22nd ANNUAL ACM SYMPOSIUM ON
THEORY OF COMPUTING

Sponsored by ACM SIGACT
May 14-16, 1990

OMNI Inner Harbor Hotel
Baltimore, Maryland 21201
(301) 752-1100

LOCATION:

The conference will be held at the Omni Inner Harbor Hotel, Baltimore, which is conveniently located downtown in Charles Center, two blocks from the Convention Center and Festival Hall, directly across from the Baltimore Arena and connected to the Inner Harbor by overhead walkways. A block of rooms is being held for the symposium until the cut-off date, April 13, 1990. The symposium rate will be honored up to three days prior to the symposium. Reservations received after the block of rooms is full or after cut-off date are subject to space and rate availability. Check-in time is 3:00pm and check-out time is 12:00 noon.

Child Care: Child care service is available; please contact the concierge at (301) 385-6795.

TRANSPORTATION:

If you are flying you will arrive at Baltimore-Washington International (BWI) Airport which is about 15 miles south of downtown Baltimore. The BWI Shuttle (van) leaves the airport every 1/2 hour from outside the baggage claim area to the Omni at a one-way cost of $5.75 or round-trip cost of $10.00. A taxi to Omni costs about $13.00. (Flying to National Airport or Dulles Airport is not recommended; however, there is limo/bus service connecting to BWI.) USAir has been designated the official carrier of STOC '90. This special fare will offer a 40% discount off the standard round trip day coach fare for travel within the Continental U.S. From within Canada, USAir will allow 30% discount with no minimum stay requirement or a 35% discount with a 2 night minimum stay requirement. Additional restrictions apply for discounts in international travel. These fares are valid between May 11-19, 1990. To obtain this convention discount, you or your travel agent must call USAir 1-800-334-8644; from Canada 1-800-428-4322, Ext. 7702 and refer to Gold File No. 168555.

To reach the hotel by car going south on I-95: through Fort McHenry Tunnel, to 395 N (Exit 53) 1/2 mile to Pratt Street, turn right; two blocks to Charles Street, turn left; four blocks to Fayette Street, turn left; Omni is one block on the left. Going north on I-95; take exit 53, 395 N; 1/2 mile to Pratt Street, turn right; continue as above. Going south on I-83 from 695: Go to end of expressway; turn right at Fayette Street; Omni is 7 blocks on the left. Going north on Baltimore-Washington Parkway: becomes Russell Street; turn right onto Pratt Street; go 5 blocks and turn left onto Charles Street; 4 blocks and turn left onto Fayette Street; Omni is one block ahead on left.

CONFERENCE REGISTRATION:

There will be registration outside of the Grand Ballroom on Sunday, May 13, from 8:00 to 10:00 pm. From Monday to Wednesday there will be a registration and information desk set up outside the Grand Ballroom from 8:30 am to 5:00 pm.

REGISTRATION FORM

Category	Fee	Late Fee (after 4/13)
ACM or SIGACT Member	$230	$280
Neither ACM nor SIGACT Member	$280	$330
Author or Program Committee Member	$220	$270
Full-time Student	$ 60	$110

Specify your membership number _____

Registration fee includes: reception, 3 lunches, dinner cruise, coffee breaks, and the proceedings.

Student registration fee includes: reception, lunches, coffee breaks and proceedings, but not the dinner cruise.

Non-members can join SIGACT for free by checking the following box. (A portion of your registration fee covers your first year's dues.) Students can also get free ACM student membership.
☐ Please enroll me as a SIGACT member.
☐ I am a student; enroll me as an ACM student member also.

Additional dinner cruise tickets are $37 each.

Name: _____

Affiliation: _____

Address: _____

_____

Phone number: _____ E-mail: _____

Dietary Restrictions: ☐ Kosher   ☐ Vegetarian

Fill out the above registration form and mail with check to:

ACM STOC '90
c/o S. Rao Kosaraju
Department of Computer Science
The Johns Hopkins University
Baltimore, Maryland 21218

STOC '90
HOTEL RESERVATION FORM

May 14-16, 1990
Omni Inner Harbor Hotel
(301) 752-1100

Please circle the accommodation desired.

