
Bernard Chazelle

Curriculum Vitae
February, 2018

1. Personal

Eugene Higgins Professor of Computer Science
Princeton University

Citizenship: USA & France

2. Education

Ph.D., Computer Science, Yale University, 1980
Diploma (Applied Math), Ecole des Mines de Paris, 1977

3. Honors

2013	SIAG/CST Best SICON Paper Prize
2012	SIAM Outstanding Paper Prize
2009	Best Paper Award, ACM-SIAM Symposium on Discrete Algorithms
2004–	Fellow, American Academy of Arts and Sciences
2004–	Fellow, World Innovation Foundation
2002–	Member, European Academy of Sciences
1995–	Fellow, Association for Computing Machinery
1994	Fellow, John Simon Guggenheim Memorial Foundation
1988	Recognition of Service Award, Association for Computing Machinery

4. Professional Appointments

2013–2015	Member, Institute for Advanced Study, Princeton
2012–2013	Professor, Chaire d'Informatique, Collège de France
2002–	Professor of Computer Science and Mathematics, Princeton University

1989–2002 Professor of Computer Science, Princeton University
 1998–2003 Fellow, NEC Research Institute
 1998–1999 Professor of Computer Science Ecole Polytechnique, France
 1986–1989 Associate Professor of Computer Science, Princeton University
 1985–1986 Associate Professor of Computer Science, Ecole normale supérieure, Paris
 1985–1986 Associate Professor of Computer Science, Brown University
 1982–1985 Assistant Professor of Computer Science, Brown University
 1980–1982 Postdoctoral Fellow, Carnegie-Mellon University

Temporary or Part-Time Employments

1977 Research Assistant, INRIA, France
 1984 Xerox PARC, Palo Alto
 1984–1992 DEC Systems Research Center, Palo Alto
 1985–1986 Visiting Professor of Computer Science, University of Paris, Orsay
 1988 DEC Paris Research Laboratory, France
 1998–1999 Visiting Professor of Computer Science, University of Paris, Orsay
 1998–1999 Invited Professor, INRIA

5. Editorial Service

1984–2009 Editor, *Algorithmica*
 1985–2010 Editor, *SIAM Journal on Computing*
 1986 Guest Editor, *Algorithmica*, Special Issue on 2nd Annual ACM Symposium on Computational Geometry
 1988 Guest Editor, *Discrete and Computational Geometry*, Special Issue on 4th Annual ACM Symposium on Computational Geometry
 1989–2003 Editor, *Journal of Algorithms*
 1990–2008 Editor, *Computational Geometry: Theory and Applications*
 1990– Editor, *International Journal of Computational Geometry & Applications*
 1991– Editor, *Discrete and Computational Geometry*
 1995–2000 Editor, *ENTCS*
 1996–2010 Editor, *Journal of the ACM*

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- 1997– Editor, *AMS Contemporary Mathematics Series: Discrete and Computational Geometry: Ten Years Later*
- 2001 Advisory Editorial Board Member, *Handbook of Discrete and Computational Geometry*, Chapman & Hall/CRC
- 2004–2008 Editor, *ACM Transactions on Algorithms*
- 2004– Editor, *Foundations and Trends in Theoretical Computer Science*
- 2006– Advisory Editorial Board Member, *Geometry and Computing*, Springer
- 2007– Advisory Editorial Board Member, *Applied Algorithms and Data Structures Series*, Chapman & Hall/CRC
- 2009– Editor, *Journal of Computational Geometry*
- 2010– Advisory Editorial Board Member, *ACM XRDS*

6. Program Committees

- 1984 Member, Program Committee, 2nd AFCET-STACS, Saarbrücken
- 1985 Member, Program Committee, 17th Annual ACM Symposium on Theory of Computing (STOC)
- 1986 Member, Program Committee, 2nd Annual ACM Symposium on Computational Geometry (SoCG)
- 1987 Program Chair, Minisymposium on Computational Geometry, SIAM Annual Meeting
- 1988 Program Chair, 4th Annual ACM Symposium on Computational Geometry (SoCG)
- 1990 Member, Program Committee, 22nd Annual ACM Symposium on Theory of Computing (STOC)
- 1993 Member, Program Committee, 25th Annual ACM Symposium on Theory of Computing (STOC)
- 1993 Member, Program Committee, 9th Annual ACM Symposium on Computational Geometry (SoCG)
- 1996 Member, Program Committee, 8th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)
- 1997 Member, Program Committee, 2nd Workshop on Applied Computational Geometry
- 1997 Member, Program Committee, 13th Annual ACM Symposium on Computational Geometry (SoCG)

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| 1998 | Member, Program Committee, 2nd International Workshop on Randomization and Approximation Techniques in Computer Science (RANDOM) |
| 2000 | Member, Program Committee, 2nd Workshop on Algorithm Engineering and Experimentation (ALENEX) |
| 2001 | Member, Program Committee, 7th Annual International Computing and Combinatorics Conference (COCOON) |
| 2001 | Member, Program Committee, 12th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) |
| 2001 | Member, Program Committee, 2nd International Conference on Fun with Algorithms, Elba |
| 2001 | Member, Program Committee, 42nd Annual IEEE Symposium on Foundations of Computer Science (FOCS) |
| 2002 | Member, Program Committee, LATIN'2002 |
| 2002 | Program Chair, 43rd Annual IEEE Symposium on Foundations of Computer Science (FOCS) |
| 2003 | Member, Program Committee, 9th Annual International Computing and Combinatorics Conference (COCOON) |
| 2003 | Member, Program Committee, 7th International Workshop on Randomization and Approximation Techniques in Computer Science (RANDOM) |
| 2004 | Member, Program Committee, 29th International Symposium on Mathematical Foundations of Computer Science (MFCS) |
| 2004 | Member, Program Committee, 20th Annual ACM Symposium on Computational Geometry (SoCG) |
| 2005 | Member, Program Committee, 16th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA) |
| 2006 | Member, Program Committee, 12th Annual International Computing and Combinatorics Conference (COCOON) |
| 2007 | Member, Program Committee, Frontiers of Algorithmics (Lanzhou, China) |
| 2008 | Member, Program Committee, 40th Annual ACM Symposium on Theory of Computing (STOC) |
| 2010 | Program Chair, 2nd Symposium on Innovations in Computer Science (ICS) |
| 2012 | Member, Program Committee, 39th International Colloquium on Automata, Languages and Programming (ICALP) |
| 2013 | Member, Program Committee, 45th Annual ACM Symposium on Theory of Computing (STOC) |

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| 2013 | Member, Program Committee, 12th European Conference on Artificial Life (ECAL) |
| 2015 | Member, Program Committee, 7th Innovations in Theoretical Computer Science Conference (ITCS) |
| 2017 | Member, Program Committee, 9th Innovations in Theoretical Computer Science Conference (ITCS) |

7. Professional Activities

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| 1986 | Member, Scientific Committee, ICPAM (Unesco) |
| 1987–1988 | Organizer, Princeton Forum on Algorithms and Complexity |
| 1988 | Chair, ARIDAM III, Rutgers University, Probabilistic methods in geometry |
| 1989–1990 | Chair, Organizing committee, DIMACS Special Year in “Discrete and Computational Geometry” |
| 1989–1994 | Faculty, Geometry Center, Minn. (NSF) |
| 1991–1998 | Member, Executive Committee, DIMACS |
| 1991–1995 | Co-Organizer, Dagstuhl Workshops on Efficient Algorithms |
| 1996 | Organizer, AMS-IMS-SIAM Summer Research Conference |
| 1996 | Research Director, DREI (NSF education program) |
| 1996–1998 | Co-Director, DIMACS (NSF Science and Technology Center) |
| 1996 | Chair, Computational Geometry Impact Task Force |
| 1996 | Co-chair, AMS-IMS-SIAM Joint Summer Research Conference |
| 1997 | Member, Steering Committee, ACM Computational Geometry |
| 1997 | Chair, Program Evaluation Committee, INRIA |
| 1998 | Founder, PACT (Consortium of Institute for Advanced Study, NECI, Princeton University) |
| 1998 | Co-Organizer, DIMACS Workshop, Design for Values |
| 1998-2001 | Chair, PACT Day |
| 1998 | Co-Organizer, DIMATIA-DIMACS Workshop on Combinatorial and Algorithmic Geometry, Prague |
| 1999 | Member, Scientific Council, ACIB, Ministère de l’Education Nationale et de la Recherche, France |
| 1999–2007 | President, Scientific Council, DI, Ecole normale supérieure, Paris, France |

