322–329, 1997. [w-rqh-97]

13481 R. Wenger. Upper bounds on geometric permutations for convex sets. *Discrete Comput. Geom.*, 5:27–33, 1990. [w-ubgpc-90]

13482 R. Wenger. Upper bounds on linear orderings. Technical Report SOCS 86.19, McGill Univ., Montreal, PQ, October 1986. [w-ublo-86]

Rephael Wenger. See also [659, 833, 834, 851, 1171, 1175–1177, 1209, 1924, 2717, 2718, 4112, 4113, 4832–4834, 6125–6132, 6453, 6454, 6727, 10550, 10824, 10825, 12386].

Carola Wenk. See also [592, 7049, 7050].

13483 R. S. Wenocur and R. M. Dudley. Some special vapnik-chervonenkis classes. *Discrete Math.*, ??:313–318, 1981. [wd-ssvcc-81]

P. R. Wensley. See also [11990].

13484 C. Wentink and O. Schwarzkopf. Motion planning for vacuum cleaner robots. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 51–56, 1994. [ws-mpvcr-94] *Cites:* abpptr-88, abf-pempa-88, ks-empac-90, l-rmp-91, oww-fabmo-85, ss-pmp1c-83, w-mpvcr-93, ZZZ.

13485 C. Wentink, A. F. van der Stappen, and M. Overmars. Algorithms for fixture design. Report UU-CS-1996-38, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1996. [wso-afd-96]

Chantal Wentink. See also [10460].

13486 C. J. Wentink. Motion planning for vacuum cleaners and related problems. Master's thesis, Utrecht University, August 1993. [w-mpvcr-93] *Keywords:* master thesis.

13487 M. Wenzel. Verschneidungsoperationen für Geo-Informationssysteme. Master's thesis, University of Münster, Münster, Germany, 1994. [w-vfgi-94] *Keywords:* master thesis.

13488 M. Werman, E. S. Baugher, and A. Gualtieri. The visual potential: One convex polygon. *Comput. Vision Graph. Image Process.*, ??:96–130, 1989. [wbg-vpocp-89]

13489 M. Werman, S. Peleg, R. Melter, and T. Y. Kong. Bipartite graph matching for points on a line or a circle. *J. Algorithms*, 7:277–284, 1986. [wpmk-bgmpl-86]

13490 M. Werman, S. Peleg, and A. Rosenfeld. A distance metric for multidimensional histograms. *Comput. Vision Graph. Image Process.*, 32:328–336, 1985. [wpr-dmmh-85]

13491 M. Werman and A. Shashua. Elimination: An approach to the study of 3d-from-2d. In *Proc. International Conference on Computer Vision*, 1995. [ms-eas3d-95]

13492 M. Werman and D. Weinshall. Similarity and affine invariant distance between point sets. *IEEE Trans. Pattern Anal. Mach. Intell.*, 17:810–814, 1995. [ww-saidb-95]

M. Werman. See also [789, 790, 2432, 5945, 6209, 8251, 8695, 12090, 12422, 12423, 12490, 12491, 13447].

U. Wermuth. See also [7490].

13493 G. Werner. The computation of the convex hull of a simple polygon in linear time. *Computers and Artificial Intelligence*, 5(5):451–458, 1986. [w-cchsp-86]

M. Werner. See also [5621].

L. Wernisch. See also [5206, 5211, 9315, 9316].

13494 M. Wesley and G. Koppelman. A robot planning system applied to VLSI manufacturing processes. Report RC 10510 (#45389), IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1984. [wk-rpsav-84]

13495 M. A. Wesley and G. Markowsky. Fleshing out projections. Report RC 8884, Dept. Comput. Sci., IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1981. [wm-fop-81]

13496 M. A. Wesley and G. Markowsky. Generation of solid models from two and three dimensional data. Report RC 10328 (#46080), IBM T. J. Watson Res. Center, Yorktown Heights, NY, 1984. [wm-gsmtt-84]

M. A. Wesley. See also [5435, 8802, 9003, 9202, 13650].

G. O. Wesolowski. See also [4422].

13497 G. Wesolowsky. The Weber problem: History and perspective. *Location Science*, 1:5–23, 1993. [w-wphp-93] *Keywords:* facility location, Weber problem.

G. O. Wesolowsky. See also [4420, 4423, 4424].

13498 D. West. *An Introduction to Graph Theory*. Prentice Hall, 1995. [w-igt-95]

D. B. West. See also [4744, 4745].

13499 J. Westbrook. Fast incremental planarity testing. In *Automata, Languages and Programming (Proc. 19th ICALP)*, volume 623 of *Lecture Notes Comput. Sci.*, pages 342–353. Springer-Verlag, 1992. [w-fipt-92]

13500 J. Westbrook and R. E. Tarjan. Maintaining bridge-connected and biconnected components on-line. *Algorithmica*, 7:433–464, 1992. [wt-mbcbc-92]

J. Westbrook. See also [697, 4962–4964].

C. J. Van Westen. See also [12874].

John Westwater. See also [6301, 6302].

13501 C. Wetherell and A. Shannon. Tidy drawing of trees. *IEEE Trans. Softw. Eng.*, SE-5(5):514–520, 1979. [ws-tdt-79] *Keywords:* graph drawing.

13502 J. E. Wetzel. On the division of the plane by lines. *Amer. Math. Monthly*, 85:648–656, 1978. [w-dpl-78]

J. E. Wetzel. See also [493–495].

13503 H. Weyl. Elementary theory of convex polyhedra. In W. Kuhn and A. W. Tucker, editors, *Contributions to the Theory of Games*, volume 24 of *Annals of Mathematical Studies*, pages 3–18. Princeton University Press, Princeton, NJ, 1950. [w-etcp-50]

13504 H. Weyl. Randbemerkungen zu Hauptproblemen der Mathematik, II, Fundamentalsatz der Alegbra und Grundlagen der Mathematik. *Math. Z.*, 20:131–151, 1924. [w-rhmfa-24]

13505 H. Weyl. *Symmetry*. Princeton, 1951. [w-s-51]

13506 K. Y. Whang, J. W. Song, J. W. Chang, J. Y. Kim, W. S. Cho, C. M. Park, and I. Y. Song. Octree-R: An adaptible octree for efficient ray tracing. *IEEE Trans. Visual. and Comp. Graphics*, 1:343–349, 1995. [wsckcps-oaoer-96] *Keywords:* octree, ray tracing.

13507 A. Whelan. *Injection moulding machines*. Elsevier, London, UK, 1984. [w-imm-84]

13508 T. Whelan. A representation of a C^2 interpolant over triangles. *Comput. Aided Geom. Design*, 3:53–66, 1986. [w-rit-86]

13509 A. T. White and L. W. Beineke. Topological graph theory. In L. Beineke and R. Wilson, editors, *Selected Topics in Graph Theory*, pages 15–49. Academic Press, London, UK, 1978. [wb-tgt-78]

13510 D. White. A design for polygon overlay. *Harvard Papers on Geographic Inform. Sys.*, 6, 1978. [w-dpo-78]

13511 D. White. A new method of polygon overlay. In *An Advanced Study Symposium on Topological Data Structures for Geographic Information Systems*. Laboratory for Computer Graphics and Spatial Analysis, Harvard Univ., October 1977. [w-nmpo-77]

13512 David White, Lai Mingwu, Steven E. Benzley, and Gregory D. Sjaardema. Automated hexahedral mesh generation by virtual decomposition. In *Proc. 4th International Meshing Roundtable*, pages 165–177, Albuquerque, NM, 1995. Sandia National Laboratories. [wmbs-ahmgv-95]

D. White. See also [2061].

13513 D. A. White and R. Jain. Similarity indexing with the SS-tree. In *Proc. 12th IEEE Internat. Conf. Data Eng.*, pages 516–523, 1996. [wj-siwst-96]

13514 D. A. White and S. Zdonik. Algorithms and strategies for similarity retrieval. Technical Report VCL-96-1101, Univ. California Davis, Davis, CA, 1996. [wj-assr-96]

13515 E. R. White. Assessment of line-generalization algorithms using characteristic points. *Amer. Cartogr.*, 12(1):17–27, 1985. [w-algau-85]

J. A. White. See also [5451].

13516 M. White. N-trees: Large ordered indexes for multidimensional space. Tech. report, US Bureau of the Census, Statistical Research Division, Washington, DC, 1982. [w-ntloi-82]

13517 M. S. White. Tribulations of automated carthography and how mathematics helps. In *Proc. 6th International Symposium on Automated Carthography*, pages 408–418, 1983. [w-tachm-83]

13518 M. S. White and P. Griffin. Piecewise linear rubber-sheet map transformation. *Amer. Cartogr.*, 12(2):123–131, 1985. [wg-plrsm-85]

13519 N. White. Comments on Goodman's problem on skew lines. Unpublished Note, 1987. [w-cgpsl-87]

13520 N. White and W. Whiteley. the algebraic geometry of motions of frameworks. *SIAM J. Algebraic Discrete Methods*, ??, 1984. to appear (preprint 1984). [ww-agmf-84]

N. White. See also [2056, 7464].

13521 N. L. White. A nonuniform matroid which violates the isotopy conjecture. *Discrete Comput. Geom.*, 4:1–2, 1989. [w-nmwvi-89]

13522 N. L. White. Geometric applications of the Grassmann-Cayley algebra. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 48, pages 881–892. CRC Press LLC, Boca Raton, FL, 1997. [w-gagca-97]

N. L. White. See also [3594].

P. R. White. See also [12455].

13523 W. Whiteley. A matrix for splines. *J. Approx. Theory*, ??, ?? To appear. [w-ms-]

13524 W. Whiteley. A matroid on hypergraphs, with applications in scene analysis and geometry. *Discrete Comput. Geom.*, 4:75–95, 1989. [w-mhasa-89] *Succeeds:* w-tapp-86.

13525 W. Whiteley. Geometry of bivariate splines. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 351–353, 1990. [w-gbs-90] *Cites:* a-csmpp-87, b-htssg-88, c-mss-88, s-mild-86, w-tapp-86, w-ms-, w-mrs-, w-mhasa-89, w-cbs-90, w-gbcs-90, ZZZ.

13526 W. Whiteley. Matroids and rigid structures. In N. White, editor, *Applications of Matroid Theory*. Cambridge University Press, ?? To appear. [w-mrs-]

13527 W. Whiteley. Realizability of polyhedra. *Structural Topology*, 1:46–58, 1979. [w-rp-79]

13528 W. Whiteley. Rigidity and scene analysis. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 49, pages 893–916. CRC Press LLC, Boca Raton, FL, 1997. [w-rsa-97]

13529 W. Whiteley. The combinatorics of bivariate splines. Preprint, Champlain Regional College, St. Lambert, Quebec, January 1990. [w-cbs-90]

13530 W. Whiteley. The geometry of bivariate $C^{1}{}_{2}$-splines. Preprint, Champlain Regional College, St. Lambert, Quebec, 1990. [w-gbcs-90]

13531 W. Whiteley. The projective geometry of rigid frameworks. In C. A. Baker and L. M. Batten, editors, *Finite Geometries*, volume 103 of *Lecture Notes in Pure and Applied Mathematics*, pages 353–375. Marcel Dekker, New York, NY, 1985. [w-pgrf-85]

13532 W. Whiteley. Two algorithms for polyhedral pictures. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 142–149, 1986. [w-tapp-86] *Precedes:* w-mhasa-89, cw-pspp-86. *Cites:* ab-gdt-86, ab-rdt-85, abcw-cpdts-88, cw-pspp-86, c-gs-90, es-vda-86, h-ions-71, h-dcaps-77, i-csldp-85, k-tow-80, m-ipps-73, m-orfdf-64, s-acaal-84, s-mild-86, w-mhasa-89, ww-agmf-84, w-mspp-82, ZZZ.

W. Whiteley. See also [986, 3501, 3594, 3599, 12839, 13520].

M. Whitely. See also [2061].

W. Whitely. See also [3600].

13533 S. Whitesides. Algorithmic issues in the geometry of planar linkage movement. *Australian Comput. J.*, ??:42–50, May 1992. Special Issue on Algorithms. [w-aigpl-92]

13534 S. Whitesides and P. Eades. Maximal biplanar subgraphs of bipartite graphs. Technical Report SOCS 90.24, McGill Univ., Montreal, PQ, 1990. [we-mbsbg-90]

13535 S. Whitesides and R. Zhao. *k*-admissible collections of Jordan curves and offsets of circular arc figures. Technical Report SOCS 90.08, McGill Univ., Montreal, PQ, 1990. [wz-kacjc-90]

13536 S. Whitesides and R. Zhao. On the placement of Euclidean trees. In *Abstracts 1st Canad. Conf. Comput. Geom.*, page 28, 1989. [wz-pet-89]

13537 S. Whitesides and R. Y. Zhao. Offsets of circular arc figures. In *Proc. 2nd Canad. Conf. Comput. Geom.*, pages 362–365, 1990. [wz-ocaf-90] *Cites:* bo-arcgi-79, eghppsss-ajati-89, f-eopss-85, klps-ujrcf-86, oww-fabmo-85, rr-oosm-86, sh-gip-76, spd-ogm-88, s-cgcw-86, z-pet-90, ZZZ.

S. Whitesides. See also [160, 586, 587, 1979–1982, 1986, 2309, 2310, 3934, 4474, 4475, 4595, 4596, 4598, 4601–4603, 4845, 5081, 5090, 5091, 5184, 5185, 8344, 8345, 8705, 8706, 8883, 10696, 10697, 12742, 12798].

13538 S. H. Whitesides. Computational geometry and motion planning. In G. T. Toussaint, editor, *Computational Geometry*, pages 377–427. North-Holland, Amsterdam, Netherlands, 1985. [w-cgmp-85]

13539 Sue H. Whitesides, editor. *Graph Drawing (Proc. GD '98)*, volume 1547 of *Lecture Notes Comput. Sci.* Springer-Verlag, 1998. [w-gd-98] *Keywords:* graph drawing, collection.

13540 S. H. Whitesides. Poster gallery report. In R. Tamassia and I. G. Tollis, editors, *Graph Drawing (Proc. GD '94)*, volume 894 of *Lecture Notes Comput. Sci.*, pages 461–469. Springer-Verlag, 1995. [w-pgr-95] *Keywords:* graph drawing, poster, system.

S. H. Whitesides. See also [4137, 4868, 7092–7094, 8707–8710, 8875, 8876].

13541 D. Whitney. Force feedback control of manipulator fine motions. *Journal of Dynamic Systems, Measurment and Control*, ??:91–97, June 1977. [w-ffcmf-77]

13542 H. Whitney. A heorem on graphs. *Annu. Math.*, 32:378–390, 1931. [w-tg-31]

13543 H. Whitney. Analytic extensions of differentiable functions defined in closed sets. *Trans. Amer. Math. Soc.*, 36:63–89, 1934. [w-aedfd-34]

13544 H. Whitney. Elementary structure of real algebraic varieties. *Ann. Math.*, 66(3), 1975. [w-esrav-57]

13545 H. Whitney. On regular closed curves in the plane. *Compos. Math.*, 4:276–284, 1937. [w-rccp-37]

13546 W. Whitney. Motions and stresses of projected polyhedra. *Structural Topology*, 7:13–38, 1982. [w-mspp-82] *Keywords:* graph drawing, convex, straight-line.

