



1985 ACM SIGACT Symposium on Theory of Computing

Providence, Rhode Island May 6-8, 1985

ADVANCE REGISTRATION FORM

Mail before **April 22, 1985** to:

STOC Registration
Prof. Robert Sedgewick
Dept of Computer Science
Brown University
Providence, RI 02912

Rates for advance registration:

Member ACM, SIGACT, or IEEE \$150 ____

Non-Member \$175 ____

Student (no lunches, no banquet) \$45 ____

Extra Banquet Tickets @ \$45 ____

Banquet Main Course (*select one*):

Lobster ____ File of Beef ____

Kosher ____ Vegetarian ____

Registration fee at the conference site is **\$200**
for all non-student registrants.

Name _____

Affiliation _____

Address _____

City _____ State _____ Zip _____

CSnet Address: _____

HOTEL RESERVATION FORM

Mail before **April 4, 1985** to:

ACM SIGACT Symposium
The Biltmore Plaza Hotel
Kennedy Plaza
Providence, RI 02903
Telephone: (401) 421-0700

Single \$65/day ____ Double \$72/day ____

Rates and availability not guaranteed after April 4th.

Arrival Date _____ Time _____

Departure Date _____ Time _____

For arrivals after **6 pm**, the hotel requests that you
guarantee your room by providing a major credit
card number or a check for one night's deposit.

Credit Card _____ Number _____

Name _____

Address _____

City _____ State _____ Zip _____

SIGACT MEMBERSHIP FORM

To become a member of SIGACT mail to:

Association for Computing Machinery
P.O. Box 9182
Church Street Station
New York, NY 10249

ACM Member ____ Non-Member ____

Number _____

For ACM members the dues are \$10, payable when
national membership is renewed. For non-members
dues are \$27, please make checks payable to ACM.

Name _____

Address _____

City _____ State _____ Zip _____

SYMPOSIUM PROCEEDINGS ORDER FORM

Proceedings may be ordered prepaid from:

ACM Order Department
P.O. Box 64145
Baltimore, MD 21264

ACM Member \$27 ____ Non-Member \$35 ____

ACM Order No. 508850

One copy of the 1985 proceedings is included in the
registration fee. Additional copies will be available
at the symposium for \$20 each.

Please send me ____ copies of the STOC 1985 pro-
ceedings. Amount enclosed ____ .

Name _____

Address _____

City _____ State _____ Zip _____

STOC 85 PROGRAM

SUNDAY, MAY 5

RECEPTION 8 - 11 Bacchante Room

MONDAY, MAY 6 MORNING SESSION
Grand Ballroom
Chairman: F. T. Leighton

- 9:00 **A Simple Parallel Algorithm for the Maximal Independent Set Problem**
M. Luby *University of Toronto*
- 9:20 **The Two-Processor Scheduling Problem Is in R-NC**
D. Kozen *IBM Research, Yorktown Heights*
U. V. Vazirani *Univ. of California, Berkeley*
V. V. Vazirani *Cornell University*
- 9:40 **Constructing a Perfect Matching Is in Random NC**
R. M. Karp *Univ. of California, Berkeley*
E. Upfal *Stanford University*
A. Wigderson *IBM Research, San Jose*
- 10:00 **A Parallel Algorithm for the Maximal Path Problem**
R. Anderson *Stanford University*
- 10:20 **The Parallel Complexity of Exponentiating Polynomials over Finite Fields**
F. E. Fich *University of Washington*
M. Tompa *University of Washington*

BREAK

- 11:00 **One, Two, Three ... Infinity: Lower Bounds for Parallel Computation**
F. E. Fich *University of Washington*
F. Meyer auf der Heide *IBM, San Jose*
P. Ragde *Univ. of California, Berkeley*
A. Wigderson *IBM Research, San Jose*
- 11:20 **Tradeoffs in Subpolynomial Delay VLSI Models**
A. Aggarwal *IBM Research, Yorktown Heights*
- 11:40 **Routing and Testing Routability of Planar VLSI Layouts**
C. E. Leiserson *Mass. Institute of Technology*
F. M. Maley *Mass. Institute of Technology*
- 12:00 **Provably Good Routing in Graphs: Regular Arrays**
P. Raghavan *Univ. of California, Berkeley*
C. D. Thompson *Univ. of California, Berkeley*

