

ACM Symposium on Theory of Computing

May 28-30, 1986
Berkeley, California

Tuesday evening, May 27, 1986

8:00 Reception in Great Hall, Dwight/Derby Complex

Wednesday morning, May 28, 1986

Chair: Silvio Micali, MIT

8:30 *Bounded-Width Polynomial-Size Branching Programs Recognize Exactly Those Languages in NC.* David A. Barrington, MIT.

8:55 *Improved Lower Bounds for Small Depth Circuits.* Johan Hastad, MIT.

9:20 *With Probability One, a Random Oracle Separates PSPACE from the Polynomial-Time Hierarchy.* Jin-Yi Cai, Cornell.

9:45 *Two Lower Bounds for Branching Programs.* M. Ajtai, IBM Almaden, L. Babai and P. Hajnal, U Chicago and Eötvös U, J. Komlos, UC San Diego, and Hungarian Acad Sci, Budapest, E. Szemerédi, U Chicago and Hungarian Acad Sci, Budapest, and G. Turan, U Illinois, Chicago, and Hungarian Acad Sci, Szeged.

10:10 *Coffee Break*

10:30 *On Nontrivial Separators for k -Page Graphs and Simulations by Nondeterministic One-Tape Turing Machines.* Zvi Galil, Columbia and Tel-Aviv U, Ravi Kannan, CMU, Endre Szemerédi, U Chicago and Hungarian Acad Sci.

10:55 *How Hard is it to Marry at Random? (On the Approximation of the Permanent).* Andrei Z. Broder, DEC.

11:20 *Arthur Merlin Games versus Interactive Proof Systems.* Shafi Goldwasser, MIT, and Michael Sipser, UC Berkeley.

11:45 *The Complexity of Optimization Problems.* Mark W. Krentel, Cornell.

12:10 *Lunch*

Wednesday afternoon and evening

Chair: Robert Sedgwick, Princeton

2:00 *A Provably Efficient Algorithm for Dynamic Storage Allocation.* E.G. Coffman, Jr., AT&T Bell Labs, and F.T. Leighton, MIT.

2:25 *Tight Bounds for Minimax Grid Matching, With Applications to the Average Case Analysis of Algorithms.* Tom Leighton, MIT, and Peter Shor, MSRI.

2:50 *Four Pages are Necessary and Sufficient for Planar Graphs.* Mihalis Yannakakis, AT&T Bell Labs.

3:15 *Making Data Structures Persistent.* James R. Driscoll, CMU, Neil Sarnak, NYU, Daniel D. Sleator, CMU, Robert E. Tarjan, Princeton and AT&T Bell Labs.

3:40 *Coffee Break*

4:00 *Rotation Distance, Triangulations, and Hyperbolic Geometry.* Daniel D. Sleator, CMU, Robert E. Tarjan, Princeton and AT&T Bell Labs, William P. Thurston, Princeton

4:25 *A New Approach to the Maximum Flow Problem.* Andrew V. Goldberg, MIT, and Robert E. Tarjan, Princeton and AT&T Bell Labs.

4:50 *Fast Algorithms for convex Quadratic Programming and Multicommodity Flows.* Sanjiv Kapoor and Pravin M. Vaidya, U Illinois, Urbana

9:00 *Business Meeting, Assembly Hall*

Thursday morning, May 29, 1986

Chair: Avi Wigderson, MSRI.

8:30 *Parallel Hashing - An Efficient Implementation of Shared Memory.* Anna R. Karlin, Stanford, and Eli Upfal, IBM Almaden.

8:55 *Limits on the Power of Concurrent-Write Parallel Machines.* Paul Beame, U Toronto.

9:20 *New Lower Bounds for Parallel Computation.* Ming Li and Yasov Yesha, Ohio State.

9:45 *Deterministic Selection in $O(\log \log N)$ Parallel Time.* M. Ajtai, IBM Almaden, Janos Komlos, UC San Diego, W.L. Steiger, Rutgers, Endre Szemerédi, Hungarian Acad Sci.

10:10 *Coffee Break*

10:30 *Linear Programming with Two Variables per Inequality in Poly-Log Time.* George S. Lueker, UC Irvine, and MSRI, Nimrod Megiddo, IBM Almaden, Tel Aviv U, and MSRI, and Vijaya Ramachandran, U Illinois, Urbana and MSRI.

10:55 *Deterministic Coin Tossing and Accelerating Cascades: Micro and Macro Techniques for Designing Parallel Algorithms.* Richard Cole, NYU, and Uzi Vishkin, NYU and Tel Aviv U.

11:20 *Introducing Efficient Parallelism into Approximate String Matching.* Gad M. Landau, Tel Aviv U, and Uzi Vishkin, NYU and Tel Aviv U.