13547 J. V. Whittaker. A mountain-climbing problem. *Canad. J. Math.*, 18:873–882, 1966. [w-mcp-66]

J. T. Whitted. See also [8473].

13548 T. Whitted. An improved illumination model for shaded display. *Commun. ACM*, 23(6):343–349, June 1980. [w-iimsd-80]

T. Whitted. See also [11467].

13549 G. T. Whyburn. *Analytic Topology*. American Mathematical Society, Providence, RI, 1942. [w-at-42]

Frederick J. Wicklin. See also [3856].

13550 A. B. Widlund. An extension theorem for finite element spaces with three applications. Report 233, Dept. Comput. Sci., New York Univ., New York, NY, 1986. [w-etfes-86]

13551 A. B. Widlund. Iterative methods for elliptic problems on regions partitioned into substructures and the biharmonic Dirichlet problem. Report 101, Dept. Comput. Sci., New York Univ., New York, NY, 1984. [w-imepr-84]

O. B. Widlund. See also [2059].

13552 P. Widmayer. *Computational complexity in computer graphics and VLSI design*. Ph.D. thesis, Univ. Fridericiana Karlsruhe, Karlsruhe, West Germany, 1983. [w-cccgv-83] *Keywords:* doctoral thesis.

13553 Peter Widmayer. Guard data structures for fat spatial objects. In *Abstracts 8th European Workshop Comput. Geom.*, page 89. Utrecht University, 1992. [w-gdsfs-92]

13554 P. Widmayer. Network design issues in VLSI. Technical report, Institut für Informatik, University Freiburg, Rheinstrasse 10-12, 7800, Freiburg, West Germany, 1989. [w-ndiv-89]

13555 P. Widmayer and D. Wood. A time and space optimal algorithm for boolean mask operations for orthogonal polygons. Report 161, Universität Karlsruhe, Karlsruhe, West Germany, 1986. [ww-tsoab-86]

13556 P. Widmayer and D. Wood. A time- and space-optimal algorithm for Boolean masking operations. *Comput. Vision Graph. Image Process.*, 41:14–27, 1988. [ww-tsoab-88]

13557 P. Widmayer and D. Wood. Time- and space-optimal contour computation for a set of rectangles. *Inform. Process. Lett.*, 24:335–338, 1987. [ww-tsocc-87] *Keywords:* complexity theory, design of algorithms, combinatorial geometry.

13558 P. Widmayer, Y. F. Wu, M. D. F. Schlag, and C. K. Wong. On some union and intersection problems for polygons with fixed orientation. *Computing*, 36:183–197, 1986. [wwsw-suipp-86]

13559 P. Widmayer, Y. F. Wu, and C. K. Wong. Distance problems in computational geometry with fixed orientations. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 186–195, 1985. [www-dpcgf-85] *Precedes:* www-sdpfo-87. *Cites:* bt-eacmd-83, ct-fmst-76, cw-oaimd-83, cw-mvdbs-84, e-ipcg-82, e-cedbt-82, gbt-srtgp-84, g-cceac-83, ht-fafnc-84, h-oarms-79, k-osps-83, l-tdvdl-80, lp-cgs-84, lw-vdllm-80, mt-fmvdb-83, nllw-xchsx-83, osw-dcrch-83, s-fmdbt-81, sh-cpp-75, t-oacmv-84a, tb-oacmd-83, tm-soafm-82, v-ulds-80, ZZZ.

13560 P. Widmayer, Y. F. Wu, and C. K. Wong. On some distance problems in fixed orientations. *SIAM J. Comput.*, 16:728–746, 1987. [www-sdpfo-87] *Succeeds:* www-dpcgf-85. *Annote:* VD for metric where paths are limited to a fixed number of orientations.

P. Widmayer. See also [931, 974, 1555–1559, 1564, 1565, 1648, 5606, 6823, 7244–7247, 7334, 10121, 10124, 10148–10150, 10435–10442, 10451, 11068, 11100, 11372, 11373, 13717].

J. A. Wieacker. See also [105].

G. Wiederhold. See also [6670].

13561 J. Wiegley, K. Goldberg, M. Peshkin, and M. Brokowski. A complete algorithm for designing passive fences to orient parts. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 1133–1139, 1996. [wgpb-cadpf-96]

13562 J. Wiegley, A. Rao, and K. Goldberg. Computing a statistical distribution of stable poses for a polyhedron. In *Proc. 30th Allerton Conf. Commun. Control Comput.*, 1992. [wrg-csdsp-92]

J. Wiegley. See also [2724].

13563 Wielandt. *Finite Permutation Groups*. Academic Press, 1964. [w-fpg-64]

13564 C. Wieners-Lummer. Manhattan channel routing with good theoretical and practical performance. In *Proc. 1st ACM-SIAM Sympos. Discrete Algorithms*, pages 465–474, 1990. [w-mcrgt-90]

13565 A. Wiernik and Micha Sharir. Planar realization of nonlinear Davenport-Schinzel sequences by segments. In *Proc. 27th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 97–106, 1986. [ws-prnds-86] *Precedes:* ws-prnds-88.

13566 A. Wiernik and Micha Sharir. Planar realizations of nonlinear Davenport-Schinzel sequences by segments. *Discrete Comput. Geom.*, 3:15–47, 1988. [ws-prnds-88] *Keywords:* Davenport-Schinzel sequences, line segments, lower bounds. *Succeeds:* ws-prnds-86.

T. N. Wiesel. See also [7180, 7181].

A. Wigderso. See also [13247].

A. Wigderson. See also [295, 296, 1598, 5944, 7849, 8994, 13248].

J. G. van Wijk. See also [10427].

13567 H. A. G. Wijshoff and J. van Leeuwen. Arbitrary versus periodic storage schemes and tessellations of the plane using one type of polyomino. *Inform. Control*, 62:1–25, 1984. [wl-avpss-84]

13568 H. A. G. Wijshoff and J. van Leeuwen. Periodic versus arbitrary tesselations of the plane using polyominos of a single type. Report RUU-CS-82-11, Dept. Comput. Sci., Utrecht Univ., Utrecht, Netherlands, 1982. [wl-pvatp-82]

R. Wilber. See also [297, 298].

B. Wilcox. See also [9613].

E. M. Wilcox. See also [1070].

H. S. Wilf. See also [5255].

13569 G. Wilfong. Motion planning for an autonomous vehicle. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 529–533, 1988. [w-mpav-88]

13570 G. Wilfong. Motion planning in the presence of movable obstacles. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 279–288, 1988. [w-mppmo-88] *Cites:* a-usppe-87, afw-msm-87, c-namrm-87, fw-pcm-88, fwy-cmtra-86, gj-cigtn-79, hss-cmpmi-84, kz-tetpp-86, ks-eapcf-85, k-osps-83, lw-apcfp-79, ls-ppspm-87, o-mpic-87, oy-rmpmd-85, rs-mppmo-85, st-pplup-86, ss-pmp2g-83, s-a-83, y-amp-87, ZZZ.

13571 G. Wilfong. Motion planning in the presence of movable obstacles. *Ann. Math. Artif. Intell.*, 3:131–150, 1991. [w-mppmo-91]

13572 G. Wilfong. Nearest neighbor problems. In *Proc. 7th Annu. ACM Sympos. Comput. Geom.*, pages 224–233, 1991. [w-nnp-91] *Keywords:* proximity. *Precedes:* w-nnp-92. *Cites:* ce-iacko-85, c-papop-85, de-eaahc-84, ds-cgug-87, e-acg-87, h-cnnr-68, hd-kgde-60, mih-ccmcp-81, rwli-asnnd-75, ZZZ.

13573 G. Wilfong. Nearest neighbor problems. *Internat. J. Comput. Geom. Appl.*, 2:283–416, 1992. [w-nnp-92] *Keywords:* pattern recognition, NP complete. *Succeeds:* w-nnp-91.

13574 G. Wilfong. On-line algorithms for compressing planar curves. In *Proc. 8th ACM-SIAM Sympos. Discrete Algorithms*, pages 158–167, January 1997. [w-olacp-97]

13575 G. Wilfong. Recent advances in algorithmic motion planning. In *Proc. 1st Internat. Conf. Indust. Applied Math.*, pages 99–110, 1987. [w-raamp-87]

13576 G. Wilfong. Shortest paths for autonomous vehicles. Technical Report, AT& T Bell Labs, 1988. [w-spav-88] *Precedes:* w-spav-89.

13577 G. Wilfong. Shortest paths for autonomous vehicles. In *Proc. 6th IEEE Internat. Conf. Robot. Autom.*, pages 15–20, 1989. [w-spav-89] *Succeeds:* w-spav-88.

13578 G. Wilfong. Two-label minimum consistent subsets. Technical Report, AT& T Bell Labs, 1993. [w-tlmcs-93]

G. Wilfong. See also [847–849, 983, 984, 1686, 1687, 1738, 1739, 5407–5409, 7088].

G. T. Wilfong. See also [7102–7104].

13579 J. Wilhelms. A coherent projection appoach for direct volume rendering. Technical Report UCSC-CRL-90-38, Computer Research Laboratory, University of California, Santa Cruz, August 1990. [w-cpadv-90]

13580 J. Wilhelms and A. Van Gelder. Octrees for faster isosurface generation. *ACM Trans. Graph.*, 11:201–227, 1992. [wv-ofig-92]

J. Wilkes. See also [5936].

D. Wilkins. See also [10240].

13581 J. Wilkinson. *Rounding Errors in Algebraic Processes.* Prentice Hall, Englewood Cliffs, NJ, 1963. [w-reap-63]

13582 J. H. Wilkinson. *The Algebraic Eigenvalue Problem.* Clarendon Press, Oxford, UK, 1965. [w-aep-65]

Allan R. Wilks. See also [4274].

13583 Hans-Martin Will. Fast and efficient computation of additively weighted Voronoi cells for applications in molecular biology. In *Proc. 6th Scand. Workshop Algorithm Theory*, volume 1432 of *Lecture Notes Comput. Sci.*, pages 310–321. Springer-Verlag, 1998. [w-fecaw-98]

P. M. Will. See also [718].

13584 D. Willard. Lower bounds for the addition-subtraction operations in orthogonal range queries and related problems. *Inform. Comput.*, 82:45–64, 1989. [w-lbaso-89]

13585 D. E. Willard. A new time complexity for orthogonal range queries. In *Proc. 20th Allerton Conf. Commun. Control Comput.*, pages 462–471, 1982. [w-ntcor-82]

13586 D. E. Willard. Abstract predicate retrieval theory. Report 83-3, Dept. Comput. Sci., State Univ. New York Albany, Albany, NY, 1983. [w-aprt-83]

13587 D. E. Willard. An introduction to super-b-trees. Report 79-01, Dept. Comput. Sci., Univ. Iowa, Iowa City, IA, 1979. [w-isbt-79]

13588 D. E. Willard. Applications of range query theory to relational data base join and selection operations. *J. Comput. Syst. Sci.*, 52:157–169, 1996. [w-arqtr-96]

13589 D. E. Willard. Applications of the fusion tree method to computational geometry and searching. In *Proc. 3rd ACM-SIAM Sympos. Discrete Algorithms*, pages 286–295, 1992. [w-aftmc-92]

13590 D. E. Willard. Applied and theoretical algorithms based on the application of sheared retrieval to orthogonal range queries. Technical report, SUNY Albany, 1986. [w-ataba-86]

13591 D. E. Willard. Balanced forests of k-d* trees as a dynamic data structure. Report TR-23-78, Aiken Comput. Lab., Harvard Univ., Cambridge, MA, 1978. [w-bfkdt-78]

13592 D. E. Willard. Efficient processing of relational calculus expressions using range query theory. In *Proceedings of ACM SIGMOD Conference*, pages 160–172, 1984. [w-eprce-84]

13593 D. E. Willard. Examining computational geometry, Van Emde Boas trees, and hashing from the perspective of the fusion tree. *SIAM J. Comput.*, 29:1030–1049, 2000. [w-ecgve-00]

13594 D. E. Willard. K-d trees in a dynamic environment. Report 80-01, Dept. Comput. Sci., Univ. Iowa, Iowa City, IA, 1980. [w-kdtde-80]

13595 D. E. Willard. Log-logarithmic worst case range queries are possible in space $O(n)$. *Inform. Process. Lett.*, 17:81–89, 1983. [w-llwcr-83]

13596 D. E. Willard. Lower bounds for dynamic range query problems that permit subtraction. In *Proc. 13th Internat. Coll. on Autom., Langu. and Program.*, 1986. [w-lbdrq-86]

13597 D. E. Willard. Lower bounds for the addition-subtraction operations in orthogonal range queries. Technical report, SUNY Albany, 1985. [w-lasoo-85]

13598 D. E. Willard. Multidimensional search trees that provide new type of memory reductions. *J. AMC*, 34(4):846–858, 1987. [w-mstpt-87]

13599 D. E. Willard. New data structures for orthogonal range queries. Technical Report, Havard Univ., 1978. [w-ndsor-78]

13600 D. E. Willard. New data structures for orthogonal range queries. *SIAM J. Comput.*, 14:232–253, 1985. [w-ndsor-85]

13601 D. E. Willard. New trie data structures which support very fast search operations. *J. Comput. Syst. Sci.*, 28:379–394, 1984. [w-ntdsw-84]

13602 D. E. Willard. On the application of sheared retrieval to orthogonal range queries. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 80–89, 1986. [w-asror-86] *Cites:* amm-cpmr-81, b-mbstu-75, b-mdc-80, bm-ewcds-80, bs-pmsad-77, bs-dsp1s-80, bw-owcar-80, c-fsnaq-83, c-sdssf-85, c-fadsi-85, cg-fc-85, ce-lsdst-86, e-ndrs-81, eo-esrp-82, fks-sstwc-82, f-icdds-80, f-lbcor-81, f-lbcor-81, fmn-dgds-85, gbt-srtgp-84, j-pqiqo-82, k-aru-84, kmr-nnpbd-85, lp-cgs-84, lw-wcarp-77, lw-qtfsm-80, lw-dsdrq-82, m-dsa-84, ms-idsfs-80, nhs-gfasm-84, o-rsg-85t, ol-tgmdd-81, ps-cgi-85, v-sttor-85, e-pofll-77, ekz-diepq-77, w-ndsor-78, w-ndsor-85, w-llwcr-83, wl-arrcd-85, w-sadbr-84, w-rmsmd-85, w-lasoo-85, w-ataba-86, y-sttoa-82, y-cmps-85, ZZZ.

13603 D. E. Willard. Optimal sample cost residues for differential database batch query problems. *J. ACM*, 38:104–119, 1991. [w-oscrd-91]

13604 D. E. Willard. Polygon retrieval. *SIAM J. Comput.*, 11:149–165, 1982. [w-pr-82]

13605 D. E. Willard. *Predicate-oriented database search algorithms.* Ph.D. thesis, Aiken Comput. Lab., Harvard Univ., Cambridge, MA, 1978. Report TR-20-78. [w-podsa-78] *Keywords:* doctoral thesis.