Single	$ 98
Double	$108
Triple	$124
Quadruple	$140

Name: _____

Sharing with: _____

Affiliation: _____

Address: _____

_____

Day time phone number: _____

Arrival Date: _____ Arrival Time: _____

Departure Date: _____ Departure Time: _____

Arrivals after 6:00 pm must guarantee first nights accommodations with check, money order, or major credit card.

Credit card company: _____

Card number: _____

Expiration date: _____

Signature: _____

Send this form to:

Omni Inner Harbor Hotel
101 W. Fayatte Street
Baltimore, Maryland 21201

Reservations received after the contracted block of rooms is full or after the cut-off date of **April 13, 1990** are subject to space and rate availability.

PROGRAM

All events except the dinner cruise are held at the Omni Hotel. Reception, all technical sessions, and the business meeting will be held in the **Grand Ballroom** on the first floor. During the day Mencken Room on the first floor is available for small meetings.

Sunday Evening, May 13, 1990

8:00-11:00 Reception

Monday, May 14, 1990

Session 1 8:30-10:10
Chaired by Ian Munro, University of Waterloo

8:30   *BLASTING Through the Information Theoretic Barrier with FUSION TREES* Michael L. Fredman, Rutgers, Bellcore and UCSD; Dan E. Willard, SUNY at Albany.

8:50   *On the Dynamic Finger Conjecture for Splay Trees* Richard Cole, Courant Institute.

9:10   *Unique Binary Search Tree Representations and Equality-testing of Sets and Sequences* Rajamani Sundar, Courant Institute; Robert E. Tarjan, Princeton University and AT&T Bell Laboratories.

9:30   *The Information Theory Bound is Tight for Selection in a Heap* Greg N. Frederickson, Purdue University.

9:50   *Lower Bounds for the Union-find and the Split-find Problem on Pointer Machines* J. A. La Poutr'e, University of Utrecht.

Break 10:10-10:30

Session 2 10:30-12:10
Chaired by Manfred Warmuth, University of California, Santa Cruz

10:30   *Optimal Randomized Algorithms for Local Sorting and Set-maxima* Wayne Goddard, Leonard Schulman, Massachusetts Institute of Technology; Valerie King, University of Toronto.

10:50   *On the Necessity of Occam Algorithms* Raymond Board, Leonard Pitt, University of Illinois, Urbana.

11:10   *Learning Boolean Functions in an Infinite Attribute Space* Avrim Blum, Massachusetts Institute of Technology.

11:30   *Self-testing and Self-correcting Programs with Applications to Numerical Problems* Manuel Blum, Ronitt Rubinfeld, University of California, Berkeley; Michael Luby, International Computer Science Institute.

11:50   *Coherent Functions and Program Checkers* Andrew C. Yao, Princeton University.

Lunch 12:10-1:30

Session 3 1:30–3:10
Chaired by Baruch Awerbuch, M.I.T.

1:30   *The Use of a Synchronizer Yields Maximum Computation Rate in Distributed Networks* Shimon Even, Technion; Sergio Rajsbaum, University of Texas at Dallas.

1:50   *The Wakeup Problem*   Michael J. Fischer, Gadi Taubenfeld, Yale University; Shlomo Moran, Technion; Steven Rudich, Carnegie Mellon University.

2:10   *How to Distribute a Dictionary in a Complete Network*   Martin Dietzfelbinger, Friedhelm Meyer auf der Heide, University of Paderborn.

2:30   *Computing with Unreliable Information*   Uriel Feige, David Peleg, Weizmann Institute of Science; Prabhakar Raghavan, IBM T.J. Watson Research Center; Eli Upfal, IBM Almaden Research Center and Weizmann.

2:50   *Efficient Robust Parallel Computations* Zvi M. Kedem, Courant Institute; Krishna Palem, IBM T.J. Watson Research Center; Paul Spirakis, Patras University and Courant.

Break 3:10–3:30

Session 4 3:30–5:10
Chaired by John Reif, Duke University

3:30   *On-line Algorithms for Path Selection in Nonblocking Networks*   Sanjeev Arora, Tom Leighton, Bruce Maggs, Massachusetts Institute of Technology.

3:50   *Optimal Disk I/O with Parallel Block Transfer*   Jeffrey S. Vitter, Brown University; Elizabeth A.M. Shriver, Bell Communications Research.