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- 2000 Chair, Board of Fellows, NEC Research Institute
 - 2001–2002 Member, Research Council, Ecole Polytechnique, France
 - 2002–2005 Co-Organizer, DIMACS Special Focus: Computational Geometry and Applications
 - 2004 Review Committee, Industrial Geometry Joint Research Program, Austrian Science Foundation
 - 2004 Advisor, Contemporary Analysis of Discrete Algorithms Project, Japan Society for the Promotion of Science
 - 2004–2006 Member, Scientific Council, Ecole normale supérieure, Paris, France
 - 2006–2014 Member, Scientific Council, Institut Henri-Poincaré, Paris
 - 2006–2011 Member, Board of Governors, Institute for Mathematics and Its Applications (IMA)
 - 2008 Member, Scientific Committee, Topological & Geometric Graph Theory '08, Paris
 - 2008– Chair Professor, Institute for Theoretical Computer Science, Tsinghua University
 - 2009 Organizer, Center for Computational Intractability “Natural Algorithms” Workshop, Princeton
 - 2009–2012 President, Steering Committee, ITCS Conference
 - 2010–2012 Director, NSF Center for Computational Intractability
 - 2013 Co-organizer with Mark Braverman, Center for Computational Intractability “Natural Algorithms and the Natural Sciences” Workshop, Princeton
 - 2015–2016 Co-Organizer, Dagstuhl workshop on Evolution and Computing
 - 2015 Evaluation Committee, INRIA
 - 2013– Member, Scientific Advisory Board, Project SAGE (Speed of Adaptation in Population Genetics and Evolutionary Computation)

8. Keynote Addresses since 1990

- 1990 Plenary Address, ARIDAM V, Rutgers University
- 1990 Plenary Address, Journées de Géométrie Algorithmique, INRIA, Sophia-Antipolis
- 1990 Plenary Address, SIGAL International Symposium on Algorithms, Tokyo
- 1990 Distinguished Lecture Series, Johns Hopkins University

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- 1991 Plenary Address, ICALP'91, Madrid, Spain
 - 1992 Plenary Address, Sixth SIAM Conference on Discrete Mathematics, Vancouver
 - 1992 Keynote Address, Stonybrook Workshop on Computational Geometry
 - 1992 Plenary Address, 4th Canadian Conference on Computational Geometry, St. John's, Newfoundland, Canada
 - 1993 Plenary Address, 16th IFIP Conference on System Modelling and Optimization, Compiègne, France
 - 1994 Plenary Address, STOC'94, Montréal, Canada
 - 1995 Distinguished Lecture Series, Graduate Center, NY
 - 1996 Distinguished Lecture Series, Univ. British Columbia
 - 1996 Plenary Address, AMS-IMS-SIAM Joint Summer Research Conference, Mount Holyoke
 - 1996 Plenary Address, CGC Workshop on Computational Geometry, The Johns Hopkins University
 - 1997 Plenary Address, WADS'97, Halifax
 - 1998 Plenary Address, ISAAC'98, Taejon, Korea
 - 1999 Distinguished Lecture Series, INRIA, Rocquencourt, France
 - 1999 Plenary Address, EuroCG'99, Antibes, France
 - 1999 Plenary Address, ETH Conference on Discrete and Computational Geometry, Ascona, Switzerland
 - 1999 Ron Graham's Celebration Day, "The Shape of Points: Where Euclid Meets Turing," AT&T Labs
 - 2000 Triangle Computer Science Distinguished Lecture Series, Duke University
 - 2000 Plenary Address, FSTTCS-2000, Foundations of Software Technology and Theoretical Computer Science, New Delhi, India
 - 2001 Plenary Address, COCOON'01, China
 - 2001 Bourbaki Seminar, "The PCP Theorem," Institut Henri Poincaré, Paris
 - 2002 Third Distinguished New York Computer Scientists Symposium, New York Academy of Sciences
 - 2002 Distinguished Lecture Series, University of Victoria, British Columbia
 - 2003 Distinguished Lecture Series, University of Wisconsin-Madison
 - 2003 Plenary Address, ESA'03, Budapest, Hungary

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| 2004 | Plenary Address, SODA'04, New Orleans |
| 2004 | Distinguished Lecture Series, University of Illinois at Urbana-Champaign |
| 2005 | Distinguished Lecture Series, University of Toronto |
| 2005 | Invited Tutorial, FOCS'05, Pittsburgh |
| 2006 | Invited Lecture, AAAS Annual Meeting, St. Louis |
| 2006 | Distinguished Lecture Series, University of Texas at Dallas |
| 2006 | Plenary Address, EuroCG'06, Delphi, Greece |
| 2006 | Plenary Address, DIKEMES, Athens, Greece |
| 2006 | Distinguished Lecture Series, Simon Fraser University, Canada |
| 2006 | Morgenstern Lecture Series, INRIA |
| 2006 | Plenary Address, ETH Informatik's 25th Anniversary, Zurich |
| 2006 | Interdisciplinary Distinguished Lecture Series, North Carolina State University |
| 2007 | Distinguished Lecture Series, University of Michigan |
| 2007 | Plenary Address, EuroCG'07, Graz, Austria |
| 2007 | Plenary Address, 34th ICALP, Wroclaw, Poland |
| 2007 | Plenary Address, Norway Research Council Conference, Trondheim |
| 2007 | Distinguished Lecture Series, Stony Brook University |
| 2008 | Distinguished Lecture Series, University of Washington |
| 2008 | Distinguished Lecture, Birzeit University |
| 2008 | Distinguished Lecture Series, University of Buffalo, SUNY |
| 2008 | Plenary Address, 5th TAMC 2008, Xi'an, China |
| 2008 | Plenary Address, First China Symposium on Theoretical Computer Science, Tsinghua University, Beijing, China |
| 2009 | Distinguished Lecture Series, Bryn Mawr College |
| 2009 | Distinguished Lectures: Universities of Auckland, Canterbury, Otago; and Wellington (New Zealand) |
| 2009 | Distinguished Lecture, Gaschnig-Oakley Memorial Lecture Series, Carnegie-Mellon University |
| 2009 | Distinguished Lecture, Drexel University |
| 2010 | Distinguished Lecture, Dertouzos Lecture Series, MIT |

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- 2011 Distinguished Lecture, Bayer Lecture Series, University of Pittsburgh
 - 2011 Keynote Address, 6th Computer Science Research Symposium, Dartmouth
 - 2011 Plenary Address, Neural Information Processing Systems (NIPS), Granada, Spain
 - 2012 Inaugural Address, Collège de France, Paris
 - 2012 Morgenstern Lecture Series, INRIA
 - 2013 Israel Pollak Lectures, Technion
 - 2013 Avner Magen Memorial Lecture, Fields Institute, University of Toronto
 - 2013 Institute Colloquium, IST Austria
 - 2013 HaPoc 2013 Plenary Address, Ecole Normale Supérieure Ulm
 - 2014 Collège de France Lecture Series, Cité des Sciences, Tunis,
 - 2014 Distinguished Lecture Series, Bibliothèque Nationale de France
 - 2014 Distinguished Lecture Series, Iowa State University
 - 2015 Plenary Address, 9th International Conference on Algorithms and Complexity (CIAC 2015), Paris
 - 2015 Plenary Address, Forums régionaux du Savoir, Regional Council, Rouen, France
 - 2015 Presidential Lecture, Association of Bone and Joint Surgeon, Eugene, Oregon
 - 2015 Plenary Lecture, 14th International Symposium on Algorithms and Data Structures (WADS 2015), Victoria, Canada
 - 2015 Plenary Lecture, NecSys 2015, Philadelphia
 - 2016 Distinguished Lecture, University of Rome, La Sapienza
 - 2016 Keynote Address, Computability in Europe, Paris
 - 2016 Keynote Address, Genetic and Evolutionary Computation Conference (GECCO 2016), Denver, Colorado
 - 2016 Plenary Lecture, Inaugural, Michigan Center for Applied and Interdisciplinary Mathematics, University of Michigan, Ann Arbor

9. Books

- [1] “L’Algorithmique et les Sciences”, Leçon Inaugurale, Collège de France, Fayard, 2013.
- [2] “The Discrepancy Method: Randomness and Complexity”, Cambridge University Press, 2000. Paperback version, 2001.

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- [3] “Advances in Discrete and Computational Geometry”, (co-edited with J.E. Goodman and R. Pollack) Contemporary Mathematics, 223, AMS, Providence, 1998.