13606 D. E. Willard. Reduced memory space for multi-dimensional search trees. In *Proc. 2nd Sympos. Theoret. Aspects Comput. Sci.*, pages 363–374, 1985. [w-rmsmd-85]

13607 D. E. Willard. Sampling algorithms for differentiable batch retrieval problems. In *Proceedings of ICALP*, 1984. [w-sadbr-84]

13608 D. E. Willard. Searching unindexed and nonuniformly generated files in $\log\log N$ time. *SIAM J. Comput.*, 14:1013–1029, 1985. [w-sungf-85]

13609 D. E. Willard. The super-b-tree algorithm. Report TR-03-79, Aiken Comput. Lab., Harvard Univ., Cambridge, MA, 1979. [w-sbta-79]

13610 D. E. Willard and G. S. Lueker. Adding range restriction capability to dynamic data structures. *J. ACM*, 32:597–617, 1985. [wl-arrcd-85]

13611 D. E. Willard and Y. C. Wee. Quasi-valid range querying and its implications for nearest neighbor problems. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 34–43, 1988. [ww-qvrqi-88] *Cites:* cg-opapp-88, acg-dctdp-87, acg-cdctd-87, ag-epssg-86, aks-osn-83, b-mbstu-75, b-mdc-80, bm-ewcds-80, bs-pmsad-77, bs-dsp1s-80, c-sdssf-85, c-fsnaq-86, c-lbcms-86, c-prsig-87, c-pms-86, dk-ppess-87, e-acg-87, eo-bdsds-85, ew-hrsls-86, f-icdds-80, f-lbcor-81, f-sbmrq-81, hw-ensrq-87, kmr-nnpbd-85, lp-cgs-84, lw-wcarp-77, lw-dsdrq-82, m-mdscg-84, ol-tgmdd-81, o-ddds-83, ps-cgi-85, v-sttor-85, v-oaann-86, w-pr-82, w-ndsor-85, w-asror-86, w-rmsmd-85, wl-arrcd-85, y-cmps-85, yy-gaddg-85, ZZZ.

D. E. Willard. See also [5557, 5558, 5574, 9029, 13420].

R. Wille. See also [11252, 12580, 13279].

13612 P. Willet. Searching for pharmacophoric patterns in databases of three-dimensional chemical structures. *J. Molecular Recognition*, 8:290–303, 1995. [w-sppdt-95]

P. Willet. See also [9216].

B. Willette. See also [6451].

T. Willhalm. See also [13433].

J. Willhelms. See also [9837].

E. H. William, Jr. See also [1658].

G. J. B. Williams. See also [1845].

13613 M. H. Williams. Cubic map configurations. *Inform. Process. Lett.*, 11:189–185, 1980. [w-cmc-80]

13614 P. Williams. Issues in interactive direct projection volume rendering of nonrectilinear meshed data sets. Work in Progress Report 1059, Center for Supercomputing Research and Development, University of Illinois, Urbana-Champaign, December 1990. [w-idpvr-90]

13615 P. Williams and P. Shirley. Visibility ordering meshed polyhedra. Report 1097, Center for Supercomputing Research and Development, Universityof Illinois, Urbana-Champaign, April 1991. [ws-vomp-91] *Precedes:* w-vomp-92.

13616 P. L. Williams. Applications of computational geometry to volume visualization. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 247–251, August 1991. [w-acgvv-91] *Cites:* e-atccd-90, e-acg-87, fkn-vsgpt-80, mhc-avcev-90, st-padsc-90, w-cpadv-90, ws-vomp-91, ZZZ.

13617 P. L. Williams. Visibility ordering meshed polyhedra. *ACM Transaction on Graphics*, 11(2):103–125, April 1992. [w-vomp-92] *Succeeds:* ws-vomp-91.

13618 David P. Williamson and Michel X. Goemans. Computational experience with an approximation algorithm on large-scale Euclidean matching instances. *INFORMS J. Comput.*, 8(1):29–40, 1996. [wg-ceaal-96] *Keywords:* matching, experimental analysis.

David P. Williamson. See also [5990].

D. P. Wills. See also [8951].

D. P. M. Wills. See also [4251].

13619 Graham J. Wills. NicheWorks - interactive visualization of very large graphs. In G. Di Battista, editor, *Graph Drawing (Proc. GD '97)*, volume 1353 of *Lecture Notes Comput. Sci.*, pages 403–414. Springer-Verlag, 1997. [w-nivvl-97] *Keywords:* graph drawing.

13620 J. M. Wills. On polyhedra with transitivity properties. *Discrete Comput. Geom.*, 1:195–199, 1986. [w-ptp-86]

J. M. Wills. See also [2116, 2417, 5166, 6336–6338, 11828].

D. Wilson. See also [13057].

D. S. Wilson. See also [12643].

13621 F. Wesley Wilson, R. Kent Goodrich, and Wendy Spratte. Lawson's triangulation is nearly optimal for controlling error bounds. *SIAM J. Numer. Anal.*, 27(1):190–197, February 1990. [wgs-ltino-90] *Keywords:* Lawson's triangulation, error bounds. *Annote:* If a triangle has side lengths $a \leq b \leq c$ then condition number C is $1 + \sqrt{(1-\lambda^2)}/\lambda$, where $\lambda = (4\text{Area})/(b^2 + c^2)$. One wants C to be small. Another error bound looks like $kc_S^n / \sin\alpha_S$, where α_S is the smallest angle, c_S is the longest side, and n a positive integer. Also gives another error bound which is really hairy. *Abstract:* One way of evaluating a triangulation method is to study how well it controls error bounds and stability in computations. Lawson's method, which maximizes the smallest angle over all triangulations, controls error bounds for linear interpolates as well as for certain derivative estimates. In particular, no other triangulation improves these bounds by more than a factor of 2. Although Lawson's triangulation method does not minimize the largest edge over all triangulations, it nearly does; this edge is no longer than 2/ root 3 times the longest edge in any other triangulation. Thus, Lawson's triangulation method controls error bounds in polynomial interpolation schemes. (Author abstract) 7 Refs.

J. Wilson. See also [13828].

L. Wilson. See also [1921–1923].

13622 P. M. H. Wilson. Towards birational classfication of algebraic varieties. *Bull. London Math. Soc.*, 19:1–48, 1987. [w-tbcav-87]

P. R. Wilson. See also [13637].

R. Wilson. See also [6018, 7924, 12400].

R. D. W. Wilson. See also [9162].

R. G. Wilson. See also [8265].

13623 R. H. Wilson. Efficiently partitioning an assembly. In L. S. Honem de Mello and S. Lee, editors, *Computer-Aided Mechanical Assembling Planning*. Kluwer Academic Publishers, 1991. [w-epa-91]

13624 R. H. Wilson. *On Geometric Assembly Planning*. PhD thesis, Stanford University, March 1992. Stanford Technical Report STAN-CS-92-1416. [w-fap-92] *Keywords:* doctoral thesis.

13625 R. H. Wilson and J.-C. Latombe. Geometric reasoning about mechanical assembly. *Artif. Intell.*, 71:371–396, 1994. [wl-grama-94]

13626 R. H. Wilson, J.-C. Latombe, and T. Lozano-Pérez. On the complexity of partitioning an assembly. Technical Report STAN-CS-92-1458, Dept. of Computer Science, Stanford University, 1992. [wll-cpa-92]

13627 R. H. Wilson and T. Matsui. Partitioning an assembly for infinitesimal motions in translation and rotation. In *Proc. IEEE Internat. Conf. Intell. Robots Syst.*, pages 1311–1318, 1992. [wm-paimt-92]

13628 R. H. Wilson and A. Schweikard. Assembling polyhedra with single translations. Technical Report STAN-CS-91-1387, Dept. Comput. Sci., Stanford Univ., Stanford, CA, October 1991. [ws-apst-91]

R. H. Wilson. See also [6389, 6390, 6584, 6606, 6607, 8511].

T. J. Wilson. See also [2061].

13629 S. Wimer, I. Koren, and I. Cederbaum. Optimal aspect ratios of building blocks invlsi. In *IEEE Trans. Computer Aided Design of Integrated Circuits and Systems*, pages 139–145, 1989. [wkc-oarbb-89]

13630 W. Wimer, I. Koren, and I. Cederbaum. Floorplans, planar graphs and layouts. *IEEE Trans. Circuits Syst.*, CAS-35:267–278, 1988. [wkc-fpgl-88]

O. Wing. See also [13765].

J. Winget. See also [5799].

J. M. Winget. See also [1522].

13631 Franz Winkler. Issues in parametrization of algebraic curves. In *Abstracts 11th European Workshop Comput. Geom.*, pages 37–40. Universität Linz, 1995. [w-ipac-95]

P. Winkler. See also [4241].

S. Winograd. See also [3528, 3529].

13632 P. Winter. An algortihm for the Steiner problem in the Euclidean plane. *Networks*, 15:323–345, 1985. [w-aspep-85]

13633 Pawel Winter. Euclidean Steiner minimal trees for 3 terminals in a simple polygon. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 247–253, 1995. [w-esmt3-95]

13634 Pawel Winter. Steiner hull in $\Theta(n \log n)$ time. In *Abstracts 17th European Workshop Comput. Geom.*, pages 170–173. Freie Universität Berlin, 2001. [w-shtt-01]

13635 P. Winter. Steiner problem in networks, a survey. *Networks*, 17:129–167, 1987. [w-spns-87]

P. Winter. See also [7273, 12318, 12319].

Jürgen Wirtgen. See also [4385].

13636 D. S. Wise. Representing matrices as quadtrees for parallel processors. *Inform. Process. Lett.*, 20:195–199, 1985. [w-rmqpp-85]

13637 J. A. Wiseman and P. R. Wilson. A Sylvester theorem for conic sections. *Discrete Comput. Geom.*, 3:295–305, 1988. [ww-stcs-88]

N. E. Wiseman. See also [10269, 10270].

13638 S. Wismath. Computing the full visibility graph of a set of line segments. *Inform. Process. Lett.*, 42(5):257–??, July 1992. [w-cfvgs-92]

S. Wismath. See also [1986, 7981, 8079].

13639 S. K. Wismath. *Bar-Representable Visibility Graphs and Related Flow Problems*. Ph.D. thesis, Dept. Comput. Sci., Univ. British Columbia, 1989. [w-brvgr-89] *Keywords:* graph drawing, visibility, planar.

13640 S. K. Wismath. Characterizing bar line-of-sight graphs. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 147–152, 1985. [w-cblsg-85] *Keywords:* visibility, graph theory, geometric graphs, graph drawing. *Precedes:* kw-wvgbr-89. *Cites:* a-aac-78, et-csn-76, gjs-agcpc-76, ZZZ.

13641 S. K. Wismath. Reconstruction of parallel line segments from endpoint visibility information. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 369–374, 1994. [w-rplse-94] *Cites:* cl-dvg-92, ec-rvgsp-90, elo-rchev-93, o-cgc18-93a, s-spinh-91, tt-uavrp-86, w-cblsg-85, a-srvg-92, ZZZ.

13642 S. K. Wismath. Triangulations: An algorithmic study. M.Sc. thesis, Dept. Comput. Inform. Sci., Queen's Univ., Kingston, ON, July 1980. Report 80-106. [w-tas-80] *Keywords:* master thesis, Delaunay triangulations, point-set triangulation, implementing algorithms, empirical analysis.

S. K. Wismath. See also [2311, 7441, 7979, 8095].

D. H. Withers. See also [7082].

R. Withers. See also [11524].

13643 H. S. Witsenhausen. Some aspects of convexity useful in information theory. *IEEE Trans. Inform. Theory*, IT-26:265–271, 1980. [w-sacui-80]

K. Wittenburg. See also [13454].

C. Witzgall. See also [12533].

13644 G. Woeginger. Epsilon-nets for half-planes. Technical Report B-88-02, Dep. of Mathematics, Free University Berlin, March 1988. [w-enh-88]

13645 G. Woeginger. Epsilon-nets for half-planes. In *Proc. 14th Internat. Workshop Graph-Theoret. Concepts Comput. Sci.*, volume 344 of *Lecture Notes Comput. Sci.*, pages 243–252, 1989. [w-enh-89]

G. Woeginger. See also [2715, 2716, 4966, 5232, 5372–5374, 6520, 6521, 8248, 9741–9743, 10551, 10552, 11169, 11423–11426].

G. J. Woeginger. See also [1473, 2592, 5191, 7489, 10754].

13646 G. Wöginger. Auffinden von Vier-Punkte-Mengen mit minimaler Fläche. In *Abstracts 5th Intern. Workshop Comput. Geom.* Universität Freiburg, 1989. [w-avpmm-89]

G. Wöginger. See also [13472].

13647 T. T. Wohlers. Stl viewers and editors, 1996. [w-sve-96] *URL:* http://lamar.colstate.edu/~wohlers/stl_view.html.

13648 George Wolberg and Henry Massalin. Fast convolution with packed lookup tables. In Paul Heckbert, editor, *Graphics Gems IV*, pages 447–464. Academic Press, Boston, MA, 1994. [wm-fcplt-94] *Keywords:* image filter, image magnification, image resampling. *Annote:* Gives optimized code for convolution of discrete signals. This is useful for image resampling and filtering. Contains C code.

Alexander Wolf. See also [189].

13649 P. Wolfe. Finding the nearest point in a polytope. *Math. Program.*, 11:128–149, 1976. [w-fnpp-76]

P. Wolfe. See also [3738].

13650 R. N. Wolfe, M. A. Wesley, J. C. Kyle, Jr., F. Gracer, and W. J. Fitzgerald. Solid modeling for production design. *IBM J. Res. Develop.*, 31:277–295, 1987. [wwkgf-smpd-87]

B. Wolfers. See also [600, 1422, 13314, 13473, 13474].

Alexander Wolff. See also [10841, 12571, 13315–13318].

Lawrence Wolff. See also [10774–10776].

J. Wolff von Gudenberg. See also [2135].

13651 S. Wolfram. *Mathematica: a system for doing mathematics by computer.* Addison-Wesley, Reading, Mass., 1988. [w-msdmc-88]

13652 Michael Wolfrath. Results on fat objects with a low intersection proportion. In *Abstracts 12th European Workshop Comput. Geom.*, page 1. Universität Münster, 1996. [w-rfoli-96] *Cites:* ZZZ.

13653 Michael Wolfrath. Voronoi diagrams for spheres and their application in motion planning. In *Abstracts 11th European Workshop Comput. Geom.*, page 29. Universität Linz, 1995. [w-vdsta-95]

K. Wolfrum. See also [5286].

13654 E. Wolfson and E. L. Schwartz. Computing minimal distances on arbitrary polyhedral surfaces. Technical report, Dept. of Computer Science, Courant Institute of Mathematical Sciences, 1987. [ws-cmdap-87] *Precedes:* ws-cmdps-89.

13655 E. Wolfson and E. L. Schwartz. Computing minimal distances on polyhedral surfaces. *IEEE Trans. Pattern Anal. Mach. Intell.*, 11(9):1001–1005, 1989. [ws-cmdps-89] *Comments:* presents an algorithm that has been implemented for the discrete geodesic problem; the algorithm is worst-case exponential. *Succeeds:* ws-cmdap-87.

13656 E. Wolfson and M. Sharir. Design and implementation of a motion planning system in three dimensions. Manuscript, ??, 1992. [ws-dimps-92]

13657 E. Wolfson and Micha Sharir. Implementation of a motion planning system in three dimensions. In *Proc. 9th Annu. ACM Sympos. Comput. Geom.*, pages 399–400, 1993. [ws-impst-93] *Keywords:* video review. *Cites:* as-car-92, cp-tncp-90, ws-dimps-92, ZZZ.

E. Wolfson. See also [11844–11846].

H. Wolfson. See also [8103].

13658 H. J. Wolfson. Model based object recognition by 'geometric hashing'. In *Proc. 1st European Conf. Comput. Vision*, pages 526–536, 1990. [w-mborg-90]

13659 H. J. Wolfson. On curve matching. *IEEE Trans. Pattern Anal. Mach. Intell.*, 12:483–489, 1990. [w-cm-90]

Haim J. Wolfson. See also [7071, 8459–8461, 10220, 11051].

O. Wolfson. See also [12230, 12231].

H. Woll. See also [667].

P. Wollard. See also [5976].

Andrzej Woloszyn. See also [885].