4:10   *Deterministic Sampling -- A New Technique for Fast Pattern Matching* Uzi Vishkin, University of Maryland and Tel Aviv University.

4:30   *Towards Overcoming the Transitive-closure Bottleneck: Efficient Parallel Algorithms for Planar Digraphs*   Ming-Yang Kao, Duke University; Philip N. Klein, Brown University.

4:50   *Deterministic Sorting in Nearly Logarithmic Time on the Hypercube and Related Computers*   Robert Cypher, IBM Almaden Research Center; C. Greg Plaxton, Massachusetts Institute of Technology.

8:30-11:00 SIGACT Business Meeting

Tuesday, May 15, 1990

Session 5 8:30-10:00
Chaired by Dexter Kozen, Cornell University

8:30   *Pseudorandom Generators for Space-bounded Computation*   Noam Nisan, Massachusetts Institute of Technology.

8:50   *Small-bias Probability Spaces: Efficient Constructions and Applications*   Joseph Naor, Stanford University; Moni Naor, IBM Almaden Research Center.

9:10   *The Analysis of Closed Hashing Under Limited Randomness*   Jeanette P. Schmidt, Polytechnic University, Brooklyn; Alan Siegel, Courant Institute.

9:30   *The Computational Complexity of Universal Hashing*   Yishay Mansour, Noam Nisan, Massachusetts Institute of Technology; Prasoon Tiwari, IBM T.J. Watson Research Center.

9:50   *Not All Keys Can Be Hashed in Constant Time*   Joseph Gil, Avi Wigderson, Hebrew University; Friedhelm Meyer auf der Heide, University of Paderborn.

Break 10:10–10:30

Session 6 10:30–12:10
Chaired by Janos Simon, University of Chicago

10:30   *A Technique for Lower Bounding the Cover Time*   David Zuckerman, University of California, Berkeley.

10:50   *Approximate Inclusion-exclusion*   Nati Linial, IBM Almaden Research Center, Stanford University, Hebrew University; Noam Nisan, Massachusetts Institute of Technology.

11:10   *Towards Optimal Simulations of Formulas by Bounded-width Programs*   Richard Cleve, International Computer Science Institute.

11:30   *Functions with Bounded Symmetric Communication Complexity and Circuits with mod m Gates*   Mario Szegedy, Hebrew University.

11:50   *Monotone Circuits for Matching Require Linear Depth*   Ran Raz, Avi Wigderson, Hebrew University.

Lunch 12:10–1:30

Session 7 1:30–3:30
Chaired by Bernard Chazelle, Princeton University

1:30   *A Separator Theorem for Graphs with an Excluded Minor and Its Applications*   Noga Alon, IBM Almaden Research Center; Paul Seymour, BellCore; Robin Thomas, Georgia Institute of Technology.

1:50   *Separators in Two and Three Dimensions*   Gary L. Miller, Carnegie Mellon University and University of Southern California; William Thurston, Princeton University.

2:10   *Leighton-Rao Might be Practical: A Faster Approximation Algorithm for Uniform Concurrent Flow*   Philip Klein, Brown University; Clifford Stein, Massachusetts Institute of Technology; Eva Tardos, Cornell University.

2:30   *Output-sensitive Construction of Voronoi Diagrams in R^d of Order 1 to k*   Ketan Mulmuley, University of Chicago.

2:50   *Solving Query-retrieval Problems by Compacting Voronoi Diagrams*   Alok Aggarwal, IBM T.J. Watson Research Center and Massachusetts Institute of Technology; Mark Hansen, Tom Leighton, MIT.

3:10   *Quantitative Steinitz's Theorems with Applications to Multifingered Grasping* David Kirkpatrick, University of British Columbia; Bud Mishra, Chee-Keng Yap, Courant Institute.

Break 3:30–3:50

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Session 8 3:50–5:10
Chaired by Harold Gabow, University of Colorado at Boulder

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3:50   *An Optimal Algorithm for On-line Bipartite Matching*   Richard M. Karp, University of California, Berkeley and International Computer Science Institute; Umesh V. Vazirani, University of California, Berkeley; Vijay V. Vazirani, Cornell University.