10. Journal Articles and Book Chapters

- [4] “The Polygon Containment Problem”, *Advances in Computing Research 1*, (F.P. Preparata, ed.), JAI Press, Greenwich, 1983, pp. 1–33.
- [5] “A Decision Procedure for Optimal Polyhedron Partitioning”, *Information Processing Letters*, **16**(2), 1983, pp. 75–78.
- [6] “An Improved Algorithm for the Fixed-Radius Neighbor Problem”, *Information Processing Letters*, **16**(4), 1983, pp. 193–198.
- [7] “Unbounded Hardware Is Equivalent to Deterministic Turing Machines” (with L. Monier), *Theoretical Computer Science*, **24**(2), 1983, pp. 123–130.
- [8] “The Bottom-Left Bin-Packing Heuristic: An Efficient Implementation”, *IEEE Transactions on Computers*, **C-32**(8), 1983, pp. 697–707.
- [9] “Computing the Connected Components of D-Ranges” (with J. Incerpi), *Bulletin of EATCS*, **22**, 1984, pp. 9–11.
- [10] “Triangulation and Shape-Complexity” (with J. Incerpi), *ACM Transactions on Graphics*, Special Issue on “Computational Geometry”, **3**(2), 1984, pp. 135–152.
- [11] “Convex Partitions of Polyhedra: A Lower Bound and Worst-Case Optimal Algorithm”, *SIAM Journal on Computing*, **13**(3), 1984, pp. 488–507.
- [12] “Computational Geometry on a Systolic Chip”, *IEEE Transactions on Computers*, **C-33**(9), 1984, pp. 774–785.
- [13] “How to Search in History”, *Information & Control*, **64**(1–3), 1985, pp. 77–99.
- [14] “Optimal Convex Decompositions” (with D.P. Dobkin), in *Computational Geometry*, (G.T. Toussaint, ed.), North-Holland, 1985, pp. 63–133.
- [15] “The Power of Geometric Duality” (with L. Guibas, D.T. Lee), *BIT*, **25**(1), 1985, pp. 76–90.
- [16] “On the Convex Layers of a Planar Set”, *IEEE Transactions on Information Theory*, **IT-31**(4), 1985, pp. 509–517.
- [17] “Optimal Solutions for a Class of Point Retrieval Problems”, (with H. Edelsbrunner), *Journal of Symbolic Computation*, Vol.1, 1985, pp. 47–56.
- [18] “A Model of Computation for VLSI with Related Complexity Results” (with L. Monier), *Journal of the ACM*, **32**(3), 1985, pp. 573–588.
- [19] “New Upper Bounds for Neighbor Searching” (with R. Cole, F.P. Preparata, C. Yap), *Information & Control*, **68**(1–3), 1986, pp. 105–124.

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- [20] “Computing the Largest Empty Rectangle” (with R.L. Drysdale, D.T. Lee), *SIAM Journal on Computing*, **15**(1), 1986, pp. 300–315.
- [21] “On a Circle Placement Problem” (with D.T. Lee), *Computing*, **36**, 1986, pp. 1–16.
- [22] “Reporting and Counting Segment Intersections”, *Journal of Computer and System Sciences*, **32**(2), 1986, pp. 156–182.
- [23] “Halfspace Range Search: An Algorithmic Application of k -Sets”, (with F.P. Preparata), *Discrete and Computational Geometry*, Vol.1, 1986, pp. 83–93.
- [24] “Filtering Search: A New Approach to Query-Answering”, *SIAM Journal on Computing*, **15**(3), 1986, pp. 703–724.
- [25] “Fractional Cascading: I. A Data Structuring Technique”, (with L.J. Guibas), *Algorithmica*, **1**(2), 1986, pp. 133–162.
- [26] “Fractional Cascading: II. Applications”, (with L.J. Guibas), *Algorithmica*, **1**(2), 1986, pp. 163–191.
- [27] “Computing on a Free Tree via Complexity-Preserving Mappings”, *Algorithmica*, **2**(3), 1987, pp. 337–361.
- [28] “Some Techniques for Geometric Searching with Implicit Set Representations”, *Acta Informatica*, **24**, 1987, pp. 565–582.
- [29] “Intersection of Convex Objects in Two and Three Dimensions”, (with D.P. Dobkin), *Journal of the ACM*, **34**(1), 1987, pp. 1–27.
- [30] “An Improved Algorithm for Constructing k -th Order Voronoi Diagrams”, (with H. Edelsbrunner), *IEEE Transactions on Computers*, **C-36**(11), 1987, pp. 1349–1354.
- [31] “Linear Space Data Structures for Two Types of Range Search”, (with H. Edelsbrunner), *Discrete and Computational Geometry*, **2**, 1987, pp. 113–126.
- [32] “Approximation and Decomposition of Shapes”, in *Advances in Robotics, Vol.1: Algorithmic and Geometric Aspects of Robotics*, (J.T. Schwartz and C.K. Yap, eds.), Lawrence Erlbaum Associates, 1987, pp. 145–185.
- [33] “A Functional Approach to Data Structures and Its Use in Multidimensional Searching”, *SIAM Journal on Computing*, **17**(3), 1988, pp. 427–462.
- [34] “An Algorithm for Segment-Dragging and its Implementation”, *Algorithmica*, **3**(2), 1988, pp. 205–221.
- [35] “Parallel Computational Geometry”, (with A. Aggarwal, L.J. Guibas, C. O’Dunlaing, C.K. Yap), *Algorithmica*, **3**(3), 1988, pp. 293–327.
- [36] “The Complexity of Cutting Complexes”, (with H. Edelsbrunner, L.J. Guibas), *Discrete and Computational Geometry*, **4**, 1989, pp. 139–181.
- [37] “Visibility and Intersection Problems in Plane Geometry”, (with L.J. Guibas), *Discrete and Computational Geometry*, **4**, 1989, pp. 551–581.

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- [38] “Lower Bounds on the Complexity of Polytope Range Searching”, *Journal of the American Mathematical Society*, **2**(4), 1989, pp. 637–666.
- [39] “Quasi-Optimal Range Searching in Spaces of Finite VC -Dimension”, (with E. Welzl), *Discrete and Computational Geometry*, **4**, 1989, pp. 467–489.
- [40] “An Algorithm for Generalized Point Location and Its Applications”, (with M. Sharir), *Journal of Symbolic Computation*, **10**, 1990, pp. 281–309.
- [41] “A Deterministic View of Random Sampling and Its Use in Geometry”, (with J. Friedman), *Combinatorica*, **10**(3), 1990, pp. 229–249.
- [42] “Lower Bounds for Orthogonal Range Searching: I. The Reporting Case”, *Journal of the ACM*, **37**(2), 1990, pp. 200–212.
- [43] “Lower Bounds for Orthogonal Range Searching: II. The Arithmetic Model”, *Journal of the ACM*, **37**(3), 1990, pp. 439–463.
- [44] “Triangulating a Nonconvex Polytope”, (with L. Palios), *Discrete and Computational Geometry*, **5**, 1990, pp. 505–526.
- [45] “A Singly Exponential Stratification Scheme for Real Semi-Algebraic Varieties and Its Applications”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir), *Theoretical Computer Science*, **84**, 1991, pp. 77–105.
- [46] “Points and Triangles in the Plane and Halving Planes in Space”, (with B. Aronov, H. Edelsbrunner, L.J. Guibas, M. Sharir, R. Wenger), *Discrete and Computational Geometry*, **6**, 1991, pp. 435–442.
- [47] “The Complexity of Computing Partial Sums Off-Line”, (with B. Rosenberg), *International Journal of Computational Geometry and Applications*, **1**(1), 1991, pp. 33–45.
- [48] “Triangulating a Simple Polygon in Linear Time”, *Discrete and Computational Geometry*, **6**, 1991, pp. 485–524.
- [49] “An Optimal Algorithm for Intersecting Line Segments in the Plane”, (with H. Edelsbrunner), *Journal of the ACM*, **39**(1), 1992, pp. 1–54.
- [50] “Quasi-Optimal Upper Bounds for Simplex Range Searching and New Zone Theorems”, (with M. Sharir, E. Welzl), *Algorithmica*, **8**, 1992, pp. 407–429.
- [51] “An Optimal Algorithm for Intersecting Three-Dimensional Convex Polyhedra”, *SIAM Journal on Computing*, **21**(4), 1992, pp. 671–696.
- [52] “Counting and Cutting Cycles of Lines and Rods in Space”, (with H. Edelsbrunner, L.J. Guibas, R. Pollack, R. Seidel, M. Sharir, J. Snoeyink), *Computational Geometry: Theory and Applications*, **1**, 1992, pp. 305–323.
- [53] “Computing a Face in an Arrangement of Line Segments and Related Problems”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir, J. Snoeyink), *SIAM Journal on Computing*, **22**(6), 1993, pp. 1286–1302.