LUNCH 12:20 - 2:00 Garden Room

MONDAY, MAY 6 AFTERNOON SESSION
Grand Ballroom
Chairman: J. I. Munro

- 2:00 **Expanders Obtained from Affine Transformations**
S. Jimbo *Tohoku University*
A. Maruoka *Tohoku University*
- 2:20 **Expanders, Sorting in Rounds and Superconcentrators of Limited Depth**
N. Alon *Mass. Institute of Technology*
- 2:40 **White Pebbles Help**
R. Wilber *Carnegie-Mellon University*
- 3:00 **Dual Integer Linear Programs and the Relationship between Their Optima**
R. Aharoni *The Technion*
P. Erdős *Hungarian Academy of Sciences*
N. Linial *The Hebrew University of Jerusalem*
- 3:20 **Stable Prehension with Three Fingers**
B. S. Baker *AT&T Bell Laboratories*
S. J. Fortune *AT&T Bell Laboratories*
E. H. Grosse *AT&T Bell Laboratories*

BREAK

- 4:00 **Riemann Hypothesis and Finding Roots over Finite Fields**
M.-D. A. Huang *IBM, Yorktown Heights*
- 4:20 **Computing Sparse Greatest Common Divisors of Multivariate Polynomials**
E. Kaltofen *Rensselaer Polytechnic Institute*
- 4:40 **Efficient Parallel Solution of Linear Systems**
V. Pan *State Univ. of New York, Albany*
J. Reif *Harvard University*
- 5:00 **Polynomial Time Solutions of Fundamental Problems in Computational Algebra**
K. Friedl *Hungarian Academy of Sciences*
L. Rónyai *Hungarian Academy of Sciences*

BUSINESS MEETING 9:00 Grand Ballroom

TUESDAY, MAY 7 MORNING SESSION
Grand Ballroom
Chairman: H. N. Gabow

- 9:00 **A General Approach to d-Dimensional Geometric Problems**
A. C. Yao *Stanford University*
F. F. Yao *Xerox PARC*
- 9:20 **Space-Time Tradeoffs for Orthogonal Range Queries**
P. M. Vaidya *Univ. of Ill., Urbana-Champaign*
- 9:40 **A Probabilistic Algorithm for the Post Office Problem**
K. Clarkson *AT&T Bell Laboratories*
- 10:00 **A Linear Algorithm for Finding Dominators in Flow Graphs and Related Problems**
D. Harel *Intermetrics*
- 10:20 **Multicommodity Flows in Planar Undirected Graphs and Shortest Paths**
H. Suzuki *Tohoku University*
T. Nishizeki *Tohoku University*
N. Saito *Tohoku University*

BREAK

- 11:00 **The Effect of Updates in Binary Search Trees**
J. C. Culberson *University of Waterloo*
- 11:20 **Finding the Median Requires $2n$ Comparisons**
S. W. Bent *University of Wisconsin, Madison*
J. W. John *University of Wisconsin, Madison*
- 11:40 **Self-Organizing Sequential Search and Hilbert's Inequalities**
F.R.K. Chung *Bell Communications Research*
D.J. Hajela *Bell Communications Research*
P.D. Seymour *Bell Communications Research*
K. Truemper *University of Texas, Dallas*
- 12:00 **On the Expected Behavior of Disjoint Set Union Algorithms**
B. Bollobás *University of Cambridge*
I. Simon *University of Campinas*

LUNCH 12:20 - 1:45 Garden Room
BUSES LEAVE AT 2:00 FOR NEWPORT

TUESDAY, MAY 7 AFTERNOON SESSION
Grand Ballroom at the Sheraton-Islander
Chairman: P. L. Wolper

- 3:00 **Concurrent Dynamic Logic**
D. Peleg *Weizmann Institute*
- 3:20 **Improved Upper and Lower Bounds for Modal Logics of Programs**
M. Y. Vardi *Stanford University*
L. Stockmeyer *IBM Research, San Jose*
- 3:40 **Transition Systems, Infinitary Languages and the Semantics of Uniform Concurrency**
J. W. de Bakker *Free University of Amsterdam*
J.-J. Ch. Meyer *Free University of Amsterdam*
E.-R. Olderog *Christian-Albrechts University*
J. I. Zucker *State Univ. of New York, Buffalo*
- 4:00 **Provable Isomorphisms and Domain Equations in Models of Typed Languages**
K. B. Bruce *Williams College*
G. Longo *University of Pisa*