13660 F. E. Wolter. *Cut Loci in Bordered and Unbordered Riemannian Manifolds.* PhD thesis, TU Berlin, FB Mathematik, Berlin, Germany, 1985. [w-clbur-85] *Keywords:* doctoral thesis.

13661 F.-E. Wolter. Cut locus and medial axis in global shape interrogation and representation. *Comput. Aided Geom. Design*, ??, ?? To appear. [w-clmag-??]

13662 F. E. Wolter. Cut locus and medial axis in global shape interrogation and representation. Technical Report 92-2, MIT, Dept. Ocean Engg., Design Lab, Cambridge, MA 02139, USA, January 1992. [w-clmag-92]

13663 F.-E. Wolter and S. T. Tuohy. Approximation of high degree and procedural curves. *Engineering with Computers*, 8:61–80, 1992. [wt-ahdpc-92]

13664 F.-E. Wolter and S. T. Tuohy. Curvature computations for degenerate surface patches. *Comput. Aided Geom. Design*, 9(4):241–270, 1992. [wt-ccdsp-92]

Franz-Erich Wolter. See also [77, 7541, 8355, 8416, 9102, 10692–10695, 11061].

J. Wolter. See also [1813].

13665 Jan D. Wolter, Tony C. Woo, and Richard A. Volz. Optimal algorithms for symmetry detection in two and three dimensions. *Visual Comput.*, 1(1):37–48, July 1985. [wwv-oasdt-85] *Keywords:* similarity, pattern matching, graph isomorphism.

13666 Y. Won and S. Sahni. A balanced bin sort for hypercube multicomputers. *J. of Supercomputing*, 2:435–448, 1988. [ws-bbshm-88]

B. Y. S. Wong. See also [3516].

C. Wong. See also [9019, 13751].

13667 C. K. Wong. An optimal two-dimensional compaction scheme. In P. Bertolazzi and F. Luccio, editors, *VLSI: Algorithms and Architectures*, pages 205–211. Elsevier, 1985. [w-otdcs-85]

C. K. Wong. See also [2821, 3527, 4374, 6965–6967, 8607, 8630–8633, 8638, 8639, 10126, 11660, 11727, 12777, 13558–13560, 13717, 13755–13761].

E. Wong. See also [6446, 6447].

S. K. M. Wong. See also [13339].

13668 T. Wong. Minimum rectangular distance paths between two points on a plane with barriers. Technical report, Electrical Engineering and Computer Science, MIT, May 1979. [w-mrdpb-79]

Y.-C. Wong. See also [5531, 13899].

Y. S. Wong. See also [3124].

Andrew Woo. See also [5295].

L. S. Woo. See also [12777].

13669 R. C. Woo and T. Thomasma. An algorithm for generating solid elements in objects with holes. *Comput. Struct.*, 18:333–342, 1984. [wt-agseo-84]

13670 T. Woo. The convex skull problem. Manuscript, ??, 1983. [w-csp-83]

T. Woo. See also [3074, 6457, 7483].

13671 T. C. Woo. A combinatorial analysis of boundary data structure schemata. *IEEE Comput. Graph. Appl.*, 5(3):19–27, 1985. [w-cabds-85]

13672 T. C. Woo. Feature extraction by volume decomposition. In *Proceedings of Conference on CAD/CAM Technology in Mechanical Engineering*. MIT, 1982. [w-fevd-82]

13673 T. C. Woo and H.-C. Lee. On the time complexity for circumscribing a convex polygon. *Comput. Vision Graph. Image Process.*, 30:362–363, 1985. [wl-tcccp-85]

13674 T. C. Woo and S. Y. Shin. A linear time algorithm for triangulating a point-visible polygon. *ACM Trans. Graph.*, 4(1):60–70, 1985. [ws-ltatp-85]

Tony C. Woo. See also [3076, 3259, 6458, 11456, 12161, 12800, 12801, 13372, 13665].

13675 D. Wood. An isothetic view of computational geometry. In G. T. Toussaint, editor, *Computational Geometry*, pages 429–459. North-Holland, Amsterdam, Netherlands, 1985. [w-ivcg-85]

13676 D. Wood. *Data Structures, Algorithms, and Performance*. Addison-Wesley, 1993. [w-dsap-93]

13677 D. Wood. The contour problem for rectilinear polygons. *Inform. Process. Lett.*, 19:229–236, 1984. [w-cprp-84]

13678 D. Wood. The riches of rectangles. In *Proc. 5th Internat. Meeting Young Comput. Scientists*, volume 381 of *Lecture Notes Comput. Sci.*, pages 161–168. Springer-Verlag, 1988. [w-rr-88]

13679 D. Wood and P. Yamamoto. Dent and staircase visibility. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 297–302, 1993. [wy-dsv-93] *Cites:* bs-parpv-92, cr-occop-89a, b-rld-91, srw-gsv-cccg-91, ZZZ.

13680 D. Wood and C. K. Yap. Computing a convex skull of an orthogonal polygon. In *Proc. 1st Annu. ACM Sympos. Comput. Geom.*, pages 311–315, 1985. [wy-ccsop-85] *Succeeds:* wy-rcsp-84. *Precedes:* wy-ocsp-88. *Cites:* cy-psppo-84, g-lcpcn-81, osw-dcrch-85, s-mcrm-72, w-csp-83, ZZZ.

13681 D. Wood and C. K. Yap. The orthogonal convex skull problem. *Discrete Comput. Geom.*, 3(4):349–365, 1988. [wy-ocsp-88] *Succeeds:* wy-ccsop-85.

13682 D. Wood and C. K. Yap. The rectilinear convex skull problem. Report TR 132, Comput. Sci. Div., New York Univ., New York, NY, 1984. [wy-rcsp-84] *Precedes:* wy-ccsop-85.

D. Wood. See also [1660, 2536, 3011, 3646, 4054, 4720, 4725, 4741, 5256–5258, 6075, 6517–6519, 8176–8178, 8180–8185, 8663, 8664, 9163–9165, 9220, 9976, 10158, 10159, 10431–10433, 10440–10447, 10450, 10452, 10510, 11064, 11068–11075, 11817–11820, 11823, 11824, 12236, 12237, 12366, 12367, 13146–13148, 13260, 13555–13557].

13683 D. R. Wood. Two-bend three-dimensional orthogonal grid drawing of maximum degree five graphs. Technical Report 98/03, School of Computer Science and Software Engineering, Monash University, 1998. [w-tbtdo-98] *URL:* ftp://ftp.cs.monash.edu.au//publications/1998/tr98_03.ps.gz. *Keywords:* graph drawing, orthogonal, 3D.

13684 D. R. Woodall. Open problems. In D. J. A. Welsh and D. R. Woodall, editors, *Combinatorics, Proc. Conference on Combinatorial Mathematics*, pages 341–350, Southend-on-Sea, UK, 1972. Institute of Mathematics and its Applications. [w-op-72]

13685 D. R. Woodall. Thrackles and deadlock. In D. J. A. Welsh, editor, *Combinatorial Mathematics and its Applications*, pages 335–348. Academic Press, London, 1969. [w-td-69]

A. R. Woodbury. See also [12344].

13686 R. J. Woodham. Photometric method for determining surface orientation from multiple images. *Optical Engineering*, 19:139–144, 1980. [w-pmdso-80]

Russell Woodroofe. See also [1473].

H. B. Woodruff. See also [11246].

13687 D. Woods. *Drawing Planar Graphs*. PhD thesis, Department of Computer Science, Stanford University, 1982. Technical Report STAN-CS-82-943. [w-dpg-82] *Keywords:* doctoral thesis, graph drawing.

J. B. Woodward. See also [13381].

13688 J. Woodwark. Blends in geometric modeling. In R. Martin, editor, *The Mathematics of Surfaces II*, pages 255–297. 1987. [w-bgm-87]

John Woodwark. See also [8536].

13689 J. R. Woodwark. Compressed quad trees. *Comput. J.*, 27(3):225–229, 1984. [w-cqt-84]

13690 J. R. Woodwark. *Computing Shape*. Butterwoths, 1986. [w-cs-86]

13691 J. R. Woodwark. Eliminating redundant primitives from set-theoretic solid models by a consideration of constituents. *IEEE Comput. Graph. Appl.*, 8(3):38–47, May 1988. [w-erpst-88]

13692 J. R. Woodwark and A. Bowyer. Better and faster pictures from solid models. *IEE Compter Aided Engineering Journal*, ??, 1986. [wb-bfpsm-86]

13693 J. R. Woodwark and K. M. Quinlan. Reducing the effect of complexity on volume model evaluation. *Compter Aided Design*, ??, 1982. [wq-recvm-82]

13694 J. R. Woodwark and K. M. Quinlan. The derivation of graphics from volume models by recursive subdivision of the object space. In *Proc. CG*, 1980. [wq-dgvmr-80]

J. R. Woodwork. See also [2354].

13695 P. Woon. A computer procedure for generating visible-line drawings of solids bounded by quadratic surfaces. Technical Report 403-15, Dept. Elect. Engrg., New York Univ., New York, NY, November 1970. [w-cpgvl-70]

W. L. Wooten. See also [6989].

13696 B. Wördenweber. Surface-triangulation. Document 107, CAD Group, Cambridge Univ., Cambridge, England, 1980. [w-st-80]

13697 B. Wördenweber. Surface triangulation for picture production. *IEEE Comput. Graph. Appl.*, 3:45–51, November 1983. [w-stpp-83] *Annote:* Triangulation of polyhedra for representation. Claims $N \log N$ for triangulation of a polygon. (I don't believe this.).

13698 B. Wördenweber. Volume-triangulation. Document 110, CAD Group, Cambridge Univ., Cambridge, England, ?? [w-vt-??]

N. Wormald. See also [4593, 4604–4606].

N. C. Wormald. See also [3711, 4589, 4590, 4607].

13699 Marcel Worring and Arnold W. M. Smeulders. Multi-scale analysis of discrete point sets. In *Abstracts 8th European Workshop Comput. Geom.*, pages 33–37. Utrecht University, 1992. [ws-msadp-92]

M. J. Wozny. See also [1206, 4377].

C. Wrathall. See also [9649].

13700 B. Darce Wright. *Planification de trajectoires pour un robot mobile sur un terrain accidenté*. PhD thesis, Ecole Nationale Supérieure des Télecommunications, 1993. [w-pdtpu-93] *Keywords:* doctoral thesis.

E. Wright. See also [6681].

E. M. Wright. See also [6682, 6683].

J. Wright. See also [11292, 11293].

M. H. Wright. See also [5960].

Stephen G. Wright. See also [7603].

13701 T. J. Wright. A two-space solution to the hidden line problem for plotting functions of two variables. *IEEE Trans. Comput.*, C-32(1):28–33, 1983. [w-tsshl-83]

W. Wright. See also [9170, 13189].

W. V. Wright. See also [3414, 13191–13193].

P. W.Shor. See also [263].

A. Wu. See also [911, 912, 9915].

13702 A. Y. Wu, S. K. Bhaskar, and A. Rosenfeld. Computation of geometric properties from the medial axis transform in $O(n \log n)$ time. *Comput. Vision Graph. Image Process.*, 34:76–92, 1986. [wbr-cgpma-86]

13703 A. Y. Wu, T. H. Hong, and A. Rosenfeld. Threshold selection using quadtrees. Report TR-886, Dept. Comput. Sci., Univ. Maryland, College Park, MD, 1980. [whr-tsuq-80]

Angela Y. Wu. See also [1926, 7759, 9909, 9911, 9912].

Ching-Ting Wu. See also [3120].

13704 Kevin Wu. Fast inversion of length- and angle-preserving matrices. In Paul Heckbert, editor, *Graphics Gems IV*, pages 199–206. Academic Press, Boston, MA, 1994. [w-filap-94] *Keywords:* eigenvalue, 4x4 matrix. *Annote:* Presents optimized formulas and code to compute the inverse of a 4x4 matrix that is known to be length- and angle-preserving (consisting of only rotation, translation, and uniform scaling). Contains C code.

13705 Peter Yick Fai Wu. *Polygon Overlay in Prolog*. PhD thesis, Electrical, Computer, and Systems Engineering Dept., Rensselaer Polytechnic Institute, 1987. [w-pop-87] *Keywords:* doctoral thesis, intersection, artificial intelligence.

13706 Peter Y. F. Wu and Wm. Randolph Franklin. A logic programming approach to cartographic map overlay. *Canadian Computational Intelligence Journal*, 6(2):61–70, 1990. [wf-lpacm-90] *Keywords:* artificial intelligence, intersection.

Peter Y. F. Wu. See also [5498, 5504, 5505, 5509–5511].

Vanban L. Wu. See also [12686].

13707 W. Wu. On the decision problem and mechanization of theorem proving in elementary geometry. *Sci. Sinica*, 21:150–172, 1978. [w-dpmtp-78]

13708 W. Wu. Some recent advances in mechanical theorem proving of geometries. In W. W. Bledsoe, editor, *Theorem Proving: After 25 Years*. American Mathematical Society, 1984. [w-sramt-84]

13709 W. C. Wu. A robust simulation-before-test technique for nonlinear analog fault diagnosis. Master's thesis, Electrical Engineering Department, University of Maryland, 1984. [w-rsbtt-84] *Keywords:* master thesis.

13710 W. T. Wu. Basic principles of mechanical theorem proving in elementary geometrics. *J. Syst. Sci. Math. Sci.*, 4:207–235, 1984. [w-bpmtp-84]

13711 W.-T. Wu. On a theorem of Leray. *Chinese Math.*, 2:398–410, 1962. [w-tl-62]

13712 X. Wu. A linear-time simple bounding volume algorithm. In D. Kirk, editor, *Graphics Gems III*. Academic Press, Boston, MA, 1992. [w-ltsbv-92]

13713 X. Wu. Optimal quantization by matrix searching. *J. Algorithms*, 12:663–673, 1991. [w-oqms-91]

13714 X. Wu and J. G. Rokne. Double-step generation of ellipses. *IEEE Comput. Graph. Appl.*, 9:56–69, 1989. [wr-dsge-89] *Keywords:* design of algorithms, computer graphics, discrete geometry, approximation, incrementation, average-case analysis, curves, two-dimensional.

13715 X. Wu and J. G. Rokne. Double-step incremental generation of lines and circles. *Comput. Vision Graph. Image Process.*, 37:331–344, 1987. [wr-dsigl-87] *Keywords:* design of algorithms, computer graphics, discrete geometry, approximation, incrementation, average-case analysis, lines, circles, two-dimensional.

13716 X. Wu and J. G. Rokne. On properties of discretized convex curves. *IEEE Trans. Pattern Anal. Mach. Intell.*, 11:217–223, 1989. [wr-pdcc-89] *Keywords:* discrete geometry, approximation, incrementation, curves, two-dimensional, convex.

X. Wu. See also [11339, 11341, 11342].

13717 Y.-F. Wu, P. Widmayer, M. D. F. Schlag, and C. K. Wong. Rectilinear shortest paths and minimum spanning trees in the presence of rectilinear obstacles. *IEEE Trans. Comput.*, C-36(3), March 1987. [wwsw-rspms-87]

Y. F. Wu. See also [8634, 8635, 11203, 11204, 13558–13560].

C. Van Wyk. See also [5410, 5411].

J. A. Wyllie. See also [3544].

13718 A. D. Wyner. Capabilities of bounded discrepancy decoding. *AT&T Tech. J.*, 44:1061–1122, 1965. [w-cbdd-65]

H. Wynn. See also [10024].

H. P. Wynn. See also [10025].

13719 E. Wynters and Joseph S. B. Mitchell. Shortest paths for a two-robot rendez-vous. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 216–221, 1993. [wm-sptrr-93] *Cites:* gm-osacv-87, m-lpltw-84, mrw-mlpop-90, mw-omcpo-90i, psr-cgcsp-89, ps-cgi-85, rs-spesp-85, w-cvgnl-85, ZZZ.

