

Committees

PROGRAM COMMITTEE

Scott Baden
University of California at San Diego

Gianfranco Ciardo
College of William and Mary

Chita Das
Pennsylvania State University

Peter Danzig
University of Southern California

David DeWitt
University of Wisconsin

Carla Ellis
Duke University

Alois Ferscha
University of Vienna

Richard Fujimoto
Georgia Institute of Technology

Bruno Gaujal
INRIA

Ed Gehringer
North Carolina State University

Robert Geist
Clemson University

Garth Gibson
Carnegie Mellon University

Albert Greenberg
AT&T Bell Laboratories

Anoop Gupta
Stanford University

Peter Harrison
Imperial College

Philip Heidelberger
IBM Research

Graham Horton
University of Erlangen

Robert Jump
Rice University

Harry Jordan
University of Colorado

David Kotz
Dartmouth College

Will Leland
Bell Communications Research

Scott Leutenegger
University of Denver

Miron Livny
University of Wisconsin

Dick Muntz
University of California at Los Angeles

Vernon Rego
Purdue University

Joel Saltz
University of Maryland

Sanjeev Setia
George Mason University

Ken Sevcik
University of Toronto

Rahul Simha
College of William and Mary

Billy Stewart
North Carolina State University

Mark Squillante
IBM Research

Xian-He Sun
Louisiana State University

Don Towsley
University of Massachusetts

Kishor Trivedi
Duke University

David Wood
University of Wisconsin

28th Annual ACM Symposium on Theory of Computing (STOC)

Plenary Invited Speaker
Daily
8:00 — 9:00 am
Room: Salon F
Grand Ballroom

Registration for the 28th Annual ACM Symposium on Theory of Computing includes a reception, SIGACT business meeting, an evening excursion, two lunches, continental breakfasts, coffee breaks, and conference proceedings. Student registration fee includes all of the above except the evening excursion. The conference is sponsored by the ACM Special Interest Group on Algorithms and Computation Theory (SIGACT).

Sessions

R

Reception

Tuesday, May 21, 1996
7:00 pm – 10:00 pm

S1
A

Session 1A

Wednesday, May 22, 1996
9:20 am – 10:55 am
Jin-Yi Cai, Chair
SUNY Buffalo

9:20 am
The Linear-Array Conjecture of Communication Complexity is False

Eyal Kushilevitz
Technion
Nathan Linial
Hebrew Institute
Rafail Ostrovsky
Bellcore

9:45 am
Testing of the Long Code and Hardness for Clique

Johan Håstad
Royal Institute of Technology

10:10 am
The Space Complexity of Approximating the Frequency Moments

Noga Alon
Tel Aviv Univ.
Yossi Matias and Mario Szegedy
AT&T Bell Laboratories

10:35 am
Deterministic Restrictions in Circuit Complexity

Shiva Chaudhuri
Max-Planck Institut für Informatik
Jaikumar Radhakrishnan
Tata Institute of Fundamental Research

S1
B

Session 1B

Wednesday, May 22, 1996
9:20 am – 10:55 am

Monika R. Henzinger, Chair
Cornell

9:20 am
Fast Algorithms for k-Node Connectivity Augmentation and Related Problems

Joseph Cheriyan
Univ. of Waterloo

Ramakrishna Thurimella
Univ. of Denver

9:45 am
Approximating s-t Minimum Cuts in $O(n^2)$ time

Andras A. Benczur and David R. Karger
MIT

10:10 am
Minimum Cuts in Near-Linear Time

David R. Karger
MIT

10:35 am
Deterministic $\tilde{O}(nm)$ Time Edge-Splitting in Undirected Graphs

Hiroshi Nagamochi and Toshihide Ibaraki
Kyoto Univ.

10:55 am Coffee Break

S2
A

Session 2A

Wednesday, May 22, 1996
11:25 am – 12:25 pm

Jin-Yi Cai, Chair
SUNY Buffalo

11:25 am
Evaluation may be Easier than Generation

Mori Naor
Weizmann Institute

11:50 am
The PL Hierarchy Collapses

Mitsunori Ogihara
Univ. of Rochester

12:15 pm
Convergence Complexity of Optimistic Rate Based Flow Control Algorithms

Yehuda Afek, Yishay Mansour and Zvi Ostfeld
Tel Aviv Univ.