BREAK

- 4:40 **Equational Theories and Database Constraints**
S.S. Cosmadakis *Mass. Institute of Technology*
P.C. Kanellakis *Mass. Institute of Technology*
- 5:00 **The Polynomial-Time Hierarchy and Fragments of Bounded Arithmetic**
S. R. Buss *Princeton University*
- 5:20 **The Knowledge Complexity of Interactive Protocols**
S. Goldwasser *Mass. Institute of Technology*
S. Micali *Mass. Institute of Technology*
C. Rackoff *University of Toronto*
- 5:40 **An Internal Semantics for Modal Logic**
R. Fagin *IBM Research, San Jose*
M. Y. Vardi *Stanford University*

BUSES LEAVE AT 7:00 FOR ROSECLIFF
BANQUET AT ROSECLIFF 7:30 - 10:30

WEDNESDAY, MAY 8 MORNING SESSION
 Grand Ballroom
 Chairman: B. M. Chazelle

- 9:00 **An $O(\lg n)$ Expected Rounds Randomized Byzantine Generals Algorithm**
 G. Bracha *Cornell University*
- 9:20 **Fault Tolerance of Minimal Path Routings in a Network**
 P. Feldman *Harvard University*
- 9:40 **The Distributed Firing Squad Problem**
 B. A. Coan *Mass. Institute of Technology*
 D. Dolev *The Hebrew University of Jerusalem*
 C. Dwork *Mass. Institute of Technology*
 L. Stockmeyer *IBM Research, San Jose*
- 10:00 **Optimal Precision in the Presence of Uncertainty**
 J. Y. Halpern *IBM Research, San Jose*
 N. Megiddo *IBM Research, San Jose*
 A. A. Munshi *IBM Research, San Jose*

BREAK

- 10:40 **The Cryptographic Security of Truncated Linearly Related Variables**
 J. Hastad *Mass. Institute of Technology*
 A. Shamir *Weizmann Institute*
- 11:00 **One-Way Functions and Pseudorandom Generators**
 L. Levin *Boston University*
- 11:20 **Towards a Strong Communication Complexity Theory or Generating Quasi-Random Sequences from Two Communicating Slightly-Random Sources**
 U. V. Vazirani *Univ. of California, Berkeley*
- 11:40 **On the Stability of the Ethernet**
 J. Goodman *Courant Institute*
 A. G. Greenberg *AT&T Bell Laboratories*
 N. Madras *Courant Institute*
 P. March *Courant Institute*
- 12:00 **A Simple Three-Dimensional Real-Time Reliable Cellular Array**
 P. Gács *Boston University*
 J. Reif *Harvard University*

LUNCH 12:20 - 2:00 Garden Room

WEDNESDAY, MAY 8 AFTERNOON SESSION
 Grand Ballroom
 Chairman: C. H. Papadimitriou

- 2:00 **Doubly Lexical Orderings of Matrices**
 A. Lubiw *University of Toronto*
- 2:20 **The Complexity of the Equivalence Problem for Commutative Semigroups and Symmetric Vector Addition Systems**
 D. T. Huynh *Iowa State University*
- 2:40 **Fast Algorithms for n-Dimensional Restrictions of Hard Problems**
 F. Meyer auf der Heide *IBM, San Jose*
- 3:00 **Trading Group Theory for Randomness**
 L. Babai *Eötvös University*

BREAK

- 3:20 **An Algorithm for Finding Hamiltonian Cycles in Random Graphs**
 B. Bollobás *University of Cambridge*
 T. I. Fenner *Birkbeck College*
 A. M. Frieze *Queen Mary College*
- 3:40 **Compression and Ranking**
 A. Goldberg *GTE Laboratories*
 M. Sipser *Mass. Institute of Technology*
- 4:00 **The Complexity of Backtrack Searches**
 L. Carter *IBM Research, Yorktown Heights*
 L. Stockmeyer *IBM Research, San Jose*
 M. Wegman *IBM Research, Yorktown Heights*
- 4:20 **NP Is as Easy as Detecting Unique Solutions**
 L. G. Valiant *Harvard University*
 V. V. Vazirani *Cornell University*
- 4:40 **Are Search and Decision Problems Computationally Equivalent?**
 R. M. Karp *Univ. of California, Berkeley*
 E. Upfal *Stanford University*
 A. Wigderson *IBM Research, San Jose*