13720 E. L. Wynters. *Optimal motion planning for multiple point robots in the plane.* Ph.D. thesis, App. Math., Cornell Univ., Ithaca, NY, 1991. [w-ompmp-91] *Keywords:* doctoral thesis.

E. L. Wynters. See also [9751–9756].

B. Wyvill. See also [3374, 11342].

P. Xavier. See also [2695, 4346, 4347, 4368–4371].

13721 Patrick G. Xavier. A generic algorithm for constructing hierarchical representations of geometric objects. In *Proc. IEEE Internat. Conf. Robot. Autom.*, pages 3644–3651, 1996. [x-gachr-96] *Keywords:* BV trees, bounding volume trees, bottom-up construction, collision detection.

P. G. Xavier. See also [4372].

C. Xia. See also [12942].

13722 J. Xia and A. Varshney. Dynamic view-dependent simplification for polygonal models. In *IEEE Visualization '96 Proceedings*, pages 327–334, San Francisco, CA, October 1996. ACM/SIGGRAPH Press. [xv-dvdsp-96]

13723 J. C. Xia, J. El-Sana, and A. Varshney. Adaptive real-time level-of-detail based rendering for polygonal meshes. *IEEE Trans. Visualizat. Comput. Graph.*, 3(2):171–183, April 1997. [xev-artld-97]

13724 Xinyu Xiang, Martin Held, and Joseph S. B. Mitchell. Fast and effective stripification of polygonal surface models. In *ACM Sympos. Interactive 3D Graphics*, 1999. [xhm-fesps-99]

C. Xiao. See also [10423].

D. Xu. See also [5038, 5039, 10424].

G. Xu. See also [1253,1255,1281,1284].

J. Xu. See also [3058, 3059, 7171].

K. Xu. See also [12830].

13725 Y. Xu. *Minimum weight triangulation problem of a planar point set.* PhD thesis, Institute of Applied Mathematics, Academia Sinica, Beijing, China, 1992. [x-mwtpp-92] *Keywords:* doctoral thesis.

Y. Xu. See also [2648].

Y.-F. Xu. See also [367, 375, 376, 3122, 3123, 9681, 13750].

13726 Zhiming Xu. Discrete interpolation surface. *Journal of Computer Science and Technology*, 5(4):329–332, October 1990. [x-dis-90] *Keywords:* discrete interpolation surface, Voronoi diagram, scattered interpolation surface. *Abstract:* In this paper, a method to construct a surface with point interpolation and normal interpolation is presented. An algorithm to construct the discrete interpolation is also presented, which has the time complexity O(Nlog N), where N in the number of scattered points. (Author abstract) 6 Refs.

13727 Z. Xu and M. Suk. Representation and reconstruction of polygons and polyhedra using hierarchical extended Gaussian images. *Ann. Math. Artif. Intell.*, 13:377–400, 1995. [xs-rrppu-95] *Keywords:* matching, shape recognition, vision.

13728 G. L. Xue, J. B. Rosen, and P. M. Pardalos. A polynomial time dual algorithm for the Euclidean multifacility location problem. In *INTEGER PROGRAMMING AND COMBINATORIAL OPTIMIZATION*, page ??, 1992. [xrp-ptdae-92]

13729 Y. Yacoob and L. Davis. Computational ground and airborne localization over rough terrain. Technical Report CS-TR-2788, University of Maryland, 1988. [yd-cgalr-88]

13730 R. Yagel and W. Ray. Visibility computations for efficient walkthrough of complex environments. *Presence*, 5(1):1–16, 1996. [yr-vcewc-96]

Roni Yagel. See also [7908, 12094].

13731 I. M. Yaglom. *A simple non-euclidean geometry and its physical basis.* Springer-Verlag, 1979. [y-snegi-79]

13732 I. M. Yaglom. *Geometric Transformations*, volume 1. Random House, 1961. [y-gt-61] *Precedes:* y-gt-68.

13733 I. M. Yaglom. *Geometric Transformations*, volume 2. Random House, 1968. [y-gt-68] *Succeeds:* y-gt-61.

13734 I. M. Yaglom and V. G. Bolyanski. *Convex Figures.* English Translation, Holt, Rinehart and Winston, New York, NY, 1961. [yb-cf-61]

H. Yahia. See also [9248,10919,10920].

Takeo Yaku. See also [9780].

13735 Atsushi Yamada, Kenji Shimada, and Takayuki Iboh. Energy-minimizing approach to meshing curved wire-frame models. In *Proc. 5th International Meshing Roundtable*, pages 179–191, PO Box 5800, MS 0441, Albuquerque, NM, 87185-0441, 1996. Sandia National Laboratories. Also Sand. Report 96-2301. [ysi-emamc-96] *URL:* http://sass577.endo.sandia.gov:80/9225/Personnel/samitch/roundtable96/%accept-list.html.

M. Yamada. See also [7412].

13736 F. Yamaguchi. A unified approach to interference problems using a triangle processor. *Comput. Graph.*, 19(3):141–149, 1985. Proc. SIGGRAPH '85. [y-uaipu-85]

13737 F. Yamaguchi. The completely four-dimensional geometric processing based on the 4 × 4 determinant method. In L. Yonchun et al., editors, *Proc. Internat. Conf. on Computer-Aided Design and Computer Graphics*, pages 183–188, Beijing, China, August 1989. Internat. Academic Publ. [y-cfdgp-89]

13738 Fujio Yamaguchi. Theoretical foundations for the 4 × 4 determinant method in computer graphics and geometric modelling. *Visual Comput.*, 3(2):88–97, August 1987. [y-tf4dm-87] *Keywords:* interference problems, geometric modelling, solid modelling, hidden line, surface detections, matrix, matrices.

13739 F. Yamaguchi and M. Niizeki. Some basic geometric test conditions in terms of pluecker coordinates and pluecker coefficients. *Visual Comput.*, 13(1):29–41, 1997. [yn-sbgtc-97]

13740 F. Yamaguchi and T. Tokieda. A unified algorithm for Boolean shape operations. *IEEE Comput. Graph. Appl.*, 4:24–27, June 1984. [yt-uabso-84] *Annote:* Intersection etc. of polyhedra. Faces are triangulated and winged edge data structure used. Face triangulation algorithm: take concave vertex and cut adjacent ear(s). Repeat for all concave vertices.

13741 F. Yamaguchi, K. Toshimitsu, H. Sato, and J. Nakagawa. An adaptive, error-free computation based on the 4 × 4 determinant method. *Visual Comput.*, 9(4):173–181, January 1993. [ytsn-aefcb-93] *Keywords:* robustness, numerical stability.

Fujio Yamaguchi. See also [10151, 13838].

13742 K. Yamaguchi and T. L. Kunii. A layerded data structure for an octree model. In *Proc. IEEE CAPAIDIM '83*, 1983. [yk-lsdso-83]

13743 K. Yamaguchi, T. L. Kunii, and K. Fujimura. Octree-related data structures and algorithms. *IEEE Comput. Graph. Appl.*, 4:53–59, January 1984. [ykf-ordsa-84]

K. Yamaguchi. See also [5653].

Y. Yamaguchi. See also [10978].

K. Yamamoto. See also [9858, 9859].

13744 P. Yamamoto. Computing the dent diameter of a polygon. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 116–121, 1994. [y-cddp-94] *Cites:* bs-parpv-92, ci-tpdc-83, cr-occop-89a, b-rld-91, dls-oaclc-89, ds-ehlec-85, k-ealdp-89, lpsssstwy-clcsp-87, ns-oarlc-91, ns-crldp-91, srw-gsv-91, s-mlppr-87, wy-dsv-93, ZZZ.

13745 P. Yamamoto, K. Kato, K. Imai, and H. Imai. Algorithms for vertical and orthogonal L_1 linear approximation of points. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 352–361, 1988. [ykii-avoll-88] *Cites:* as-lce-73, b-lbact-83, c-lp-83, csy-khrp-87, eg-tsa-86, ew-cbtda-86, elss-dgpps-73, iky-ltall-87, lw-gcslp-86, m-ltalp-83, m-lpltw-84, mn-salfl-80, sw-olla-87, ZZZ.

P. Yamamoto. See also [7143, 7361, 7362, 13679].

Y. Yamamoto. See also [11969].

T. Yamanouchi. See also [3197].

Y. Yamasbita. See also [3190].

13746 M. Yamashita, H. Umemoto, I. Suzuki, and T. Kameda. Searching for mobile intruders in a polygonal region by a group of mobile searchers. In *Proc. 13th Annu. ACM Sympos. Comput. Geom.*, pages 448–450, 1997. [yusk-smipr-97] *Cites:* csy-smico-95, ik-tgp-91, llglm-futwo-97, mhgjp-csg-88, o-agta-87, p-bbcra-96, p-peg-76, ssy-ssp-90, sy-smipr-92, u-sp1s-95, ZZZ.

M. Yamashita. See also [3601, 12631, 12681, 12682].

13747 B. Yamnitsky and L. A. Levin. An old linear programming algorithm runs in polynomial time. In *Proc. 23rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 327–328, 1982. [yl-olpar-82]

P. Yan. See also [1341, 1342].

M. Yanakakis. See also [10601].

13748 H. H. Yanasse. Cutting stock: Open stack minimization. In *Proc. 5th Franco-Japanese Days on Combinatorics and Optimization*, page ??, 1992. [y-csosm-92]

13749 B. Yang. A better subgraph of the minimum weight triangulation. In *Proc. Internat. Conf. Comput. Combinatorics*, pages 452–455, 1995. [y-bsmwt-95]

Boting Yang. See also [13355, 13356].

13750 B.-T. Yang, Y.-F. Xu, and Z.-Y. You. A chain decomposition algorithm for the proof of a property on minimum weight triangulations. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 423–427. Springer-Verlag, 1994. [yxy-cdapp-94]

Bo-Ting Yang. See also [13357].

13751 C. Yang, D. Lee, and C. Wong. Rectilinear paths among rectilinear obstacles revisited. Technical report, Dept. of EE & CS, Northwestern Univ., 1992. [ylw-rpror-92] *Precedes:* ylw-rppro-95.

C. Yang. See also [7363].

13752 C. C. Yang and D. T. Lee. A note on the all nearest-neighbor problem for convex polygons. *Inform. Process. Lett.*, 8:193–194, 1979. [yl-nannp-79]

C. C. Yang. See also [8636].

13753 C. D. Yang, T. H. Chen, and D. T. Lee. Shortest rectilinear path among weighted rectangles. In *Proceedings of the International Workshop on Discrete Algorithms and Complexity*, pages 1–8, Fukuoka, Japan, 1989. Institute of Electronics, Information and Communication Engineers (IEICE), Tokyo. [ycl-srpaw-89] *Keywords:* weighted regions, segment trees, plane sweep.

13754 C. D. Yang, T. H. Chen, and D. T. Lee. Shortest rectilinear paths among weighted rectangles. *J. Inform. Proc.*, 13(4):456–462, 1990. [ycl-srpwr-90]

13755 C. D. Yang, D. T. Lee, and C. K. Wong. On bends and distances of paths among obstacles in two-layer interconnection model. Technical Report, Northwestern University, 1991. [ylw-bdpot-91]

13756 C. D. Yang, D. T. Lee, and C. K. Wong. On bends and distances of paths among obstacles in two-layer interconnection model. *IEEE Trans. Comput.*, 43(6):711–724, 1994. [ylw-bdpot-94] *Succeeds:* ylw-bdpot-91.

13757 C. D. Yang, D. T. Lee, and C. K. Wong. On bends and lengths of rectilinear paths: a graph-theoretic approach. In *Proc. 2nd Workshop Algorithms Data Struct.*, volume 519 of *Lecture Notes Comput. Sci.*, pages 320–330. Springer-Verlag, 1991. [ylw-blrpg-91] *Precedes:* ylw-blrpg-92.

13758 C. D. Yang, D. T. Lee, and C. K. Wong. On bends and lengths of rectilinear paths: a graph theoretic approach. *Internat. J. Comput. Geom. Appl.*, 2(1):61–74, 1992. [ylw-blrpg-92] *Keywords:* path planning, shortest path, minimum-bend path, rectilinear obstacles, graph-theoretic approach. *Succeeds:* ylw-blrpg-91.

13759 C. D. Yang, D. T. Lee, and C. K. Wong. Problem transformation for finding rectilinear paths among obstacles in two-layer interconnection model. Technical Report, Northwestern University, 1992. [ylw-ptfrp-92] *Annote:* This is under revision now (Jan, 1996) for a journal.

13760 C. D. Yang, D. T. Lee, and C. K. Wong. Rectilinear paths problems among rectilinear obstacles revisited. Technical Report, Northwestern University, 1992. [ylw-rppro-92]

13761 C. D. Yang, D. T. Lee, and C. K. Wong. Rectilinear paths problems among rectilinear obstacles revisited. *SIAM J. Comput.*, 24:457–472, 1995. [ylw-rppro-95] *Keywords:* shortest paths, rectilinear geometry, bicriteria paths, VLSI, wire routing. *Succeeds:* ylw-rpror-92. *Annote:* They consider shortest paths (also MST) in the L_1 geodesic metric. They use a path-preserving graph approach, together with segment draggin. For a set of disjoint rectilinear obstacles having m edges, t of which are "extreme" (locally – having both adjacent edges on the same side of the line through the edge), they compute a shortest path in time $O(m \log t + t \log^{3/2} t)$, using $O(m + t \log^{3/2} t)$ space. They also consider the minimum-bend shortest path (MBSP), shortest minimum-bend path (SMBP), and minimum-cost (MCP – using a monotonic function of rectilinear link length and L_1 length) problems; these alsorithms take time $O(m \log^2 m)$ ($O(m \log m)$ space), or $O(m \log^{3/2} m)$ time and space. This improves previous bound of $O(mt + m \log m)$ in [13758].

C. D. Yang. See also [7364, 8609, 8637–8639].

13762 J. Yang, H. Gould, W. Klein, and R. Mountain. Molecular dynamics investigation of deeply quenched liquids. To appear. [ygkm-mdidq-]

13763 M. Yang and E. Lee. NC verification for wire-edm using an r-map. *Comput. Aided Design*, 28(9):733–740, September 1996. [yl-nvweu-96]

S. Yang. See also [1070].

T. Yang. See also [765].

13764 T.-C. Yang, S. Y. Shin, and K.-Y. Chwa. Rolling discs and their applications. *J. of Design and Manufacturing*, 2:71–82, 1992. [ysc-rdta-92] *Keywords:* Voronoi diagrams, offsetting.

T.-C. Yang. See also [763, 764, 8050, 8051].

13765 Y. Y. Yang and O. Wing. Optimal and suboptimal solution algorithms for the wiring problem. In *IEEE International Symposium on Circuit Theory*, pages 154–158, 1972. [yw-ossaw-72]

13766 Zaifu Yang. A simplicial algorithm for testing the integral feasibility of arbitrary simplices. In *Abstracts 13th European Workshop Comput. Geom.*, page 45. Universität Würzburg, 1997. [y-satif-97] *Cites:* ZZZ.