S2
B

Session 2B

Wednesday, May 22, 1996
11:25 am – 12:35 pm

ShangHua Teng, Chair
Univ. of Minnesota

11:25 am
Generating Hard Instances of Lattice Problems

M. Ajtai
IBM Almaden

Sessions

11:50 am

Translational Polygon Containment and Minimal Enclosure Using Linear Programming Based RestrictionVictor J. Milenkovic
Univ. of Miami

12:15 pm

Pushing Disks Together—the Continuous-motion CaseMarshall Bern
Xerox PARC
Amit Sahai
UC Berkeley

L

12:35 pm – 2:00 pm
Luncheon

S3

A

Session 3AWednesday, May 22, 1996
2:00 pm – 3:35 pmRonitt Rubinfeld, Chair
Cornell/MIT

2:00 pm

Learning Sat-k-DNF Formulas from Membership QueriesF. Bergadano
Università di Torino
D. Catalano
Università di Catania
S. Varricchio
Università di L' Aquila

2:25 pm

Towards the learnability of DNF formulaeNader H. Bshouty
Univ. of Calgary

2:50 pm

Noise-tolerant Learning Near the Information-theoretic BoundN. Cesa-Bianchi
Università di Milano
E. Dichterman
Technion
P. Fischer and H.U. Simon
Universität Dortmund

3:15 pm

Noise-tolerant Distribution-Free Learning of General Geometric ConceptsNader Bshouty
Calgary
Sally Goldman, David Mathias and Subhash Suri
Washington University
Hisao Tamaki
IBM Tokyo

S3

B

Session 3BWednesday, May 22, 1996
2:00 pm – 3:35 pmErich Kaltofen, Chair
RPI

2:00 pm

The Complexity of Matrix Rank and Feasible Systems of Linear EquationsE. Allender
Rutgers
R. Beals
DIMACS, Rutgers
M. Ogiwara
Univ. of Rochester

2:25 am

Computing Roadmaps of Semi-algebraic SetsSaugata Basu and Richard Pollack
Courant Institute
Marie-Françoise Roy
IRMAR, Université de Rennes

2:50 pm

Using the Groebner Basis Algorithm to find Proofs of UnsatisfiabilityMatthew Clegg
UCSD
Jeffery Edmonds
York Univ.
Russell Impagliazzo
UCSD

3:15 pm

Sparsity Considerations in Dixon ResultantsDeepak Kapur and Tushar Saxena
SUNY Albany

3:35 pm Coffee Break

S4

A

Session 4AWednesday, May 22, 1996
4:05 pm – 5:40 pmMonika R. Henzinger, Chair
Cornell

4:05 pm

Efficient 3-d Range Searching in External MemoryDarren Erick Vengroff
Brown, Duke
Jeffery Scott Vitter
Duke

4:30 pm

Purely Functional Representations of Catenable Sorted ListsHaim Kaplan and Robert E. Tarjan
Princeton

4:55 pm

A Fast Quantum Mechanical Algorithm for Database SearchLov K. Grover
AT&T Bell Laboratories

S4

B

Session 4BWednesday, May 22, 1996
4:05 pm – 5:40 pmRonitt Rubinfeld, Chair
Cornell/MIT

4:05 pm

Constructing Evolutionary Trees in the Presence of Polymorphic CharactersMaria Bonet, Tandy J. Warnow and Shibu Yooseph
Univ. of Pennsylvania
Cynthia Phillips
Sandia National Labs

4:30 pm

Efficient Algorithms for Inverting EvolutionMartin Farach
Rutgers
SamPATH Kannan
Univ. of Pennsylvania

S5

A

Session 5AThursday, May 23, 1996
9:20 am – 10:55 amMaurice Herlihy, Chair
Brown

9:20 am

Modular Competitiveness for Distributed AlgorithmsJames Aspnes
Yale
Orli Waarts
UC Berkeley

9:45 am

Communication-Efficient Parallel SortingMichael T. Goodrich
Johns Hopkins

10:10 am

Automatic Methods for Hiding Latency in High Bandwidth NetworksMatthew Andrews, Tom Leighton and Lisa Zhang
MIT
P. Takis Metaxas
Wellesley

10:35 am

An $O(n \log n)$ -Size Fault-Tolerant Sorting NetworkYuan Ma
Stanford

S5

B

Session 5BThursday, May 23, 1996
9:20 am – 10:55 amAlistair Sinclair, Chair
UC Berkeley

9:20 am

On Extracting Randomness From Weak Random SourcesAmnon Ta-Shma
Hebrew Univ.

