

FOCS '95

The 36th Annual
IEEE Conference on
Foundations of Computer Science

October 22–25, 1995
Milwaukee, Wisconsin

Sponsored by
The IEEE Computer Society
In cooperation with ACM SIGACT

Registration for FOCS '95

The registration fees for FOCS '95 are listed below. To qualify for the early registration fee, your registration application must be postmarked by **Friday, September 22**. Refund requests will be honored until October 6. The non-student registration fee includes the Saturday night reception, the Sunday night business meeting, the Monday night banquet, coffee breaks and lunches, and a copy of the proceedings. The student fee includes all of the above except the banquet.

Please fill out the form below and send it, along with a check or money order (in US \$, drawn on a US bank) made payable to "IEEE - FOCS '95 Symposium," to:

Aditi Dhagat
Attn: FOCS Registration
Dept. of EECS
University of Wisconsin-Milwaukee
P. O. Box 784
Milwaukee, WI 53201

Name _____

Affiliation _____

Street Address _____

City _____ State _____

ZIP or Country & Postal code _____

E-mail _____

Phone _____

Please circle one category below and fill in your membership number if appropriate: # _____

Category	Fee	After 10/20
ACM or SIGACT member	285	340
IEEE or EATCS member	285	340
Author or Program Committee	285	340
Student	80	100
Other	340	425
Extra Banquet Tickets ____ × \$50 each =		_____

Total registration _____

Machtey Fund Contributions (\$5 suggested) _____

(Make separate check to Machtey Award Fund)

Dietary restrictions: Kosher____Vegetarian____None____

T-shirt size (Small, Medium, Large, X-Large) _____

Hotel Reservations

The conference will be held at the historical Pfister Hotel in Milwaukee. The rates for IEEE FOCS '95 are posted below and apply from Thursday, October 19 through Friday, October 27, pre and post days on a space availability basis. Checkin time is 2:00 pm and checkout is noon. Please advise the hotel of late arrival. Reservations should be made by **Wednesday, September 20**. Reservations made after that will be accepted on a rate and space availability basis. Refer to IEEE FOCS '95 when making reservations to obtain the rates listed. To make your reservations by phone, call 1-800-558-2222 or 414-273-8222 or fax 414-273-5025. To make reservations by mail or fax, fill out the form below and send it to the address below. A deposit in the form of a check or money order for one night's stay, or credit card information and your return phone and/or fax must be included. When filling out the form, make sure that you list your name exactly as it appears on your check or credit card. The following credit cards are accepted: American Express, Diners Club, Visa, Mastercard, and Discover. Deposits will be refunded if the hotel is notified at least 72 hours before your specified arrival.

The Pfister Hotel
Attn: IEEE FOCS '95 Reservations
424 East Wisconsin Avenue
Milwaukee, WI 53202

Please check one:

Single \$100 _____ Double \$120 _____

Arrival Date: _____ Departure Date: _____

Please fill out:

Name _____

Address _____

Fax: _____ Phone _____

Sharing room with _____

If paying for deposit by credit card please complete:

Credit Card Type _____

Credit Card Number _____

Expiration Date _____

I authorize the Pfister Hotel to charge the above account for the amount equal to one night's stay as deposit.

Signature _____

SUNDAY, OCTOBER 22, 1995

CONFERENCE IN HONOUR OF RICHARD KARP'S 60th BIRTHDAY

- 9:10** *Introduction.*
- 9:10** *Derandomizing Approximation Algorithms for Hard Enumeration Problems.*
Michael Luby.
- 9:55** *Las-Vegas Simulations for Asynchronous Parallel Computations.*
Michael Rabin.

Break: 10:35 am – 11:00 am

- 11:00** *The Queue-Read, Queue-Write PRAM Model: Accounting for Contention in Parallel Algorithms.*
Vijaya Ramachandran.
- 11:40** *Modeling Communication in Parallel Query Optimization.*
Rajeev Motwani.