E. Yaniv. See also [12089].

P. Yanker. See also [5336].

13767 M. Yannakakis. Edge deletion problems. *SIAM J. Comput.*, ??:297–309, 1981. [y-edp-81]

13768 M. Yannakakis. The complexity of the partial order dimension problem. *SIAM J. Algebraic Discrete Methods*, 3(3):351–358, 1982. [y-cpodp-82]

13769 M. Yannakakis, C. H. Papadimitriou, and H. T. Kung. Locking policies: safety and freedom from deadlock. In *Proc. 20th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 286–297, 1979. [ypk-lpsfd-79] *Keywords:* database theory. *Annote:* closure of union of isooriented rectangles.

M. Yannakakis. See also [9049, 9050, 10602–10607, 12825].

13770 A. Yao. Probabilistic computation: towards a unified measure of complexity. In *Proc. 18th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 222–227, 1977. [y-pctum-77]

A. Yao. See also [5266, 5267].

13771 A. C. Yao. A lower bound to finding convex hulls. *J. ACM*, 28:780–787, 1981. [y-lbfch-81]

13772 A. C. Yao. An $O(|E| \log \log |V|)$ algorithm for finding minimum spanning trees. *Inform. Process. Lett.*, 4, 1975. [y-oafms-75] *Succeeds:* y-oamst-74.

13773 A. C. Yao. An $O(|E| \log \log |V|)$ algorithm for minimum spanning trees. Report UIUCDCS-R-74-691, Univ. Illinois, Urbana, IL, 1974. [y-oamst-74] *Precedes:* y-oafms-75.

13774 A. C. Yao. Fast algorithms for finding minimum spanning trees in k dimensions. In *Proc. 15th Allerton Conf. Commun. Control Comput.*, pages 553–556, 1977. [y-fafms-77] *Precedes:* y-cmstk-82.

13775 A. C. Yao. Lower bounds for algebraic computation trees with integer inputs. *SIAM J. Comput.*, 20(4):655–668, 1991. [y-lbact-91]

13776 A. C. Yao. On constructing minimum spanning trees in k-dimensional spaces and related problems. *SIAM J. Comput.*, 11(4):721–736, 1982. [y-cmstk-82] *Succeeds:* y-fafms-77.

13777 A. C. Yao. On the complexity of comparison problems using linear functions. In *Proc. 16th Annu. ACM Sympos. Theory Comput.*, pages 85–89, 1975. [y-ccpul-75]

13778 A. C. Yao. On the complexity of maintaining partial sums. *SIAM J. Comput.*, 14:277–288, 1985. [y-cmps-85] *Succeeds:* y-sttoa-82.

13779 A. C. Yao. Space-time trade-off for answering range queries. In *Proc. 14th Annu. ACM Sympos. Theory Comput.*, pages 128–136, 1982. [y-sttoa-82] *Precedes:* y-cmps-85.

13780 A. C. Yao, D. M. Avis, and R. L. Rivest. An $\Omega(n^2 \log n)$ lower bound to the shortest paths problem. In *Proc. 9th Annu. ACM Sympos. Theory Comput.*, pages 11–17, 1977. [yar-olbsp-77] *Precedes:* yr-pdp-80. *Annote:* Lower bound is incorrect.

13781 A. C. Yao and R. L. Rivest. On the polyhedral decision problem. *SIAM J. Comput.*, 9:343–347, 1980. [yr-pdp-80] *Succeeds:* yar-olbsp-77.

13782 A. C. Yao and F. F. Yao. A general approach to D-dimensional geometric queries. In *Proc. 17th Annu. ACM Sympos. Theory Comput.*, pages 163–168, 1985. [yy-gaddg-85]

13783 A. C. Yao and F. F. Yao. On computing the rank function for a set of vectors. Report R-699, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1975. [yy-crfsv-75]

A. C. Yao. See also [1659, 12479].

13784 Andrew Chi-Chih Yao. Decision tree complexity and Betti numbers. In *Proc. 25th Annu. ACM Sympos. Theory Comput.*, 1994. [y-dtcbn-94]

13785 A. C. C. Yao. Lower bounds for algebraic computation rees with integer inputs. In *Proc. 30th IEEE FOCS*, pages 308–313, 1989. [y-lbact-89]

Andrew Chi-Chih Yao. See also [2057].

13786 C. Yao and J. G. Rokne. A straightforward algorithm for computing the medial axis of a simple polygon. *Internat. J. Comput. Math.*, 39:51–60, 1991. [yr-sacma-91] *Keywords:* design of algorithms, Voronoi diagrams, medial axis, two-dimensional. *Annote:* $O(kn)$ time.

13787 C. Yao and J. G. Rokne. Fat curves. *Comput. Graph. Forum*, 10:237–248, 1991. [yr-fc-91] *Keywords:* digital geometry, computer graphics, design of algorithms, approximation, incrementation, curves, two-dimensional.

En-Yu Yao. See also [2595].

F. Yao. See also [963, 1814, 1817, 1818, 4285, 6230, 9811, 9812].

13788 F. F. Yao. A 3-space partition and its applications. In *Proc. 15th Annu. ACM Sympos. Theory Comput.*, pages 258–263, 1983. [y-3spia-83] *Precedes:* ydep-psrq-89.

13789 F. F. Yao. Computational geometry. In R. A. Earnshaw and B. Wyvill, editors, *Algorithms in Complexity*, pages 345–490. Elsevier, Amsterdam, 1990. [y-cg-90] *Keywords:* survey paper.

13790 F. F. Yao. Efficient dynamic programming using quadrangle inequalities. In *Proc. 12th Annu. ACM Sympos. Theory Comput.*, pages 429–435, 1980. [y-edpuq-80]

13791 F. F. Yao. On finding the maximal elements in a set of plane vectors. Report R-667, Dept. Comput. Sci., Univ. Illinois, Urbana, IL, 1974. [y-fmesp-74]

13792 F. F. Yao. On the priority approach to hidden-surface algorithms. In *Proc. 21st Annu. IEEE Sympos. Found. Comput. Sci.*, pages 301–307, 1980. [y-pahsa-80]

13793 F. F. Yao, D. P. Dobkin, H. Edelsbrunner, and M. S. Paterson. Partitioning space for range queries. *SIAM J. Comput.*, 18(2):371–384, 1989. [ydep-psrq-89] *Keywords:* d-dimensional, searching, range search. *Succeeds:* y-3spia-83.

F. F. Yao. See also [6241, 6262, 6435, 6436, 8024, 10639–10645, 13782, 13783].

Y. C. Yao. See also [7275].

13794 C. Yap. Algorithmic motion planning. Manuscript, ??, 1985. [y-amp-85]

13795 Chee Yap. Euclidean lattice reduction. In *Abstracts 9th European Workshop Comput. Geom.*, page 26. FernUniversität Hagen, 1993. [y-elr-93]

13796 C. Yap. Towards exact geometric computation. *Comput. Geom. Theory Appl.*, 7(1):3–23, 1997. [y-tegc-97] *Succeeds:* y-tegc-93.

13797 C. Yap. What can be parallelized in computational geometry? In A. Albrecht, H. Jung, and K. Mehlhorn, editors, *Parallel Algorithms and Architectures. Proc. Internat. Workshop Suhl (Germany), May 25–30, 1987*, volume 38 of *Math. Res.*, pages 184–195, Berlin, East Germany, 1987. Akademie-Verlag. [y-wcbpc-87] *Comments:* Zbl. 625.68052.

C. Yap. See also [282, 1810, 3573, 4462, 5409, 6180, 6181, 7322–7325, 7789, 8071, 9483, 9487, 11770–11772, 11848, 12412, 12413, 13212].

13798 C. K. Yap. A geometric consistency theorem for a symbolic perturbation scheme. In *Proc. 4th Annu. ACM Sympos. Comput. Geom.*, pages 134–142, 1988. [y-gctsp-88] *Precedes:* y-gctsp-90. *Cites:* b-gbamp-85, c-odlp-52, c-lp-83, dmy-aobgn-86, e-esaa-86, em-sstcd-87, ew-chsct-86, my-ngb-86, r-tgs-86, r-topr-85, y-stgd-87, ZZZ.

13799 C. K. Yap. A geometric consistency theorem for a symbolic perturbation scheme. *J. Comput. Syst. Sci.*, 40(1):2–18, 1990. [y-gctsp-90] *Succeeds:* y-gctsp-88.

13800 C.-K. Yap. Algorithmic motion planning. In J. T. Schwartz and C.-K. Yap, editors, *Advances in Robotics 1: Algorithmic and Geometric Aspects of Robotics*, pages 95–143. Lawrence Erlbaum Associates, Hillsdale, NJ, 1987. [y-amp-87] *Keywords:* survey paper, motion planning, Voronoi diagrams, decomposition, cell complexes, lower bounds.

13801 C. K. Yap. An $O(n \log n)$ algorithm for the Voronoi diagram of a set of simple curve segments. Technical Report, Courant Inst., New York Univ., New York, NY, October 1984. [y-oavds-84]

13802 C. K. Yap. An $O(n \log n)$ algorithm for the Voronoi diagram of a set of simple curve segments. *Discrete Comput. Geom.*, 2:365–393, 1987. [y-oavds-87]

13803 C. K. Yap. Coordinating the motion of several discs. Report TR 105, Comput. Sci. Div., New York Univ., New York, NY, 1984. [y-cmsd-84]

13804 C. K. Yap. Exact computational geometry and tolerancing metrology. In D. Avis and J. Bose, editors, *Snapshots of Computational and Discrete Geometry, Vol. 3, Tech. Rep. SOCS-94.50.* McGill School of Comp. Sci., 1995. [y-ecgtm-95]

13805 C. K. Yap. Fast algorithms for boolean operations on rectilinear regions. Report ??, Courant Inst. Math. Sci., New York Univ., New York, NY, 1982. [y-fabor-82]

13806 Chee K. Yap. Fast unimodular reduction: Planar integer lattices. In *Proc. 33rd Annu. IEEE Sympos. Found. Comput. Sci.*, pages 437–446, 1992. [y-furpi-92]

13807 C. K. Yap. *Fundamental Problems in Algorithmic Algebra.* Princeton University Press, 1993. [y-fpaa-93]

13808 C. K. Yap. How to move a chair through a door. *Internat. J. Robot. Autom.*, RA-3(3):172–181, 1987. [y-hmctd-87] *Keywords:* motion planning.

13809 C. K. Yap. Manufacturing and computational geometry workshop report. *Computational Science and Engineering*, ??:82–84, 1995. [y-mcgwr-95]

13810 C. K. Yap. Nsf workshop on manufacturing and computational geometry. April 1, 1994; preliminary report, June 1994. [y-nwmcg-94]

13811 C. K. Yap. Parallel triangulation of a polygon in two calls to the trapezoidal map. Manuscript, ??, 1987. [y-ptptc-87]

13812 C. K. Yap. Parallel triangulation of a polygon in two calls to the trapezoidal map. *Algorithmica*, 3:279–288, 1988. [y-ptptc-88] *Keywords:* parallel computation, triangulation, polygon.

13813 C. K. Yap. Parallel triangulation of a simple polygon in three calls to the trapezoidal map. Technical report, Robotics Lab, Courant Institute of Mathematical Sciences, New York University, NY 10012, USA, March 1987. [y-ptspt-87]

13814 C. K. Yap. Robust geometric computation. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 35, pages 653–668. CRC Press LLC, Boca Raton, FL, 1997. [y-rgc-97]

13815 C. K. Yap. Symbolic treatment of geometric degeneracies. *Lecture Notes in Control and Information Science*, 113:348–358. [y-stgd-] *Succeeds:* y-stgd-87.

13816 C. K. Yap. Symbolic treatment of geometric degeneracies. In *Proc. 13th IFIP Conf. System Modelling and Optimization*, pages 348–358, 1987. [y-stgd-87] *Precedes:* y-stgd-, y-stgd-90.

13817 C. K. Yap. Symbolic treatment of geometric degeneracies. *J. Symbolic Comput.*, 10:349–370, 1990. [y-stgd-90] *Succeeds:* y-stgd-87.

13818 C. K. Yap. Towards exact geometric computation. In *Proc. 5th Canad. Conf. Comput. Geom.*, pages 405–419, 1993. [y-tegc-93] *Precedes:* y-tegc-97. *Cites:* brv-ipam-89, cot-liais-87, dst-casaa-88, ds-rgnap-88, dy-biecg-93, e-acg-87, em-sstcd-88, ft-ousls-86, f-nsa2d-92, fv-eeacg-93, h-gsm-89, kln-edtur-91, ps-cgi-85, ss-pmp2g-83, sbv-hslim-90, si-tdpga-89, si-gafpa-88, si-nsmvd-88, s-rgwtd-93, svh-bpepa-89, r-hrrc-83, y-gctsp-90, y-stgd-90, y-fpaa-93, y-easm-92, ZZZ.

13819 Chee K. Yap and Helmut Alt. Motion planning in the cl-environment. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 373–380. Springer-Verlag, 1989. [ya-mpce-89]

13820 C. K. Yap and E.-C. Chang. Issues in the metrology of geometric tolerancing. In M. Overmars, editor, *Proc. Workshop on Algorithmic Robotics*, Lecture Notes Comput. Sci. Springer-Verlag, 1996. To appear. [yc-imgt-96]

13821 C. K. Yap and E.-C. Chang. Issues in the metrology of geometric tolerancing. In J.-P. Laumond and M. H. Overmars, editors, *Robotics Motion and Manipulation*, pages 393–400. A.K. Peters, 1997. [yc-imgt-97]

13822 C. K. Yap and T. Dubé. The exact computation paradigm. In D.-Z. Du and F. K. Hwang, editors, *Computing in Euclidean Geometry*, volume 4 of *Lecture Notes Series on Computing*, pages 452–492. World Scientific, Singapore, 2nd edition, 1995. [yd-ecp-95] *URL:* http://cs.nyu.edu/cs/faculty/yap/papers/paradigm.ps. *Keywords:* survey paper, numeral computing, exact compuation, fixed-precision, multiprecision number packages. *Abstract:* A survey of the approaches to non-robustness of geometric algorithms, and especially the exact computation approach. Also surveys available big-number packages.

C. K. Yap. See also [275, 276, 280, 283, 601–603, 973, 2666, 2812, 2813, 2840, 2846, 2847, 2939, 2940, 3238–3242, 3457, 3458, 3467–3470, 4286, 4461, 5024, 5330, 5331, 6103, 6182, 6608, 6609, 6960, 8072, 8073, 8299, 8705, 8706, 9087, 9488, 9686, 10234–10238, 10241, 10242, 10511, 10512, 11773, 11871, 11975, 12138, 12396, 12397, 13213, 13680–13682].

Yana Yarmovski. See also [7956].

M. Yasuda. See also [9859].

13823 M. Yau and S. N. Srihari. Digital convex hulls from hierarchical data structures. In *Proc. Canadian Man-Comput. Comm. Soc. Conf.*, pages 163–171, 1981. [ys-dchhd-81]

13824 M.-M. Yau and S. N. Srihari. A hierarchical data structure for multidimensional digital images. *Commun. ACM*, 26(7):504–515, 1983. [ys-hdsmd-83]

13825 N. Yazdani and Z. M. Ozsoyoglu. Sequence matching of images. In *Proc. 8th Internat Conf. on Scientific and Statistical Database Management*, pages 53–62, 1996. [yo-smi-96]

13826 X. Ye and H. Nowacki. G^1 interpolation of rectangular cubic curve meshes using biquintic Bézier patches. In *The 6th IMA Conference on Mathematics of Surface VI*, 1994. [yn-gircc-94]

X. Ye. See also [7158, 7159, 9868].

Yinyu Ye. See also [13201].