11:45 *Parallel Evaluation of Division-Free Arithmetic Expressions.* S. Rao Kosaraju, Johns Hopkins

12:10 *Lunch*

Thursday afternoon

Chair: Maria Klawe, IBM Almaden

2:00 *Ramanujan Conjecture and Explicit Constructions of Expanders and Super-Concentrators.* A. Lubotzky, Hebrew U, R. Phillips and P. Sarnak, Stanford

2:25 *Non-Blocking Networks.* Paul Feldman, MIT, Joel Friedman, UC Berkeley, and Nicholas Pippenger, IBM Almaden

2:50 *An Optimal Sorting Algorithm for Mesh Connected Computers.* C.P. Schnorr, U Frankfurt, and A. Shamir, Weizmann Inst.

3:15 *Optimal Simulations Between Mesh-Connected Arrays of Processors.* S. Rao Kosaraju, Johns Hopkins, and Mikhail J. Atallah, Purdue

3:40 *Coffee Break*

Chair: Neil Immerman, Yale

4:00 *Classifying Learnable Geometric Concepts with the Vapnik-Chervonenkis Dimension.* Anselm Blumer, U Denver, Andrzej Ehrenfeucht, U Colorado, Boulder, David Haussler, U Denver, and Manfred Warmuth, UC Santa Cruz.

4:25 *Reasoning about Fair Concurrent Programs.* Constantinos Courcoubetis, AT&T Bell Labs, Moshe Y. Vardi, IBM Almaden, and Pierre Wolper, AT&T Bell Labs.

4:50 *A Note on the One-Way Functions and Polynomial-Time Isomorphisms.* Ker-I Ko, U Houston and MSRI, Timothy J. Long, Ohio State, and Ding-Zhu Du, MSRI.

5:15 *The Complexity of Reasoning About Knowledge and Time.* Joseph Y. Halpern and Moshe Y. Vardi, IBM Almaden

Thursday evening

8:30 *Reception and Banquet.* University Art Museum, Bancroft Way.

Friday morning, May 30, 1986

Chair: Michael Fischer, Yale

8:30 *A Provably Correct and Probably Fast Primality Test.* Shafi Goldwasser and Joe Kilian, MIT

8:55 *Uniform Closure Properties of P-Computable Functions.* Erich Kaltofen, MSRI and RPI.

9:20 *A Fast Parallel Algorithm to Compute the Rank of a Matrix Over an Arbitrary Field.* Ketan Mulmuley, UC Berkeley

9:45 *A Fast Parallel Algorithm for Determining All Roots of a Polynomial with Real Roots.* Michael Ben-Or, Hebrew U, Ephraim Feig, IBM Yorktown, Dexter Kozan, Cornell, and Praseon Tiwari, U Illinois, Urbana.

10:10 *Coffee Break*

10:30 *Finding Irreducible Polynomials Over Finite Fields.* Leonard M. Adleman, USC, and Hendrik W. Lenstra, U Amsterdam and MSRI.

10:55 *Pseudo-Random Permutation Generators and the Data Encryption Standard.* Michael Luby and Charles Rackoff, U Toronto.

11:20 *The Impossibility of Secure Coin Flips When Half the Processors are Faulty.* Richard Cleve, U Toronto.

11:45 *Fault Tolerance in Networks of Bounded Degree.* Cynthia Dwork, David Peleg, Nicholas Pippenger, and Eli Upfal, IBM Almaden

12:10 *Lunch*

Friday afternoon

Chair: Franco Preparata, U Illinois, Urbana

2:00 *A Linear-Time Algorithm for Triangulating Simple Polygons.* Robert E. Tarjan, Princeton and AT&T Bell Labs, and Christopher J. Van Wyk, AT&T Bell Labs.

2:25 *Topologically Sweeping an Argument.* Herbert Edelsbrunner, U Illinois, Urbana, and Leonidas J. Guibas, DEC and Stanford

2:50 *Constructing Higher-Dimensional Convex Hulls at Logarithmic Cost per Face.* Raimund Seidel, Cornell.

3:15 *Further Applications of Random Sampling to Computational Geometry.* Kenneth L. Clarkson, AT&T Bell Labs.

3:40 *Coffee Break*

4:00 *Probing Convex Polytopes.* D. Dobkin, Princeton, H. Edelsbrunner, U Illinois, Urbana, and C.K. Yap, NYU.

4:25 *Two Probabilistic Results on Rectilinear Steiner Trees.* Marshall W. Bern, UC Berkeley.

4:50 *To Compute the Volume is Difficult.* I. Barany and Z. Füredi, Hungarian Acad Sci, Budapest and Rutgers.

5:15 *Aspects of Information Flow in VLSI Circuits.* Alan Siegel, NYU.