Lunch: 12:40 pm – 1:35 pm

- 1:35** *NP-completeness: A Retrospective.*
Christos Papadimitriou.
- 2:15** *Whistling Pigs & Flying Horses - A Survey.*
Avi Wigderson.

Break: 2:55 pm – 3:20 pm

- 2:15** *Linear Programming over an ordered abelian group.*
Alan Hoffman.
- 4:00** **End of Sunday's Special Conference**

This special conference sponsored by ACM SIGACT, IEEE Computer Society and IBM Almaden and T.J. Watson Research Centers.

RECEPTION: 8:00 pm – 11:00 pm, Pfister Hotel

MONDAY, OCTOBER 23, 1995

Session 1: 9:00 – 10:00

Invited Talk — Chair: Steve Cook

Cognitive Computation.

Leslie Valiant, Harvard University

Break: 10:00 am – 10:20 am

Session 2a – chair László Babai

10:20 *Spectral Methods for Matrix Rigidity with Applications to Size-Depth Tradeoffs and Communication Complexity.*

Satyanarayana V. Lokam.

10:45 *Lower bounds for arithmetic circuits via partial derivatives.*

Noam Nisan, Avi Wigderson.

11:10 *Pseudorandom Generators, Measure Theory, and Natural Proofs.*

Kenneth W. Regan, D. Sivakumar, Jin-yi Cai.

11:35 *Counting bottlenecks to show monotone $P \neq NP$.*

Armin Haken.

12:00 *Private Information Retrieval.*

Benny Chor, Oded Goldreich, Eyal Kushilevitz, Madhu Sudan.

Session 2b – chair Serge Plotkin

10:20 *Disjoint paths in densely embedded graphs.*

Jon Kleinberg, Eva Tardos.

10:45 *Divide-and-conquer approximation algorithms via spreading metrics.*

Guy Even, Joseph Naor, Satish Rao, Baruch Schieber.

11:10 *The Loading Time Scheduling Problem.*

Randeep Bhatia, Samir Khuller, Joseph Naor.

11:35 *Approximability of flow shop-scheduling.*

Leslie Hall.

12:00 *A representation of cuts within $6/5$ times the edge connectivity with applications.*

Andras A. Benczur.

Lunch: 12:25 pm – 2:00 pm

Session 3a – chair Nicholas Pippenger

2:00 *Contention Resolution with Bounded Delay.*

Mike Paterson, Aravind Srinivasan.

2:25 *Tight Bounds for a Distributed Selection Game with Applications to Fixed-Connection Machines.*
C. Greg Plaxton.

2:50 *Efficient Parallel Solution of Sparse Eigenvalue and Eigenvector Problems.*

John H. Reif.

Session 3b – chair Umesh Vazirani

2:00 *Approximating the Volume of Definable Sets.*
Pascal Koiran.

2:25 *An Optimal Algorithm for Monte Carlo Estimation.*

Paul Dagum, Richard Karp, Michael Luby, Sheldon Ross.

2:50 *Markov chain algorithms for planar lattice structures.*

Michael Luby, Dana Randall, Alistair Sinclair.

Break: 3:15 pm – 3:30 pm

Session 4a – chair Steven Rudich

3:30 *Derandomizing Semidefinite Programming Based Approximation Algorithms.*

S. Mahajan, H. Ramesh.

3:55 *Synthesizers and Their Application.*

Moni Naor, Omer Reingold.

4:20 *Splitters and near-optimal derandomization.*

Moni Naor, Leonard J. Schulman, Aravind Srinivasan.

Session 4b – chair Edith Cohen

3:30 *A Unified Analysis of Paging and Caching.*

Eric Torng.

3:55 *Application-Controlled Paging for a Shared Cache.*

Rakesh Barve, Edward F. Grove, Jeffrey Scott Vitter.

4:20 *Speed is as powerful as clairvoyance.*

K. Pruhs, B. Kalyanasundaram.

8:00 Business Meeting

TUESDAY, OCTOBER 24, 1995

Session 5: 9:00 – 10:00

Invited Talk — Chair: Andrew C-C Yao

Perspectives on Database Theory.