4:10   *Online Algorithms for Locating Checkpoints*   M. Bern, D. Greene, Xerox PARC; A. Raghunathan, Courant Institute; M. Sudan, University of California, Berkeley.

4:30   *Random Walks on Weighted Graphs, and Applications to On-Line Algorithms*   Don Coppersmith, Prabhakar Raghavan, Marc Snir, IBM T.J. Watson Research Center; Peter Doyle, AT&T Bell Laboratories.

4:50   *On the Power of Randomization in Online Algorithms*   A. Borodin, University of Toronto; R. Karp, University of California, Berkeley and International Computer Science Institute; G. Tardos, Eötvös University; A. Wigderson, Hebrew University.

6:15-10:00 Dinner cruise on Bay Lady, Harbor Place

Wednesday, May 16, 1990

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Session 9 8:30–10:10
Chaired by Oded Goldreich, Technion

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8:30   *One-way Functions are Necessary and Sufficient for Secure Signatures*   John Rompel, Massachusetts Institute of Technology.

8:50   *Pseudo-Random Generators under Uniform Assumptions*   Johan Håstad, Royal Institute of Technology, Stockholm.

9:10   *The Discrete Log is Very Discreet*   A.W. Schrift, A. Shamir, Weizmann Institute of Science.

9:30   *Witness Indistinguishability and Witness Hiding*   U. Feige, A. Shamir, Weizmann Institute of Science.

9:50   *Public-key Cryptosystems Provably Secure Against Chosen Ciphertext Attacks,*   Moni Naor, IBM Almaden Research Center; Moti Yung, IBM T.J. Watson Research Center.

Break 10:10–10:30

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Session 10 10:30–12:10
Chaired by Ronald Fagin, IBM Almaden

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10:30   *On the Complexity of Local Search*   Christos H. Papadimitriou, University of California, San Diego; Alejandro A. Schäffer, Rice University; Mihalis Yannakakis, AT&T Bell Laboratories.

10:50   *Quantifiers and Approximation* Alessandro Panconesi, Desh Ranjan, Cornell University.

11:10   *On Polynomial Bounded Truth-Table Reducibility of NP Sets to Sparse Sets* Mitsunori Ogiwara, Osamu Watanabe, Tokyo Institute of Technology.

11:30   *The Undecidability of the Semi-unification Problem* A.J. Kfoury, Boston University; J. Tiuryn, P. Urzyczyn, University of Warsaw.

11:50   *Decidability of the Multiplicity Equivalence of Multitape Finite Automata* T. Harju, J. Karhumäki, University of Turku.

Lunch 12:10–1:30

Session 11 1:30–2:50
Chaired by Oded Goldreich, Technion

1:30   *Perfect Zero-knowledge in Constant Rounds* Mihir Bellare, Silvio Micali, Rafail Ostrovsky, Massachusetts Institute of Technology.

1:50   *The (True) Complexity of Statistical Zero Knowledge* Mihir Bellare, Silvio Micali, Rafail Ostrovsky, Massachusetts Institute of Technology.

2:10   *Cryptographically Secure Distributed Computation in a Constant Number of Rounds* Donald Beaver, Harvard University; Silvio Micali, Phillip Rogaway, Massachusetts Institute of Technology.

2:30   *Efficient Computation on an Oblivious RAM* Rafail Ostrovsky, Massachusetts Institute of Technology.

Break 2:50–3:10

Session 12 3:10–4:50
Chaired by Fan R. K. Chung, Bellcore

3:10   *Computing in Quotient Groups* William M. Kantor, Eugene M. Luks, University of Oregon.

3:30   *On the Decidability of Sparse Univariate Polynomial Interpolation* Allan Borodin, University of Toronto; Prasoon Tiwari, IBM T.J. Watson Research Center.

3:50   *Small Degree Primitive Roots over Finite Fields* Victor Shoup, AT&T Bell Laboratories.

4:10   *On the Complexity of Computing a Gröbner Basis for the Radical of a Zero Dimensional Ideal* Y. N. Lakshman, Rensselaer Polytechnic Institute.

4:30   *The Number Field Sieve* A.K. Lenstra, Bellcore; H.W. Lenstra, Jr., University of California, Berkeley; M.S. Manasse, DEC SRC; J.M. Pollard, Tidmarsh, Reading.