13827 K. Yeap and M. Sarrafzadeh. Floorplanning by graph dualization: 2-concave rectiliear modules. *SIAM J. Comput.*, 22(3):500–526, June 1993. [ys-fpgdc-93]

P. Yeh. See also [3224, 6357, 7072].

13828 Y. Yeh, J. Wilson, and S. C. Schwartz. Outage probability in mobile telephony with directive antennas and macrodiversity. *IEEE Trans. Selected Areas in Communication*, 2:507–511, 1984. [yws-opmtd-84]

13829 D. Yellin. A dynamic transitive closure algorithm. Technical report, IBM T. J. Watson Research Center, 1988. [y-dtca-88]

F. Yellin. See also [6207, 8842].

13830 Y. Yemini. Some theoretical aspects of position-location problems. In *Proc. 20th Annu. IEEE Sympos. Found. Comput. Sci.*, pages 1–8, 1979. [y-stapl-79]

Y. Yemini. See also [8993].

R. Yen. See also [350].

13831 M. A. Yerry and M. S. Shephard. A modified quadtree approach to finite element mesh generation. *IEEE Comput. Graph. Appl.*, 3(1):39–46, 1983. [ys-mqafe-83] *Annote:* Generates a FEM from a modified (blocks with cut corners are allowed) quadtree. Mesh is smoothed by moving each node to the centroid of surrounding ones.

M. A. Yerry. See also [12113].

Y. Yesha. See also [3075].

C. I. Yessios. See also [4613].

P. Yianilos. See also [2631].

13832 P. N. Yianilos. Data structures and algorithms for nearest neighbor search in general metric spaces. In *Proc. 4th ACM-SIAM Sympos. Discrete Algorithms*, pages 311–321, 1993. [y-dsann-93]

P. N. Yianilos. See also [2632].

Daoning Ying. See also [3086].

13833 S. M. Yiu. A generalized fortress problem using k-consecutive vertex guards. In *Proc. 7th Canad. Conf. Comput. Geom.*, pages 139–144, 1995. [y-gfpuk-95]

13834 S. M. Yiu and A. Choi. Edge guards on a fortress. Technical Report 94-06, Dept. of Computer Science, University of Hong Kong, 1994. [yc-egf-94t] *Succeeds:* yc-egf-94.

13835 S. M. Yiu and A. Choi. Edge guards on a fortress. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 296–301, 1994. [yc-egf-94] *Precedes:* yc-egf-94t. *Cites:* bs-tbegm-92t, bs-tbegm-92, o-agta-87, s-rrag-92, sd-csegs-91, v-egpsp-93, yc-egf-94t, ghks-ggprp-94t, ZZZ.

13836 P. Yoeli. Compilation of data for computer-assisted relief cartography. In J. C. Davis and M. J. McCullagh, editors, *Display and Analysis of Spatial Data*, pages 352–367. John Wiley & Sons, New York, 1995. [y-cdcrc-75] *Keywords:* minimum-weight triangulations, data interpolation.

13837 P. Yoeli. The logic of automated map lettering. *Cardographic J.*, 9:99–108, 1972. [y-laml-72]

M. Yokayama. See also [7416].

S. Yokoi. See also [12951].

J. W. Yoon. See also [10663, 13070, 13071].

Y. I. Yoon. See also [3233].

J. A. Yorke. See also [8788].

A. Yoshida. See also [11110, 11135].

13838 Norimasa Yoshida, Masato Shyokawa, and Fujio Yamaguchi. Solid modeling based on a new paradigm. *Comput. Graph. Forum*, 13(3):55–64, 1994. Proc. EUROGRAPHICS '94. [ysy-smbnp-94] *Keywords:* solid modeling, robustness, boundary representation.

Takahashi Yoshioka. See also [10166].

Z.-Y. You. See also [13750].

K. Youcef-Toumi. See also [1534].

G. S. Young. See also [6984].

N. Young. See also [8031, 8401, 9054, 9253].

P. Young. See also [2545].

N. Y. Yousif. See also [5058].

13839 S. Youssef. Vectorized simulation and ray tracing. Report FSU-SCRI-87-63, Supercomputer Comput. Res. Inst., Florida State Univ., Tallahassee, FL, 1987. [y-vsrt-87]

V. Yriarte. See also [3650].

A. Y. Yu. See also [9910].

C. T. Yu. See also [10957].

13840 J. Yu. *Exact Arithmetic Solid Modeling*. PhD thesis, Purdue University, CS Dept., West Lafayette, IN 47907, USA, December 1991. [y-easm-91] *Keywords:* numerical precision, stability, robustness. *Precedes:* y-easm-92.

13841 Jiaxun Yu. Exact arithmetic solid modeling. Technical Report CSD-TR-92-037, Comput. Sci. Dept., Purdue University, June 1992. [y-easm-92] *Succeeds:* y-easm-91.

J.-B. Yu. See also [6041].

K. Yu. See also [7539].

L. Yu. See also [9851].

13842 M.-F. Yu and W. W.-M. Dai. Single-layer fanout routing and routability analysis for ball grid arrays. In *Proc. IEEE/ACM Internat. Conf. on CAD*, pages 581–586, 1995. [yd-slfrr-95]

13843 M.-F. Yu, J. Darnauer, and W. W.-M. Dai. Interchangeable pin routing with applications to package layout. In *Proc. IEEE/ACM Internat. Conf. on CAD*, pages 668–673, 1996. [ydd-iprap-96]

13844 S. Yu, M. van Kreveld, and J. Snoeyink. Drainage queries in TINs: from local to global and back again. In *Proc. 7th Internat. Sympos. Spatial Data Handling*, pages 13A.1–13A.14, 1996. [yks-dqtfl-96]

S. Yu. See also [1688].

13845 X. Yu, J. A. Goldack, and L. Dong. Constructing 3d discrete medial axis. In *Proc. ACM Sympos. Solid Modeling Found. and CAD/CAM Applic.*, pages 481–492, 1991. [ygd-c3ddm-91]

X. Yu. See also [6012].

Y. Yu. See also [10574].

Zhong-Liang Yu. See also [2595].

T. Yuba. See also [7131].

D. B. Yudin. See also [10100].

13846 M. M. F. Yuen, S. T. Tan, and K. Y. Hung. A hierarchical approach to automatic finite-element mesh generation. *Internat. J. Numer. Methods Eng.*, 32(3):501–525, 1991. [yth-haafe-91] *Annote:* Uses Watson's for 3DDT. Fixes slivers with local changes. *Abstract:* A point-based two-stage hierarchical method for automatic finite element mesh generation from a solid model is presented. Given the solid model of a component and the required nodal density distribution, nodes are generated according to the hierarchy - vertex, edge, face and solid. At the vertices, nodes are established naturally. Nodes on the edges, faces and inside the solid model are generated by recursive subdivision. The nodes are then connected to form a valid and well-conditioned finite element mesh of tetrahedron elements using modified Delaunay Triangulation. Checks are conducted to ensure the compatibility of geometry and topology between the solid model and the mesh. (Author abstract) 35 Refs.

13847 T. P. Yunck. A technique to identify nearest neighbors. *IEEE Trans. Syst. Man Cybern.*, SMC-6:678–683, 1976. [y-tinn-76]

M. Yung. See also [4962–4964].

13848 G. Yuval. Finding near neighbors in k-dimensional space. *Inform. Process. Lett.*, 3:113–114, 1975. [y-fnnkd-75]

13849 G. Yuval. Finding nearest neighbors. *Inform. Process. Lett.*, 5:63–65, 1976. [y-fnn-76]

13850 G. Yuval. The mean distance in 2-space. Report ??, Dept. Comput. Sci., Carnegie-Mellon Univ., Pittsburgh, PA, 1976. [y-md2s-76]

G. Yuval. See also [12027].

13851 Mariette Yvinec. Triangulation in 2D and 3D space. In *Proc. of the Workshop on Geometry and Robotics*, volume 391 of *Lecture Notes Comput. Sci.*, pages 275–291. Springer-Verlag, 1989. [y-t2d3d-89] *Annote:* Survey paper.

Mariette Yvinec. See also [481, 483–485, 1185–1187, 2157, 2161, 2162, 2171–2177, 2187–2191, 2195, 2215, 2216, 2224–2227, 2483–2486, 3435, 4053, 4320–4322, 5345, 10136, 10137, 10899–10902, 11725].

M. Zachariasen. See also [10049].

13852 Gabriel Zachmann. Rapid collision detection by dynamically aligned DOP-trees. In *Proc. of IEEE Virtual Reality Annual International Symposium; VRAIS '98*, March 1998. [z-rcdda-98]

F. K. Zadeck. See also [555].

13853 N. Zadeh. What is the worst case behavior of the simplex algorithm? Technical Report 27, Dept. Operations Research, Stanford University, 1980. [z-wwcbs-80]

E. Zadicario. See also [3422].

M. Zagha. See also [2077, 2078].

N. Zaguia. See also [1441, 3675, 7626].

13854 C. T. Zahn. Graph-therorectical methods for detecting gestalt clusters. *IEEE Trans. Comput.*, C-20:68–86, 1971. [z-gtmdg-71]

O. Zajicek. See also [3471–3473].

J. Zaks. See also [1586, 3684, 3685, 3689–3694, 6354, 7872, 13121].

U. A. Zalgaller. See also [471].

V. A. Zalgaller. See also [2588].

13855 B. Žalik and G. J. Clapworthy. A universal trapezoidation algorithm for planar polygons. *Comput. & Graphics*, 23(3):353–363, June 1999. [zc-utapp-99]

13856 T. Zamfirescu. On two conjectures of Franz Hering about convex surfaces. *Discrete Comput. Geom.*, 6:163–169, 1991. [z-tcfha-91]

T. Zamfirescu. See also [6130–6132].

J. C. Zamiska. See also [8389].

13857 P. Zamperoni. Analysis and synthesis of binary images by means of convex blobs. In *Proc. Internat. Conf. on Digital Signal Processing*, pages 181–188, 1978. [z-asbim-78]

13858 P. Zamperoni. Bilddarstellung durch konvexe elementarmuster Bildverarbeitung und Musterekennung. In E. Triendl, editor, *DAGM Sympos.*, pages 145–154. Informatik-Fachberichte, Springer-Verlag, 1978. [z-bdkeb-78]

13859 P. Zamperoni. Sequential growth of convex regions for grey-scale image analysis. In *Proc. 6th IEEE Internat. Conf. Pattern Recogn.*, pages 912–914, 1982. [z-sgcrg-82]

S. K. Zaremba. See also [11766].

J. A. Zarge. See also [11802].

13860 O. Zariski and P. Samuel. *Commutative Algebra*, volume 1. Springer-Verlag, 1958. [zs-ca1-58] *Precedes:* zs-ca2-58.

13861 O. Zariski and P. Samuel. *Commutative Algebra*, volume 2. Springer-Verlag, 1958. [zs-ca2-58] *Succeeds:* zs-ca1-58.

C. Zaroliagis. See also [752].

C. D. Zaroliagis. See also [753, 4260].

13862 T. Zaslavsky. A combinatorial analysis of topological dissections. *Adv. Math.*, 25:267–285, 1977. [z-catd-77]

13863 T. Zaslavsky. *Facing up to Arrangements: Face-Count Formulas for Partitions of Space by Hyperplanes*, volume 154 of *Memoirs Amer. Math. Soc.* American Mathematical Society, Providence, RI, 1975. [z-fuafc-75] *ISBN:* 0-8218-1854-6. *Keywords:* doctoral thesis. *Comments:* substantially the author's thesis, Massachusetts Inst. Tech.

S. Zdonik. See also [12091, 13514].

N. Zeh. See also [7241, 9110].

13864 E. Zeidler, editor. *Teubner-Taschenbuch der Mathematik*. B. G. Teubner, Leipzig, 1996. Begründet von I. N. Bronstein und K. A. Semendjajew, weitergeführt von G. Grosche, V. Ziegler und D. Ziegler. [z-tdm-96]

A. V. Zelevinski. See also [5842].

13865 A. Zelikovsky. A faster 11/6-approximation algorithm for the Steiner tree problem in graphs. Report MPI-I-92-122, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [z-f11aa-92]

13866 A. Zelikovsky. Minimum base of weighted k-polymatroid and Steiner tree problem. Report MPI-I-92-121, Max-Planck-Institut Inform., Saarbrücken, Germany, 1992. [z-mbwkp-92]

13867 A. Zelikovsky and D. Lozevanu. Minimal and bounded trees. In *Tezele Cong. XVIII Acad. Romano-Americane, Kishinev*, pages 25–26, 1993. [zl-mbt-93]

A. Zelikovsky. See also [1506, 5424, 5425, 7267, 7850].

13868 A. Z. Zelikovsky. An 11/8-approximation algorithm for the Steiner problem on networks with rectilinear distance. In *Sets, Graphs and Nubers*, volume 60 of *Colloquia Mathematica Societatis János Bolyai*, pages 733–745. ??, 1992. [z-1aasp-92]

13869 A. Z. Zelikovsky. Better approximation bounds for the network and Euclidean Steiner tree problems. Technical Report CS-96-06, University of Virginia, Charlottesville, VA, 1996. [z-babne-96] *Annote:* Was written in 1994 at Institute of Mathematics, Kishinev Moldova and submitted for publication. *Abstract:* The network and Euclidean Steiner tree problems require a shortest tree spanning a given vertex subset within a network G=(V,E,d) and Euclidean plane, respectively. For these problems, we present a series of heuristics finding approximate Steiner trees with performance guarantees coming arbitrary close to 1+ln 2= 1.693... and 1+ln(2/sqrt3) = 1.1438..., respectively. The best previously known corresponding values are close to 1.746 and 1.1546.

Christian Zelle. See also [2310].

D. Zeltzer. See also [9376].

M. Zemankova. See also [4614].

13870 E. Zemel. A linear time randomizing algorithm for searching ranked functions. *Algorithmica*, 2:81–90, 1987. [z-ltras-87]

E. Zemel. See also [9436–9438].

13871 Zhenbing Zeng. Heilbronn problem for six points in a planar convex body. In *Proc. 3rd Twente Workshop on Graphs and Combinatorial Optimization*, page ??, June 1993. [z-hpspp-93]

D. Zepf. See also [7647].

Elias Zerhouni. See also [10776].

D. Zernik. See also [8053, 11471].

13872 Kyriakos Zervoudakis and Ioannis Z. Emiris. A comparative application of convex hull algorithms in two and three dimensions. In *Abstracts 17th European Workshop Comput. Geom.*, pages 101–104. Freie Universität Berlin, 2001. [ze-cacha-01]

Qiong-Hua Zhan. See also [13881].

13873 D. Zhang and A. Bowyer. CSG set-theoretic solid modeling and NC machining of blend surfaces. In *Proc. 2nd Annu. ACM Sympos. Comput. Geom.*, pages 236–245, 1986. [zb-cstsm-86]

D. Zhang. See also [6357].

13874 H. Zhang, D. Manocha, T. Hudson, and K. Hoff. Visibility culling using hierarchical occlusion maps. Technical Report TR97-004, Dept. Comput. Sci., Univ. North Carolina, Chapel Hill, NC, 1997. [zmhh-vcuho-97t]

13875 Hansong Zhang, Dinesh Manocha, Tom Hudson, and Kenneth E. Hoff III. Visibility culling using hierarchical occlusion maps. In *SIGGRAPH 97 Conference Proceedings*, Annual Conference Series, pages 77–88. ACM SIGGRAPH, ACM Press, 1997. [zmhh-vcuho-97] *Cites:* hh-asgca-85t, hh-qbs-85, hh-pmbsc-85, l-pagaa-44, ms-bsstv-85a, pg-aldit-84, r-cgcg-72, sa-irpcs-84, wb-bfpsm-86, wq-recvm-82, wq-dgvmr-80, w-cs-86, ZZZ.