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- [54] “Cutting Hyperplanes for Divide-and-Conquer”, *Discrete and Computational Geometry*, **9**, 1993, pp. 145–158.
- [55] “An Optimal Convex Hull Algorithm in Any Fixed Dimension”, *Discrete and Computational Geometry*, **10**, 1993, pp. 377–409.
- [56] “How Hard Is Half-Space Range Searching?”, (with H. Brönnimann, J. Pach), *Discrete and Computational Geometry*, **10**, 1993, pp. 143–155.
- [57] “Diameter, Width, Closest Line Pair, and Parametric Searching”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir), *Discrete and Computational Geometry*, **10**, 1993, pp. 183–196.
- [58] “Ray Shooting in Polygons Using Geodesic Triangulations”, (with H. Edelsbrunner, M. Grigni, L.J. Guibas, J.E. Hershberger, M. Sharir, J. Snoeyink), *Algorithmica*, **12**, 1994, pp. 54–68.
- [59] “Point Location among Hyperplanes and Unidirectional Ray-Shooting”, (with J. Friedman), *Computational Geometry: Theory and Applications*, **4**(2), 1994, pp. 53–62.
- [60] “Triangulating Disjoint Jordan Chains”, (with R. Bar-Yehuda), *International Journal of Computational Geometry and Applications*, **4**(4), 1994, pp. 475–481.
- [61] “Algorithms for Bichromatic Line-Segment Problems and Polyhedral Terrains”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir), *Algorithmica*, **11**(2), 1994, pp. 116–132.
- [62] “Decomposition Algorithms in Geometry”, (with L. Palios), *Algebraic Geometry and its Applications*, (C. Bajaj, ed.), Chap.27, Springer-Verlag, 1994, pp. 419–447.
- [63] “Selecting Heavily Covered Points”, (with H. Edelsbrunner, L.J. Guibas, J.E. Hershberger, R. Seidel, M. Sharir), *SIAM Journal on Computing*, **23**(6), 1994, pp. 1138–1151.
- [64] “Derandomizing an Output-Sensitive Convex Hull Algorithm in Three Dimensions”, (with J. Matoušek), *Computational Geometry: Theory and Applications*, **5**, 1995, pp. 27–32.
- [65] “Improved Bounds on Weak ε -Nets for Convex Sets”, (with H. Edelsbrunner, M. Grigni, L.J. Guibas, M. Sharir, E. Welzl), *Discrete and Computational Geometry*, **13**, 1995, pp. 1–15.
- [66] “Computational Geometry: A Retrospective”, In “Computing in Euclidean Geometry”, (D.-Z. Du and F. Hwang, eds.), 2nd edition, World Scientific Press, 1995, pp. 22–46.
- [67] “Bounds on the Size of Tetrahedralizations”, (with N. Shouraboura), *Discrete and Computational Geometry*, **14**, 1995, pp. 429–444.
- [68] “An Elementary Approach to Lower Bounds in Geometric Discrepancy”, (with J. Matoušek, M. Sharir), *Discrete and Computational Geometry*, **13**, 1995, pp. 363–381.
- [69] “Lines in Space: Combinatorics and Algorithms”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir, J. Stolfi), *Algorithmica*, **15**(5), 1996, pp. 428–447.
- [70] “Simplex Range Reporting on a Pointer Machine”, (with B. Rosenberg), *Computational Geometry: Theory and Applications*, **5**, 1996, pp. 237–247.
- [71] “On Linear-Time Deterministic Algorithms for Optimization Problems in Fixed Dimension”, (with J. Matoušek), *Journal of Algorithms*, **21**, 1996, pp. 579–597.

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- [72] “The Computational Geometry Impact Task Force Report: An Executive Summary”, in *Applied Computational Geometry: Towards Geometric Engineering*, Springer-Verlag, LNCS 1148, 1996, pp. 59–65.
- [73] “BOXTREE: A Hierarchical Representation for Surfaces in 3D”, (with G. Barequet, L.J. Guibas, J. Mitchell, A. Tal), *Graphics Forum*, **15**(3), August 1996, pp. C–387–396.
- [74] “Decomposing the Boundary of a Nonconvex Polytope”, (with L. Palios), *Algorithmica*, **17**(3), 1997, pp. 245–265
- [75] “Lower Bounds for Off-Line Range Searching”, *Discrete and Computational Geometry*, **17**, 1997, pp. 53–65.
- [76] “Strategies for Polyhedral Surface Decomposition: An Experimental Study”, (with D.P. Dobkin, N. Shouraboura, A. Tal), *Computational Geometry: Theory and Applications*, **7**, 1997, pp. 327–342.
- [77] “A Spectral Approach to Lower Bounds with Applications to Geometric Searching”, *SIAM Journal on Computing*, **27**(2), 1998, pp. 545–556.
- [78] “Optimal Slope Selection via Cuttings”, (with H. Brönnimann), *Computational Geometry: Theory and Applications*, **10**(1), 1998, pp. 23–29.
- [79] “Product Range Spaces, Sensitive Sampling, and Derandomization”, (with H. Brönnimann and J. Matoušek), *SIAM Journal on Computing*, **28**(5), 1999, pp. 1552–1575.
- [80] “Discrepancy Bounds for Geometric Set Systems with Square Incidence Matrices”, *Advances in Discrete and Computational Geometry*, Contemporary Mathematics, 223, AMS, Providence, 1999, pp. 103–107.
- [81] “The Computational Geometry Impact Task Force Report”, (with 36 co-authors), *Advances in Discrete and Computational Geometry*, Contemporary Mathematics, 223, AMS, Providence, 1999, pp. 407–463.
- [82] “A Lower Bound on the Complexity of Approximate Nearest-Neighbor Searching on the Hamming Cube”, (with A. Chakrabarti, B. Gum, A. Lvov), *Discrete and Computational Geometry – The Goodman-Pollack Festschrift*, Springer-Verlag, 2003.
- [83] “The Soft Heap: An Approximate Priority Queue with Optimal Error Rate”, *Journal of the ACM*, **47**(6), 2000, pp. 1012–1027.
- [84] “A Minimum Spanning Tree Algorithm with Inverse-Ackermann Type Complexity”, *Journal of the ACM*, **47**(6), 2000, pp. 1028–1047.
- [85] “Self-Customized BSP Trees for Collision Detection”, (with S. Ar, A. Tal), *Computational Geometry: Theory and Applications*, **10**(1–3), 2000, 23–29. Special Issue on Computational Geometry in Virtual Reality,
- [86] “The Discrepancy of Boxes in Higher Dimension”, (with A. Lvov), *Discrete and Computational Geometry*, **25**, 2001, pp. 519–524.