Mihalis Yannakakis, AT&T Bell Labs

Break: 10:00 am – 10:30 am

Session 6a – chair Pankaj Agarwal

10:30 *Algebraic Decompositions of Non-Convex Polyhedra.*

Herbert Edelsbrunner.

10:55 *Improved Lower Bound on Testing Membership to a Polyhedron by Algebraic Decision Trees.*

Dima Grigoriev, Marek Karpinski, Nicolai Vorobjov.

11:20 *Optimal Algorithms for Curves on Surfaces.*

Tamal K. Dey, Sumanta Guha.

11:45 *Integral Geometry of higher-dimensional polytopes and the average case in Combinatorial Optimization.*

Alexander Barvinok.

12:10 *Finding points on curves over finite fields.*

J. von zur Gathen, I. E. Shparlinski.

Session 6b – chair John Canny

10:30 *Learning polynomials with queries: the highly noisy case.*

Oded Goldreich, Ronitt Rubinfeld, Madhu Sudan.

10:55 *Simple Learning Algorithms for Decision Trees and Multivariate Polynomials.*

Nader Bshouty, Yishay Mansour.

11:20 *Tracking the best disjunction.*

Peter Auer, Manfred K. Warmuth.

11:45 *Gambling in a rigged casino: the adversarial multi-arm bandit problem.*

Peter Auer, Nicolo Cesa-Bianchi, Yoav Freund, Robert E. Schapire.

12:10 *Efficient Algorithms for Learning to Play Repeated Games Against Computationally Bounded Adversaries.*

Yoav Freund, Michael Kearns, Yishay Mansour, Dana Ron, Ronitt Rubinfeld, Robert E. Schapire.

Lunch: 12:35 pm – 2:00 pm

Session 7a – chair Uri Feige

2:00 *$RSPACE(S) \subseteq DSPACE(S^{3/2})$.*

Michael Saks, Shiyu Zhou.

2:25 *Sparse P-hard sets yield space-efficient algorithms.*

Mitsunori Ogihara.

2:50 *The Resolution of a Hartmanis Conjecture.*

Jin-Yi Cai, D. Sivakumar.

Session 7b – chair Martin Dyer

2:00 *A Scheduling Model for Reduced CPU Energy.*

Frances Yao, Alan Demers, Scott Shenker.

2:25 *Load Balancing in the Euclidean Norm.*

E. Grove, P. Krishnan, M. Kao, J. Vitter.

2:50 *Competitive Access Time via Dynamic Storage Rearrangement.*

Amos Fiat, Yishay Mansour, Adi Rosen, Orli Waarts.

Break: 3:15 pm – 3:30 pm

Session 8a – chair Uri Feige

3:30 *Reductions, Codes, PCPs, and Inapproximability.*

Sanjeev Arora.

3:55 *Improved Hardness Results for Approximating the Chromatic Number.*

Martin Fürer.

4:20 *Free Bits and Non-Approximability.*

Mihir Bellare, Oded Goldreich, Madhu Sudan.

4:45 *Linearity Testing in Characteristic Two.*

Mihir Bellare, Don Coppersmith, Johan Hastad, Marcos Kiwi, Madhu Sudan.

Session 8b – chair Edith Cohen

3:30 *3-Coloring in time $O(1.3446^n)$: a no-MIS algorithm.*

Richard Beigel, David Eppstein.

3:55 *Computing simulations on finite and infinite graphs.*

Monika R. Henzinger, Thomas A. Henzinger, Peter W. Kopke.

4:20 *Minimum Coloring Random and Semi-Random Graphs in Polynomial Expected Time.*

C.R. Subramanian.

4:45 *Improved Algorithms and Analysis for Secretary Problems and Generalizations.*

Miklos Ajtai, Nimrod Megiddo, Orli Waarts.