H. Zhang. See also [7192].

J. Zhang. See also [1919–1921, 8503, 8826, 10262].

Li Zhang. See also [155, 1481, 1486, 1487, 6377].

Q. Zhang. See also [5977].

S. Zhang. See also [3635].

T. Zhang. See also [1450, 1451].

X. Zhang. See also [11457].

Y. Zhang. See also [4438, 4458].

Z. Zhang. See also [9860].

13876 H.-K. Zhao, S. Osher, B. Merriman, and M. Kang. Implicit nonparametric shape reconstruction from unorganized points using a variational level set method. *Computer Vision and Image Understanding*, 80(3), 2000. [zomk-insru-00]

13877 Jianmin Zhao and Norman I. Badler. Inverse kinematics positioning using nonlinear programming for highly articulated figures. *ACM Trans. Graph.*, 13(4):313–336, 1994. [zb-ikpnp-94]

13878 R. Zhao. Linear-time algorithms for computing reachability regions from polygonal figures. In *Proc. 1st Workshop Algorithms Data Struct.*, volume 382 of *Lecture Notes Comput. Sci.*, pages 163–170. Springer-Verlag, 1989. [z-ltacr-89]

R. Zhao. See also [13535, 13536].

13879 R. Y. Zhao. *Placements of Euclidean trees.* PhD thesis, School Comput. Sci., McGill Univ., Montreal, PQ, 1990. [z-pet-90] *Keywords:* doctoral thesis.

R. Y. Zhao. See also [13537].

S. Zheng. See also [6078].

S.-Q. Zheng. See also [6084–6091, 8810].

Z.-H. Zhong. See also [5315].

D. Zhou. See also [9564, 9565].

13880 J. Zhou, E. C. Sherbrooke, and N. M. Patrikalakis. Computation of stationary points of distance functions. *Engineering with Computers*, 9(4):231–246, 1993. [zsp-cspdf-93]

J. Zhou. See also [77, 10662, 10669].

13881 Jian-Ming Zhou, Ke-Ran Shao, Ke-Ding Zhou, and Qiong-Hua Zhan. Computing constrained triangulation and Delaunay triangulation: A new algorithm. *IEEE Trans. Magn.*, 26(2):694–697, March 1990. [zszz-cctdt-90] *Keywords:* triangulation, finite-element mesh generation, constrained triangulation, Delaunay triangulation. *Annote:* CDT in 3D. Generalized Watson's algorithm. *Abstract:* A novel algorithm for computing optimal constrained triangulation is presented which is equally applicable to 2-D and 3-D optimal constrained triangulation and Delaunay triangulation. This algorithm has no degenerate and near-degenerate problems. The same amount of time is needed to add a new point to an existing mesh of any element number provided that the element it belongs to has been predetermined, as in the self-adaptive finite-element analysis process. This algorithm has been applied to finite- element mesh generation. Test results are given. 11 Refs.

13882 J. M. Zhou, K. D. Zhou, and K. R. Shao. Automatic-generation of 3D meshes for complicated solids. *IEEE Trans. Magn.*, 28(2):1759–1762, 1992. [zzs-ag3dm-92]

K. D. Zhou. See also [13881, 13882].

Meng-Chu Zhou. See also [5504].

T. Zhou. See also [7082].

13883 Y. Zhou. *Shape Sensitive Geometric Complexity*. PhD thesis, Washington University, 2000. St. Louis, MO, USA. [z-ssgc-00] *Keywords:* doctoral thesis.

13884 Y. Zhou, A. Kaufman, and A. W. Toga. Three-dimensional skeleton and centerline generation based on an approximate minimum distance field. *Visual Comput.*, 14(7):303–314, 1998. [zkt-tdscg-98]

13885 Y. Zhou and S. Suri. Shape sensitive geometric permutations. In *Proc. 12th ACM-SIAM Sympos. Discrete Algorithms*, pages 234–243, 2001. [zs-ssgp-01]

13886 Z. Y. Zhou. A real time algorithm for two-dimensional convex hull problem (Chinese English summary). *Chinese J. Comput.*, 8:136–143, 1985. [z-rtatd-85]

13887 B. Zhu. Approximating convex polyhedra with axis-parallel boxes. *Internat. J. Comput. Geom. Appl.*, 7:253–267, 1997. [z-acpap-97]

13888 Binhai Zhu. Computing the shortest watchtower of a polyhedral terrain in $O(n \log n)$ time. *Comput. Geom. Theory Appl.*, 8(4):181–193, 1997. [z-cswpt-97] *Succeeds:* z-iacsw-92.

13889 Binhai Zhu. Fast range searching with Delaunay triangulations. In *Proc. 3rd Ann. Internat. Conf. Computing and Combinatorics*, volume 1276 of *Lecture Notes Comput. Sci.*, pages 52–61. Springer-Verlag, 1997. [z-frsdt-97]

13890 B. Zhu. Further computational geometry in secondary memory. In *Proc. 5th Annu. Internat. Sympos. Algorithms Comput.*, volume 834 of *Lecture Notes Comput. Sci.*, pages 514–522. Springer-Verlag, 1994. [z-fcgsm-94]

13891 B. Zhu. Improved algorithms for computing the shortest watchtower of polyhedral terrains. In *Proc. 4th Canad. Conf. Comput. Geom.*, pages 286–291, 1992. [z-iacsw-92] *Precedes:* z-cswpt-97. *Cites:* ce-oails-88, cg-fc1ds-86, cs-vppt-89, cs-agpli-90, dk-ladsc-85, dz-irls-94, k-osps-83, s-swrpp-88, ZZZ.

13892 B. Zhu. Intersection detection and computation of Manhattan terrains. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 256–262, 1994. [z-idcmt-94] *Cites:* b-akrp-77, ce-oails-92, cegs-lscaa-89, cg-fc1ds-86, c-oaitd-92, b-earsh-92, egs-oplms-86, gp-narlp-92, ht-fafnc-84, k-osps-83, p-lmps3-93, ps-cgi-85, pt-fdplm-89, s-swrpp-88, st-pplup-86, t-dsna-83, wl-arrcd-85, vw-rlsil-82, ZZZ.

13893 B. Zhu. On the $\Omega(n^{4/3})$ weak lower bounds for some 3D geometric problems. In *Proc. 8th Canad. Conf. Comput. Geom.*, pages 270–275, 1996. [z-owlbs-96]

13894 B. Zhu and A. Mirzaian. Sorting does not always help in computational geometry. In *Proc. 3rd Canad. Conf. Comput. Geom.*, pages 239–242, August 1991. [zm-sdnah-91] *Cites:* agss-ltacv-89, aw-cg-88, f-savd-87, gs-pmgsc-85, lp-cgs-84, ps-cgi-85, s-mplbc-85, y-lbact-89, ZZZ.

13895 B. Zhu and C. K. Poon. Efficient approximation algorithms for two-label point labeling. *Internat. J. Comput. Geom. Appl.*, 11:455–464, 2001. [zp-eaatl-01]

Binhai Zhu. See also [983, 984, 1135–1137, 1141, 2330, 2331, 2648, 4060, 4062, 4325, 9921, 10839, 10840, 11426, 12980, 13358].

13896 C. Zhu, G. Sundaram, J. Snoeyink, and Joseph S. B. Mitchell. Generating random polygons with given vertices. *Comput. Geom. Theory Appl.*, 6:277–290, 1996. [zssm-grpgv-96] *Succeeds:* zssm-grxmp-94.

13897 C. Zhu, G. Sundaram, J. Snoeyink, and Joseph S. B. Mitchell. Generating random x-monotone polygons with given vertices. In *Proc. 6th Canad. Conf. Comput. Geom.*, pages 189–194, 1994. [zssm-grxmp-94] *Precedes:* zssm-grpgv-96. *Cites:* es-gtr-92, g-eadch-72, ghlst-ltavs-87, gh-ospqs-89, mr-ulbnm-90, ov-grp-91, sz-grmp-93, ls-utstp-82, t-cgpis-89, ZZZ.

Chong Zhu. See also [12342].

13898 David Zhu and Jean-Claude Latombe. New heuristic algorithms for efficient hierarchical path planning. *IEEE Trans. Robot. Autom.*, 7:9–20, 1991. [zl-nhaeh-91]

J. Zhu. See also [10049].

Wenhong Zhu. See also [697].

Y. Zhu. See also [9170].

13899 Y. Zhuang, K. Y. Goldberg, and Y.-C. Wong. On the existence of modular fixtures. In *Proc. 11th IEEE Internat. Conf. Robot. Autom.*, pages 543–549, May 1994. [zgw-emf-94]

13900 Sergey Zhukov, Andrei Iones, and G. Kronin. Environment preprocessing for real-time navigation of intelligent agents. In *Proc. SCCG'98 Conference in Bratislava ??*, April 1998. [zik-eprtn-98] *Comments:* This is Andrei Iones and Sergey Zhukov from St-Petersburg State Technical University, Russia.

We are studying the problem of intelligent agent navigation in complex environments. The goal of our research is to develop a technique (and theoretical foundations) to solve the navigation problem. We assume that our algorithms must be applicable to the agents with significantly different locomotion capabilities that live (navigate) in *really* complex 3D environments, including natural landscapes with caves, stalactites/stalagmites, etc. Our characters (agents) are spiders, birds, hoppers, etc., so they have totally different 'walk algorithms'. Since we have to handle all these creature types motivated us to develop such 'universal' techniques that: - enables the agent to explore the environment off-line (it takes 5 to 30 minutes) and create a representative map; - navigate in the environment in real-time using the map.

The technology is not heuristic - it can be proved that the paths found in real-time do not differ much from the real optimal paths. Currently, our technology is practically implemented in a commercial 3D title scheduled this year.

We base our technology on accessibility graphs, not on road maps/visibility graphs since these methods prove to be inefficient in our context.

G. Ziegler. See also [649, 5818, 7675].

13901 G. M. Ziegler. *Lectures on Polytopes*, volume 152 of *Graduate Texts in Mathematics*. Springer-Verlag, Heidelberg, 1994. [z-lp-94] *Keywords:* polytope, Fourier-Motzkin elimination, Schlegel diagram, shellability, Gale transform, oriented matroid, cyclic polytope, zonotope, permutahedron, associhedron, neighborly polytope, fiber polytope, Lawrence construction, diameter, non-rational polytope, tiling. *Annote:* advanced textbook on modern theory of convex polytopes.

13902 G. M. Ziegler. "what is a complex matroid". *Discrete Comput. Geom.*, 10:313–348, 1993. [z-wcm-93]

G. M. Ziegler. See also [383, 2055, 2056, 2058, 2551, 6818, 7624, 9785, 11228, 11229].

J. Ziegler. See also [9453, 9454, 9941].

Martin Ziegler. See also [5273–5275].

13903 O. C. Zienkiewicz. *The Finite Element Method*. McGraw-Hill, 3rd edition, 1977. [z-fem-77]

13904 O. C. Zienkiewicz and R. L. Taylor. *The Finite Element Method*. McGraw-Hill, 4th edition, 1989. [zt-fem-89]

13905 H. Ziezold. Über die Eckenzahl zufälliger konvexer Polygone. *Izv. Akad. Nauk. Armanj. SSR. Ser. Mat.*, 5:296–312, 1970. [z-udezk-70]

E. Zijlstra. See also [4895].

13906 K. Zikan. Least-squares image registration. *ORSA J. Comput.*, 3:169–172, 1991. [z-lsir-91]

13907 K. Zikan and T. M. Silberberg. The Frobenius metric in image registration. Report 88-13, Department of Operations Research, Stanford University, 1988. [zs-fmir-88] *Precedes:* zs-fmir-92.

13908 Karel Zikan and Theresa M. Silberberg. The Frobenius metric in image registration. In L. Shapiro and A. Rosenfeld, editors, *Computer Vision and Image Processing*, pages 385–420. Academic Press, 1992. [zs-fmir-92] *Succeeds:* zs-fmir-88.

K. Zikan. See also [803, 8199].

J. Zimba. See also [500].

P. Zimmerman. See also [5319].

E. W. Zimmers. See also [6314].

13909 R. Zippel. *Effective Polynomial Computation*. Kluwer Academic Publishers, 1993. [z-epc-93]

13910 C. Zirkelbach. Geometrisches clustern — ein metrischer ansatz. Dissertation, Department of Computer Science, Universität Würzburg, Germany, 1992. [z-gcema-92]

13911 C. Zirkelbach. Monotonous bisector trees and clustering problems. Technical report, Department of Computer Science, Universität Würzburg, Germany, 1990. [z-mbtcp-90] *Precedes:* nvz-mbtte-92.

C. Zirkelbach. See also [10181].

H. Zischler. See also [10016].

A. Ziv. See also [4819–4821].

R. Živaljević. See also [13294].

13912 R. T. Živaljević. Topological methods. In Jacob E. Goodman and Joseph O'Rourke, editors, *Handbook of Discrete and Computational Geometry*, chapter 11, pages 209–224. CRC Press LLC, Boca Raton, FL, 1997. [z-tm-97]

13913 R. T. Živaljević and S. T. Vrećica. An extension of the ham sandwich theorem. *Bull. London Math. Soc.*, 22:183–186, 1990. [zv-ehst-90]

Albert L. Zobrist. See also [9149–9151].

G. Zodik. See also [11471].

13914 J. E. Zolnowsky. Topics in computational geometry. Report STAN-CS-78-659, Dept. Comput. Sci., Stanford Univ., Stanford, CA, 1978. [z-tcg-78]

A. Y. Zomaya. See also [10263].

13915 Afra Zomorodian and Herbert Edelsbrunner. Fast software for box intersections. In *Proc. 16th Annu. ACM Sympos. Comput. Geom.*, pages 129–138, 2000. [ze-fsbi-00]

Alfra Zomorodian. See also [4709, 4721].

J. Zorbas. See also [1970, 1971].

D. Zorin. See also [1810].

M. Zubaer. See also [10264].

13916 A. Zucco. The generic contact of convex bodies with circumscribed homothets of a convex surface. *Discrete Comput. Geom.*, 7:319–323, 1992. [z-gccbc-92]

S. Zucker. See also [7752].

Steven W. Zucker. See also [7186, 7753].

D. Zuckerman. See also [8868].

13917 Karel Zuiderveld. Contrast limited adaptive histogram equalization. In Paul Heckbert, editor, *Graphics Gems IV*, pages 474–485. Academic Press, Boston, MA, 1994. [z-clahe-94] *Keywords:* contrast enhancement. *Annote:* Presents a contrast enhancement technique that overcomes some of the flaws of simple histogram equalization, such as noise amplification and suppression of local contrast. Contains C code.

J. Žunić. See also [80, 81].

13918 N. Zvegintzov. Partial-match retrieval in an index sequential directory. *Comput. J.*, 23:37–40, 1980. [z-pmris-80]

U. Zwick. See also [4384, 6024, 6610].

13919 M. J. Zyda, A. R. Jones, and P. G. Hogan. Surface construction from planar contours. *Computers and Graphics*, 11:393–408, 1987. [zjh-scpc-87]

M. J. Zyda. See also [3874, 5697, 11223, 11224].