-
-
- [87] “A Trace Bound for the Hereditary Discrepancy”, (with A. Lvov), *Discrete and Computational Geometry*, **26**, 2001, pp. 221–231.
- [88] “Splitting a Delaunay Triangulation in Linear Time”, (with O. Devillers, F. Hurtado, M. Mora, V. Sacristán, M. Teillaud), *Algorithmica*, **34**(1), 2002, pp. 39–46.
- [89] “The PCP Theorem”, *Séminaire Bourbaki*, Astérisque, **895**, 2001–2002, pp. 19–36.
- [90] “Shape Distributions”, (with R. Osada, T. Funkhouser, D.P. Dobkin), *ACM Transactions on Graphics*, **21**(4), 2002, pp. 807–832.
- [91] “Lower Bounds for Intersection Searching and Fractional Cascading in Higher Dimension”, (with D. Liu), *Journal of Computer and System Sciences*, **68**(2), 2004, pp. 269–284.
- [92] “The Discrepancy Method in Computational Geometry”, *Handbook of Discrete and Computational Geometry*, (J.E. Goodman and J. O’Rourke, eds.), Chapter 44, CRC Press, 2004, pp. 983–996.
- [93] “A Reflective Symmetry Descriptor for 3D Models”, (with M. Kazhdan, D.P. Dobkin, A. Finkelstein, T. Funkhouser, S. Rusinkiewicz), *Algorithmica*, **38**(1), 2004, pp. 201–225.
- [94] “The Power of Nonmonotonicity in Geometric Searching”, *Discrete and Computational Geometry*, **31**, 2004, pp. 3–16.
- [95] “A Semidefinite Programming Approach to Side-Chain Positioning with New Rounding Strategies”, (with C. Kingsford, M. Singh), *INFORMS Journal on Computing*, **16**(4), 2004, pp. 380–392.
- [96] “Lower Bounds for Linear Degeneracy Testing”, (with N. Ailon), *Journal of the ACM*, **52**(2), 2005, pp. 157–171.
- [97] “Cuttings”, *Handbook of Data Structures and Applications*, (D. Mehta and S. Sahni, eds.), CRC Press, Chapter 25, 2005, pp. 25.1–25.10.
- [98] “Approximating the Minimum Spanning Tree Weight in Sublinear Time”, (with R. Rubinfeld, L. Trevisan), *SIAM Journal on Computing*, **34**(6), 2005, pp. 1370–1379.
- [99] “Whole-Proteome Prediction of Protein Function via Graph-Theoretic Analysis of Interaction Maps”, (with E. Nabieva, K. Jim, A. Agarwal, M. Singh), *Bioinformatics*, **21**(1), 2005, pp. 302–310.
- [100] “Is the Thrill Gone?”, (with S. Arora), *Communications of the ACM*, Viewpoint, **48**(8), 2005, pp. 31–33.
- [101] “Solving and Analyzing Side-Chain Positioning Problems Using Linear and Integer programming”, (with C. Kingsford, M. Singh), *Bioinformatics*, **21**(7), 2005, pp. 1028–1036.
- [102] “Sublinear Geometric Algorithms”, (with D. Liu, A. Magen), *SIAM Journal on Computing*, **35**(3), 2006, pp. 627–646.
- [103] “Could Your iPod Be Holding the Greatest Mystery in Modern Science?”, *Math Horizons*, **13**, in “Codes, Cryptography, and National Security,” April 2006, Mathematical Association of America.

-
-
- [104] “Information Theory in Property Testing and Monotonicity Testing in Higher Dimension”, (with N. Ailon), *Information and Computation*, **204**(11), 2006, pp. 1704–1717.
- [105] “Proof at a Roll of the Dice”, *Nature*, **444**, 21/28 December 2006, pp. 1018–1019.
- [106] “The Security of Knowing Nothing”, *Nature*, **446**, 26 April 2007, pp. 992–993.
- [107] “Coding and Computing Join Forces”, *Science*, **317**, 21 September 2007, pp. 1691–1692.
- [108] “Estimating the Distance to a Monotone Function”, (with N. Ailon, S. Comandur, D. Liu), *Random Structures and Algorithms*, **31**(3), 2007, pp. 371–383.
- [109] “Approximate Range Searching in Higher Dimension”, (with D. Liu, A. Magen), *Computational Geometry: Theory and Applications*, **39**(1), 2008, pp. 24–29.
- [110] “Complexity Bounds via Roth’s Method of Orthogonal Functions”, in *Analytic Number Theory — Essays in Honour of Klaus Roth*, eds, W. Chen, T. Gowers, H. Halberstam, W. Schmidt, R.C. Vaughan, Cambridge University Press, 2009, pp. 144–149.
- [111] “Property-Preserving Data Reconstruction”, (with N. Ailon, S. Comandur, D. Liu), *Algorithmica*, **51**(2), 2008, pp. 160–182.
- [112] “Finding a Good Neighbor, Near and Fast”, *Communications of the ACM*, **51**(1), 2008, pp. 115.
- [113] “Organization of Physical Interactomes as Uncovered by Network Schemas”, (with E. Banks, E. Nabieva, M. Singh), *PLoS Computational Biology*, **4**(10), 2008, e1000203, pp. 1–16.
- [114] “Markov Incremental Constructions”, (with W. Mulzer), *Discrete and Computational Geometry*, **42**, 2009, pp. 399–420.
- [115] “The Fast Johnson-Lindenstrauss Transform and Approximate Nearest Neighbors”, (with N. Ailon), *SIAM Journal on Computing*, **39**(1), 2009, pp. 302–322. (2012 SIAM Outstanding Paper Prize.)
- [116] “Faster Dimension Reduction”, (with N. Ailon), *Communications of the ACM*, **53**(2), 2010, pp. 97–104.
- [117] “Computing Hereditary Convex Structures”, (with W. Mulzer), “Discrete and Computational Geometry”, **45**, 2011, pp. 796–823.
- [118] “Self-Improving Algorithms”, (with N. Ailon, K. Clarkson, D. Liu, W. Mulzer, C. Seshadhri), *SIAM Journal on Computing*, **40**(2), 2011, pp. 350–375.
- [119] “The Total s -Energy of a Multiagent System”, *SIAM Journal on Control and Optimization*, **49**(4), 2011, pp. 1680–1706. (2013 SIAG/CST Best SICON Paper Prize.)
- [120] “Online Geometric Reconstruction”, (with C. Seshadhri), *Journal of the ACM*, **58**(4), 2011, pp. 14:1–14:32.
- [121] “Natural Algorithms and Influence Systems”, *Communications of the ACM*, **55**(12), 2012, pp. 101–110.

-
-
- [122] “Les Surprises de la Complexité Algorithmique”, *La Lettre de l’Académie des Sciences*, **33**, 2014.
- [123] “The Convergence of Bird Flocking”, *Journal of the ACM*, **61**(4), 2014, pp. 21:1–35.
- [124] “How Many Bits Can a Flock of Birds Compute?”, *Theory of Computing*, **10**(16), 2014, pp. 421–451.
- [125] “An Algorithmic Approach to Collective Behavior”, *Journal of Statistical Physics*, **158**(3), 2015, pp. 514–548.
- [126] “Data Structures on Event Graphs”, (with W. Mulzer), *Algorithmica*, **71**(4), 2015, pp. 1007–1020.
- [127] “Diffusive Influence Systems”, *SIAM Journal on Computing*, **44**(5), 2015, pp. 1403–1442.
- [128] “Algorithmic Renormalization for Network Dynamics”, *IEEE Transactions on Network Science and Engineering*, **2**(1), 2015, pp. 1–16.
- [129] “Inertial Hegselmann-Krause Systems”, (with C. Wang), *IEEE Transactions on Automatic Control*, **62**(8), 2017, pp. 3905–3913.
- [130] “Well-Posedness of the Limiting Equation of a Noisy Consensus Model in Opinion Dynamics”, (with Q. Jiu, Q. Li, C. Wang), *Journal of Differential Equations*, **263**(1), 2017, pp. 365–397.
- [131] “Noisy Hegselmann-Krause Systems: Phase Transition and the $2R$ -Conjecture”, (with C. Wang, Q. Li, Weinan E), *Journal of Statistical Physics* **166**, 2017, pp. 1209–1225.
- [132] “A Sharp Bound on the s -Energy”, arXiv:1802.01207, 2018.
- [133] “Toward a Theory of Markov Influence Systems and their Renormalization”, arXiv:1802.01208, 2018.

11. Conference Articles

- [134] “Decomposing a Polygon into its Convex Parts” (with D.P. Dobkin), *Proceedings of Eleventh Annual ACM Symposium on Theory of Computing (STOC)*, May 1979, Atlanta, GA, pp. 38–48.
- [135] “Detection Is Easier than Computation” (with D.P. Dobkin), *Proceedings of Twelfth Annual ACM Symposium on Theory of Computing (STOC)*, May 1980, Los Angeles, CA, pp. 146–153.
- [136] “Towards More Realistic Models of Computation for VLSI” (with L. Monier), *Proceedings of Second Caltech Conference on VLSI*, January 1981, Pasadena, CA, pp. 441–454.
- [137] “Convex Decompositions of Polyhedra”, *Proceedings of Thirteenth Annual ACM Symposium on Theory of Computing (STOC)*, May 1981, Milwaukee, WI, pp. 70–79.
- [138] “A Model of Computation for VLSI with Related Complexity Results” (with L. Monier), *Proceedings of Thirteenth Annual ACM Symposium on Theory of Computing (STOC)*, May 1981, Milwaukee, WI, pp. 318–325.