PROGRAM COMMITTEE:

B. M. Chazelle, S. A. Cook, H. N. Gabow, F. T. Leighton, N. A. Lynch, J. I. Munro, A. M. Odlyzko, N. J. Pippenger, C. H. Papadimitriou, and P. L. Wolper.

LOCATION

Technical sessions will be held at The Biltmore Plaza Hotel, in downtown Providence, RI, with the exception of the afternoon session on Tuesday May 7th. This session will be at the Sheraton-Islander in Newport. A block of rooms at The Biltmore has been reserved until April 4 at the rate of \$65 single and \$72 double occupancy. Please make reservations directly with the hotel, using the form in this brochure.

TRANSPORTATION

Taxi fare from Providence's Green Airport to the hotel (15 min) is about \$20. The Biltmore will send a van to pick up registered guests at the airport *free of charge*. Other airport limousine service is available to the hotel at a rate of \$5.75 per person. Direct bus service from Boston's Logan airport (75 min.) makes a direct flight to Boston often preferable to an inconvenient connection into Providence. The Bonanza bus stops at each terminal building at Logan every hour on the half hour 7:30-10:30 and costs \$9 (\$15 round-trip). The train and bus stations in Providence are one block from the hotel. (If you plan to arrive on Tuesday, please note that the busses to Newport leave right after lunch.)

CLIMATE

It has been said of many cities, but here it is true: "Providence, Rhode Island where it rains 2 days out of 3 except during the rainy season when it snows like a bitch." Temperatures in May are typically in the mid 50's. Rain's a possibility.

THINGS TO DO

The immediate vicinity of the Biltmore includes the Trinity Repertory Theatre, the recently renovated Arcade of interesting shops and restaurants, and the Civic Center (arena) offering rock concerts. The College Hill area, beginning a quarter mile east of the hotel, has many well preserved 18th and 17th century houses on or near Benefit St. The Brown University and R.I. School of Design campuses are here. Beyond lies the East Side neighborhood of 19th and 18th century houses whose yards should be a showcase of Spring. May will be designer crafts month with exhibits and open studios throughout R.I.

RECEPTION AND REGISTRATION

A reception will be held 8 - 11pm Sunday in the Bacchante Room at The Biltmore. On Sunday evening (5 - 10pm), registration will be on the mezzanine opposite the Bacchante Room. On Monday (all day), Tuesday and Wednesday (mornings) the registration desk will be located on the 17th floor, in the foyer to the Grand Ballroom.

BREAKFAST AND LUNCH

Continental breakfast can be purchased at the Cafe on the Terrace (third floor of the hotel); full breakfasts will be available at L'Apogée (rooftop restaurant). Lunches will be served in the Garden Room on the mezzanine at the Biltmore (get your elevator early).

EXCURSION AND BANQUET

After lunch on Tuesday (at approximately 2) buses will leave for Newport. The afternoon session will be at the Sheraton-Islander in Newport, and the banquet on Tuesday evening will be held at ROSECLIFF, one of the Newport mansions. Between the session and the banquet, there is ample time to walk around Newport. Of special interest are the shops and historic homes in the harbor area near the hotel, Touro Synagogue (the oldest Synagogue in the Americas), and Cliff Walk, a trail which goes between the mansions and the ocean. Also, transportation will be provided back to Providence for those not wishing to stay in Newport. **Note: Student registration does not include the banquet. Tickets may be purchased separately.**

FOR FURTHER INFORMATION

Conference Chair:

Prof. Robert Sedgewick
Dept of Computer Science
Brown University
Providence, RI 02912

Program Committee Chair:

Nicholas Pippenger
IBM Research Laboratory K51/281
5600 Cottle Road
San Jose, CA 95193

SIGACT Chair:

Prof. Zvi Galil
Dept of Computer Science
Columbia University
New York, NY 10027