-
-
- [139] “Optimality in VLSI” (with L. Monier), *Proceedings of First International Conference on VLSI*, August 1981, Edinburgh, Academic Press, pp. 269–278.
- [140] “Unbounded Hardware Is Equivalent to Deterministic Turing Machines” (with L. Monier), *Proceedings of First Conference on Foundations of Software Technology*, December 1981, Bangalore, India.
- [141] “VLSI Implementations of Geometric Tasks”, *Proceedings of Twentieth Annual Allerton Conference on Communication, Control, and Computing*, October 1982, Monticello, IL, pp. 615–624.
- [142] “A Theorem on Polygon Cutting with Applications”, *Proceedings of Twenty-Third Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, November 1982, Chicago, IL, pp. 339–349.
- [143] “How to Search in History”, *Proceedings of International Conference on Foundations of Computation Theory, FCT’83*, August 1983, Borgholm, Sweden, Lecture Notes in Computer Science, Springer-Verlag, pp. 52–63.
- [144] “Optimal Algorithms for Computing Depths and Layers”, *Proceedings of Twenty-First Annual Allerton Conference on Communication, Control, and Computing*, October 1983, Monticello, IL, pp. 427–436.
- [145] “Triangulating a Polygon by Divide-and-Conquer” (with J. Incerpi), *Proceedings of Twenty-First Annual Allerton Conference on Communication, Control, and Computing*, October 1983, Monticello, IL, pp. 447–456.
- [146] “Filtering Search: A New Approach to Query-Answering”, *Proceedings of Twenty-Fourth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, November 1983, Tucson, AZ, pp. 122–132.
- [147] “The Power of Geometric Duality” (with L. Guibas, D.T. Lee), *Proceedings of Twenty-Fourth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, November 1983, Tucson, AZ, pp. 217–225.
- [148] “On a Circle Placement Problem” (with D.T. Lee), *Proceedings of Eighteenth Annual Conference on Information Sciences and Systems*, March 1984, Princeton, N.J., pp. 333–337.
- [149] “Computing the Largest Empty Rectangle” (with R.L. Drysdale, D.T. Lee), *Proceedings of First Symposium on Theoretical Aspects of Computer Science (STACS)*, Lecture Notes in Computer Science, Paris, France, Springer-Verlag, April 1984, pp. 43–54.
- [150] “Intersecting Is Easier than Sorting”, *Proceedings of Sixteenth Annual ACM Symposium on Theory of Computing (STOC)*, May 1984, Washington D.C., pp. 125–134.
- [151] “The Complexity and Decidability of Separation” (with T. Ottmann, E. Soisalon-Soininen and D. Wood), *Proceedings of Eleventh International Colloquium on Automata, Languages and Programming (ICALP)*, Antwerp, Belgium, Lecture Notes in Computer Science, Springer-Verlag, July 1984, pp. 119–127.

-
-
- [152] “Computing on a Free Tree via Complexity-Preserving Mappings”, *Proceedings of Twenty-Fifth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1984, West Palm Beach, FL, pp. 358–368.
- [153] “Criticality Considerations in the Design of Geometric Algorithms”, *Proceedings of Twenty-Second Annual Allerton Conference on Communication, Control, and Computing*, October 1984, Monticello, IL, p. 71–80.
- [154] “Fast Searching in a Real Algebraic Manifold with Applications to Geometric Complexity”, *Proceedings of Colloquium on Trees in Algebra and Programming, CAAP’85*, Berlin, West Germany, Lecture Notes in Computer Science, Springer-Verlag, March 1985, pp. 145–156.
- [155] “New Techniques for Computing Order Statistics in Euclidean Space”, *Proceedings of First Annual ACM Symposium on Computational Geometry (SoCG)*, June 1985, pp. 125–134.
- [156] “An Improved Algorithm for Computing k -th Order Voronoi Diagrams”, (with H. Edelsbrunner), *Proceedings of First Annual ACM Symposium on Computational Geometry (SoCG)*, June 1985, pp. 228–234.
- [157] “Visibility and Intersection Problems in Plane Geometry”, (with L.J. Guibas), *Proceedings of First Annual ACM Symposium on Computational Geometry (SoCG)*, June 1985, pp. 135–146.
- [158] “Halfspace Range Search: An Algorithmic Application of k -Sets”, (with F.P. Preparata), *Proceedings of First Annual ACM Symposium on Computational Geometry (SoCG)*, June 1985, pp. 107–115.
- [159] “Optimal Solutions for a Class of Point Retrieval Problems”, (with H. Edelsbrunner), *Proceedings of Twelfth International Colloquium on Automata, Languages and Programming (ICALP)*, Nafplion, Greece, Lecture Notes in Computer Science, Springer-Verlag, July 1985, pp. 80–89.
- [160] “Fractional Cascading: A Data Structuring Technique with Geometric Applications” (with L.J. Guibas), *Proceedings of Twelfth International Colloquium on Automata, Languages and Programming (ICALP)*, Nafplion, Greece, Lecture Notes in Computer Science, Springer-Verlag, July 1985, pp. 90–99.
- [161] “Parallel Computational Geometry”, (with A. Aggarwal, L.J. Guibas, C. O’Dunlaing, C.K. Yap), *Proceedings of Twenty-Sixth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1985, Portland, OR, pp. 468–477.
- [162] “Slimming Down Search Structures: A Functional Approach to Algorithm Design”, *Proceedings of Twenty-Sixth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1985, Portland, OR, pp. 165–174.
- [163] “Linear Space Data Structures for Two Types of Range Search”, (with H. Edelsbrunner), *Proceedings of Second Annual ACM Symposium on Computational Geometry (SoCG)*, June 1986, pp. 293–302.
- [164] “Lower Bounds on the Complexity of Multidimensional Searching”, *Proceedings of Twenty-Seventh Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1986, Toronto, pp. 87–96.

-
-
- [165] “The Complexity of Cutting Convex Polytopes”, (with H. Edelsbrunner, L.J. Guibas), *Proceedings of Nineteenth Annual ACM Symposium on Theory of Computing (STOC)*, May 1987, New York, NY, pp. 66–76.
- [166] “Polytope Range Searching and Integral Geometry”, *Proceedings of Twenty-Eighth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1987, Los Angeles, pp. 1–10.
- [167] “A Deterministic View of Random Sampling and Its Use in Geometry”, (with J. Friedman), *Proceedings of Twenty-Ninth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1988, White Plains, pp. 539–549.
- [168] “An Optimal Algorithm for Intersecting Line Segments in the Plane”, (with H. Edelsbrunner), *Proceedings of Twenty-Ninth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1988, White Plains, pp. 590–600.
- [169] “Probabilistic Methods for Multidimensional Searching”, *13th International Symposium on Mathematical Programming*, Tokyo, August 1988, pp. 147.
- [170] “Lines in Space — Combinatorics, Algorithms and Applications”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir), *Proceedings of Twenty-First Annual ACM Symposium on Theory of Computing (STOC)*, May 1989, pp. 382–393.
- [171] “Computing Partial Sums in Multidimensional Arrays”, (with B. Rosenberg), *Proceedings of Fourth Annual ACM Symposium on Computational Geometry (SoCG)*, June 1989, pp. 131–139.
- [172] “Triangulating a Nonconvex Polytope”, (with L. Palios), *Proceedings of Fourth Annual ACM Symposium on Computational Geometry (SoCG)*, June 1989, pp. 393–399.
- [173] “A Singly Exponential Stratification Scheme for Real Semi-Algebraic Varieties and Its Applications”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir), *Proceedings of Sixteenth International Colloquium on Automata, Languages and Programming (ICALP)*, Lecture Notes in Computer Science, Springer-Verlag, July 1989, pp. 179–193.
- [174] “An Optimal Algorithm for Intersecting Three-Dimensional Convex Polyhedra”, *Proceedings of Thirtieth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1989, Research Triangle, NC, pp. 586–591.
- [175] “Points and Triangles in the Plane and Halving Planes in Space”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir), *Proceedings of Sixth Annual ACM Symposium on Computational Geometry (SoCG)*, June 1990, pp. 112–115.
- [176] “Slimming Down by Adding; Selecting Heavily Covered Points”, (with H. Edelsbrunner, L.J. Guibas, J.E. Hershberger, R. Seidel, M. Sharir), *Proceedings of Sixth Annual ACM Symposium on Computational Geometry (SoCG)*, June 1990, pp. 116–127.
- [177] “Quasi-Optimal Upper Bounds for Simplex Range Searching and New Zone Theorems”, (with M. Sharir, E. Welzl), *Proceedings of Sixth Annual ACM Symposium on Computational Geometry (SoCG)*, June 1990, pp. 23–33.

-
-
- [178] “Triangulating a Simple Polygon in Linear Time”, *Proceedings of Thirty-First Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1990, pp. 220–230.
- [179] “Counting and Cutting Cycles of Lines and Rods in Space”, (with H. Edelsbrunner, L.J. Guibas, R. Pollack, R. Seidel, M. Sharir, J. Snoeyink), *Proceedings of Thirty-First Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1990, pp. 242–251.
- [180] “Computing a Face in an Arrangement of Line Segments”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir, J. Snoeyink), *Proceedings of Second Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)* January 1991, pp. 441–448.
- [181] “Ray Shooting in Polygons Using Geodesic Triangulations”, (with H. Edelsbrunner, M. Grigni, L.J. Guibas, J.E. Hershberger, M. Sharir, J. Snoeyink), *Proceedings of Eighteenth International Colloquium on Automata, Languages and Programming (ICALP)*, Lecture Notes in Computer Science, Springer-Verlag, July 1991, pp. 661–673.
- [182] “Computational Geometry for the Gourmet: Old Fare and New Dishes”, *Proceedings of Eighteenth International Colloquium on Automata, Languages and Programming (ICALP)*, invited paper, Lecture Notes in Computer Science, Springer-Verlag, July 1991, pp. 686–696.
- [183] “An Optimal Convex Hull Algorithm and New Results on Cuttings”, *Proceedings of Thirty-Second Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1991, pp. 29–38.
- [184] “Lower Bounds on the Complexity of Simplex Range Reporting on a Pointer Machine”, (with B. Rosenberg), *Proceedings of Nineteenth International Colloquium on Automata, Languages and Programming (ICALP)*, Lecture Notes in Computer Science 623, Springer-Verlag, July 1992, pp. 439–449.
- [185] “Diameter, Width, Closest Line Pair, and Parametric Searching”, (with H. Edelsbrunner, L.J. Guibas, M. Sharir), *Proceedings of Eighth Annual ACM Symposium on Computational Geometry (SoCG)*, June 1992, pp. 120–129.
- [186] “How Hard Is Halfspace Range Searching?”, (with H. Brönnimann), *Proceedings of Eighth Annual ACM Symposium on Computational Geometry (SoCG)*, June 1992, pp. 271–275.
- [187] “Decomposing the Boundary of a Nonconvex Polytope”, (with L. Palios), *Proceedings of Third Scandinavian Workshop on Algorithm Theory*, July 1992, pp. 364–375.
- [188] “On Linear-Time Deterministic Algorithms for Optimization Problems in Fixed Dimension”, (with J. Matoušek), *Proceedings of Fourth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, January 1993, pp. 281–290.
- [189] “Improved Bounds on Weak ε -Nets for Convex Sets”, (with H. Edelsbrunner, M. Grigni, L.J. Guibas, M. Sharir, E. Welzl), *Proceedings of Twenty-Fifth Annual ACM Symposium on Theory of Computing (STOC)*, May 1993, pp. 495–504.
- [190] “Deterministic Sampling and Optimization”, *Proceedings of Sixteenth IFIP Conference on System Modelling and Optimization*, (Invited) July 1993, pp. 7–12.

-
-
- [191] “Geometric Discrepancy Revisited”, *Proceedings of Thirty-Fourth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, November 1993, pp. 392–399.
- [192] “Product Range Spaces, Sensitive Sampling, and Derandomization”, (with H. Brönnimann and J. Matoušek), *Proceedings of Thirty-Fourth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, November 1993, pp. 400–409.
- [193] “Computational Geometry: A Retrospective”, *Proceedings of Twenty-Sixth Annual ACM Symposium on Theory of Computing (STOC)*, May 1994, pp. 75–94.
- [194] “Bounds on the Size of Tetrahedralizations”, (with N. Shouraboura), *Proceedings of Tenth Annual ACM Symposium on Computational Geometry (SoCG)*, June 1994, pp. 231–239.
- [195] “Optimal Slope Selection via Cuttings”, (with H. Brönnimann), *Proceedings of Sixth Canadian Conference on Computational Geometry*, August 1994, pp. 99–103.
- [196] “A Spectral Approach to Lower Bounds”, *Proceedings of Thirty-Fifth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, November 1994, pp. 674–682.
- [197] “Lower Bounds for Off-Line Range Searching”, *Proceedings of Twenty-Seventh Annual ACM Symposium on Theory of Computing (STOC)*, May 1995, pp. 733–740.
- [198] “Strategies for Polyhedral Surface Decomposition: An Experimental Study”, (with D.P. Dobkin, N. Shouraboura, A. Tal), *Proceedings of Eleventh Annual ACM Symposium on Computational Geometry (SoCG)*, June 1995, pp. 297–305.
- [199] “Application Challenges to Computational Geometry”, *Proceedings of First ACM Workshop on Applied Computational Geometry*, May 1996, pp. 136–142.
- [200] “A Faster Deterministic Algorithm for Minimum Spanning Trees”, *Proceedings of Thirty-Eighth Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 1997, pp. 22–31.
- [201] “Car-Pooling as a Data Structuring Device: The Soft Heap”, *Proceedings of Sixth Annual European Symposium on Algorithms (ESA)*, August 1998, pp. 35–42.
- [202] “The Discrepancy Method” (invited presentation), *Proceedings of Ninth International Symposium on Algorithms and Computation (ISAAC)*, Lecture Notes in Computer Science 1533, Springer, December 1998, pp. 1–3.
- [203] “Geometric Searching over the Rationals”, *Proceedings of Seventh Annual European Symposium on Algorithms (ESA)*, 1999, pp. 354–365.
- [204] “A Lower Bound on the Complexity of Approximate Nearest-Neighbor Searching on the Hamming Cube”, (with A. Chakrabarti, B. Gum, A. Lvov), *Proceedings of Thirty-First Annual ACM Symposium on Theory of Computing (STOC)*, 1999, pp. 305–311.
- [205] “Geometric Complexity and the Discrepancy Method” (invited presentation), *Proceedings of Fifteenth European Workshop on Computational Geometry*, March 1999.
- [206] “A Trace Bound for the Hereditary Discrepancy”, (with A. Lvov), *Proceedings of Sixteenth Annual ACM Symposium on Computational Geometry (SoCG)*, June 2000, pp. 64–69.

-
-
- [207] “Irregularities of Distribution, Derandomization, and Complexity Theory”, *Proceedings of Twentieth FSTTCS-2000*, Foundations of Software Technology and Theoretical Computer Science, December 2000, Springer LNCS 1974, pp. 46–54.
- [208] “Matching 3D Models with Shape Distributions”, (with R. Osada, T. Funkhouser, D.P. Dobkin), *Shape Modeling International 2001*, pp. 154–166.
- [209] “Lower Bounds for Intersection Searching and Fractional Cascading in Higher Dimension”, (with D. Liu), *Proceedings of Thirty-Third Annual ACM Symposium on Theory of Computing (STOC)*, 2001, pp. 322–329.
- [210] “Approximating the Minimum Spanning Tree Weight in Sublinear Time”, (with R. Rubinfeld, L. Trevisan), *Proceedings of Twenty-Eighth International Colloquium on Automata, Languages and Programming (ICALP)*, Lecture Notes in Computer Science 2076, Springer-Verlag, July 2001, pp. 190–200.
- [211] “Splitting a Delaunay Triangulation in Linear Time”, (with O. Devillers, F. Hurtado, M. Mora, V. Sacristán, M. Teillaud), *Proceedings of Ninth Annual European Symposium on Algorithms (ESA)*, 2001.
- [212] “The PCP Theorem”, *Séminaire Bourbaki*, 895 (2001–2002), 54-ème Année.
- [213] “The Power of Nonmonotonicity in Geometric Searching”, *Proceedings of Eighteenth Annual ACM Symposium on Computational Geometry (SoCG)*, June 2002, pp. 88–93.
- [214] “A Reflective Symmetry Descriptor”, (with M. Kazhdan, D.P. Dobkin, A. Finkelstein, T. Funkhouser), *European Conference on Computer Vision 2002 (ECCV)*, May 2002, pp. 642–656.
- [215] “Sublinear Geometric Algorithms”, (with D. Liu, A. Magen), *Proceedings of Thirty-Fifth Annual ACM Symposium on Theory of Computing (STOC)*, 2003, pp. 531–540.
- [216] “The Side-Chain Positioning Problem: A Semidefinite Programming Formulation with New Rounding Schemes”, (with C. Kingsford, M. Singh), *Proceedings of ACM FCRC’2003, Principles of Computing and Knowledge: Paris Kanellakis Memorial Workshop*, San Diego, June 2003, pp. 86–94.
- [217] “The Bloomier Filter: An Efficient Data Structure for Static Support Lookup Tables”, (with J. Kilian, R. Rubinfeld, A. Tal), *Proceedings of Fifteenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, New Orleans, January 2004, pp. 30–39.
- [218] “Lower Bounds for Linear Degeneracy Testing”, (with N. Ailon), *Proceedings of Thirty-Sixth Annual ACM Symposium on Theory of Computing (STOC)*, June 2004, pp. 554–560.
- [219] “Estimating the Distance to a Monotone Function”, (with N. Ailon, S. Comandur, D. Liu), *Proceedings of Eighth International Workshop on Randomization and Computation (RANDOM)*, August 2004, pp. 229–236.
- [220] “Approximate Range Searching in Higher Dimension”, (with D. Liu, A. Magen), *Proceedings of Sixteenth Canadian Conference on Computational Geometry (CCCG)*, August 2004, pp. 154–157.

-
-
- [221] “Property-Preserving Data Reconstruction”, (with N. Ailon, S. Comandur, D. Liu), *Proceedings of Fifteenth International Symposium on Algorithms and Computation (ISAAC)*, 2004, pp. 16–27.
- [222] “Information Theory in Property Testing and Monotonicity Testing in Higher Dimension”, (with N. Ailon), *Proceedings of Twenty-Second Symposium on Theoretical Aspects of Computer Science (STACS)*, February 2005, pp. 434–447.
- [223] “Whole-Proteome Prediction of Protein Function via Graph-Theoretic Analysis of Interaction Maps”, (with E. Nabieva, K. Jim, A. Agarwal, M. Singh), *Thirteenth Annual International Conference on Intelligent Systems for Molecular Biology (ISMB)*, June 2005, pp. 302–310.
- [224] “Self-Improving Algorithms”, (with N. Ailon, S. Comandur, D. Liu), *Proceedings of Seventeenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, Miami, January 2006, pp. 261–270.
- [225] “Approximate Nearest Neighbors and the Fast Johnson-Lindenstrauss Transform”, (with N. Ailon), *Proceedings of Thirty-Eighth Annual ACM Symposium on Theory of Computing (STOC)*, May 2006, pp. 557–563.
- [226] “Online Geometric Reconstruction”, (with S. Comandur), *Proceedings of Twenty-Second Annual ACM Symposium on Computational Geometry (SoCG)*, June 2006, pp. 386–394.
- [227] “Markov Incremental Constructions”, (with W. Mulzer), *Proceedings of Twenty-Fourth Annual ACM Symposium on Computational Geometry (SoCG)*, June 2008, pp. 156–163.
- [228] “Natural Algorithms”, *Proceedings of Twentieth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, New York, January 2009, pp. 422–431. (Best Paper Award.)
- [229] “Computing Hereditary Convex Structures”, (with W. Mulzer), *Proceedings of Twenty-Fifth Annual ACM Symposium on Computational Geometry (SoCG)*, June 2009, pp. 61–70.
- [230] “Analytical Tools for Natural Algorithms”, *Proceedings of First Symposium on Innovations in Computer Science (ICS)*, Beijing, January 2010, pp. 32–41.
- [231] “A Geometric Approach to Collective Motion”, *Proceedings of Twenty-Sixth Annual ACM Symposium on Computational Geometry (SoCG)*, June 2010, pp. 117–126.
- [232] “The Geometry of Flocking”, *Proceedings of Twenty-Sixth Annual ACM Symposium on Computational Geometry (SoCG)*, June 2010, pp. 19–28.
- [233] “The Dynamics of Influence Systems”, *Proceedings of Fifty-Third Annual IEEE Symposium on Foundations of Computer Science (FOCS)*, October 2012, pp. 311–320.
- [234] “Data Structures on Event Graphs”, (with W. Mulzer), *Proceedings of Twentieth Annual European Symposium on Algorithms (ESA)*, 2012, pp. 313–324.
- [235] “On the Convergence of the Hegselmann-Krause System”, (with A. Bhattacharyya, M. Braverman, H.L. Nguyen), *Proceedings of Fourth Innovations in Theoretical Computer Science Conference (ITCS)*, Berkeley, January 2013, pp. 61–66.

-
-
- [236] “Communication, Dynamics, and Renormalization”, *Proceedings of Ninth International Conference on Algorithms and Complexity (CIAC)*, Paris, May 2015, LNCS 9079, Springer, pp. 1–32.
- [237] “Inertial Hegselmann-Krause Systems”, (with C. Wang), *Proceedings of 2016 American Control Conference*, Boston, 2016, pp. 1936–1941.
- [238] “Noisy Hegselmann-Krause Systems: Phase Transition and the $2R$ -Conjecture”, (with C. Wang, Q. Li, Weinan E), *Proceedings of 55th IEEE Conference on Decision and Control*, Las Vegas, 2016.
- [239] “Self-Sustaining Iterated Learning”, (with C. Wang), *Proceedings of Eighth Innovations in Theoretical Computer Science Conference (ITCS)*, Berkeley, January 2017.
- [240] “Gaussian Learning-Without-Recall in a Dynamic Social Network”, (with C. Wang), *Proceedings of 2017 American Control Conference*, Seattle. 2017, pp. 5109–5114.
- [241] “Toward a Theory of Markov Influence Systems and their Renormalization”, *Proceedings of Ninth Innovations in Theoretical Computer Science Conference (ITCS)*, MIT, January 2018.

12. Miscellaneous Publications

- [242] “Mise au Point d’un Système Interactif de Traitement d’Images sur un Ordinateur INTER-DATA 8/32”, Technical Report, INRIA, June 1977
- [243] “Computational Geometry and Convexity”, PhD Thesis, Yale University, 1980. Available as Carnegie-Mellon University, Computer Science Technical Report No. CMU-CS-80-150, 1980.
- [244] “The Power of Triangulation: Applications to Problems of Visibility and Internal Distance”, Carnegie-Mellon University, Computer Science Technical Report No. CMU-CS-82-121, March 1982
- [245] “Unraveling the Segment Tree” (with J. Incerpi), Brown University, Computer Science Technical Report No. CS-83-15, June 1983
- [246] “New Algorithms for Near Neighbor Searching” (with F.P. Preparata), Brown University, Computer Science Technical Report No. CS-83-19, September 1983
- [247] “Efficient Algorithms for Partitioning a Polygon into Star-Shaped Polygons” (with A. Aggarwal), IBM T. J. Watson Research Center, Yorktown Heights, NY, 1984.
- [248] “Tight Bounds on the Stabbing Number of Spanning Trees in Euclidean Space”, Princeton University, Computer Science Technical Report No. CS-TR-155-88, May 1988.
- [249] “The New Jersey Line-Segment-Saw Massacre”, (with A. Tal, D.P. Dobkin), *Animation and geometric algorithms: A video review*, (M. Brown and J.E. Hershberger, eds.), Technical Report 87b, 1993, DEC System Research Center, Palo Alto, CA.

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-
- [250] “Convex Surface Decomposition”, (with D.P. Dobkin, N. Shouraboura, A. Tal), Video, Eleventh Annual ACM Symposium on Computational Geometry, 1995, pp. V9–V10.

13. Graduate Advising

- Burton Rosenberg (PhD, 1991), Magda Nour (MSc, 1990), Leonidas Palios (PhD, 1992), Hervé Brönnimann (PhD, 1995), Nadia Shouraboura (PhD, 1995), Alexey Lvov (PhD, 2000), Amit Chakrabarti (PhD, 2002), Ding Liu (PhD, 2005), Nir Ailon (PhD, 2006), Seshadhri Comandur (PhD, 2008), Wolfgang Mulzer (PhD, 2010), Nadia Heninger (PhD, 2011), Chu Wang (PhD, 2016).
- PhD Reader or Co-advisor: Mark Post, Janet Incerpi, Delfin Montuno, Robert McCartney, Kazuo Iwano, Mark Weiss, Michael Laszlo, E.S. Panduranga, T.L. Snyder, Deborah Silver, William Lin, Francis Avnaim, Pankaj Agarwal, Jeffery R. Westbrook, Mordecai Golin, Heather Booth, Jean-Michel Moreau, Michel Pocchiola, Sarantos Kapidakis, Monique Teillaud, C. Bradford Barber, Jenny Zhao, Claire Mathieu, Mariette Yvinec, Dan Boneh, Franck Nielsen, Alejo Hausner, Subhash Khot, Tony Wirth, Elena Zaslavsky, Carl Kingsford, Renato Werneck, Robert Osada, Elad Hazan, Elena Nabieva, Adriana Karagiozova, Eric Banks, Huy Nguyen, Yingfei Wang.