9:45 am

Randomness-Optimal Sampling, Extractors, and Constructive Leader ElectionDavid Zuckermann
Univ. of Texas, Austin

10:10 am

Generating Random Spanning Trees More Quickly than the Cover TimeDavid Bruce Wilson
MIT

10:35 am

Towards an Analysis of Local Optimization AlgorithmsTassos Dimitriou and Russell Impagliazzo
UCSD

10:55 am Coffee Break

S6

Knuth Prize LectureThursday, May 23, 1996
11:30 am – 12:30 pmAndrew C.-C. Yao
Princeton

L

12:30 pm – 2:00 pm
Luncheon

S7

A

Session 7AThursday, May 23, 1996
2:00 pm – 3:35 pmMichel Goemans, Chair
MIT

Sessions

2:00 pm

A Threshold of $\ln n$ for Approximating Set Cover
Uriel Feige
Weizmann Institute

2:25 pm

Fast Algorithms for Parametric Scheduling come from Extensions to Parametric Maximum Flow
S. Thomas McCormick
UBC

2:50 pm

Towards a Syntactic Characterization of ptas
Sanjeev Khanna and Rajeev Motwani
Stanford

3:15 pm

Efficient Approximation Algorithms for MAX-CUT and COLORING
Philip Klein and Hsueh-I Lu
Brown

S7
B

Session 7B

Thursday, May 23, 1996
2:00 pm – 3:35 pm
Abhiram Ranade, Chair
UC Berkeley

2:00 pm

Dynamic Deflection Routing on Arrays
Andrei Border
Digital Systems Research
Eli Upfal
IBM Almaden

2:25 pm

Universal Algorithms for Store-and-Forward and Wormhole Routing
Robert Cypher
Johns Hopkins
Friedhelm Meyer auf der Heide,
Christian Scheideler and Berthold Vocking
Univ. of Paderborn

2:50 pm

Distributed Packet Switching in Arbitrary Networks
Yuval Rabini and Eva Tardos
Cornell

3:15 pm

Adversarial Queueing Theory
Allan Borodin
Univ. of Toronto
Jon Kleinberg
MIT

Parbhakar Raghavan
IBM Almaden
Madhu Sudan and David P. Williamson
IBM T.J. Watson

3:35 pm Coffee Break

S8
A

Session 8A

Thursday, May 23, 1996
4:05 pm – 5:40 pm
Gary L. Miller, Chair
CMU

4:05 pm

Computing Betti Numbers via Combinatorial Laplacians
Joel Friedman
UBC

4:30 pm

Embedding Graphs in an Arbitrary Surface in Linear Time
Bojan Mohar
University of Ljubljana

4:55 pm

Algorithms for Manifolds and Simplicial Complexes in Euclidean 3-Space
Tamal K. Dey
I.I.T. Kharagpur
Sumanta Guha
Univ. of Wisconsin

5:20 pm

On Bounding the Betti Numbers and Computing the Euler Characteristic of Semi-algebraic Sets
Saugata Basu
Courant Institute

S8
B

Session 8B

Thursday, May 23, 1996
4:05 pm – 5:40 pm
Vijay Vazirani, Chair
Georgia Tech

4:05 pm

Approximability and Nonapproximability Results for Minimizing Total Flow Time on a Single Machine

Hans Kellerer
Universität Graz
Thomas Tautenhahn
Universität Magdeburg
Gerhard J. Woeginger
Eindhoven Univ.

4:30 pm

How Good is the Goemans-Williamson MAX CUT Algorithm?
Howard J. Karloff
Georgia Tech

4:55 pm

A Tight Analysis of the Greedy Algorithm for Set Cover
Petr Slavik
SUNY Buffalo

5:20 pm

A Constant-factor Approximation Algorithm for the k-MST Problem
Avrim Blum, R. Ravi and Santosh Vempala
CMU

M

SIGACT Business Meeting

Thursday, May 23, 1996
9:00 pm

S9
A

Session 9A

Friday, May 24, 1996
9:20 am – 10:30 am
Thomas Lengauer, Chair
GMD

9:20 am

Reconstructing a Three-Dimensional Model with Arbitrary Errors
Bonnie Berger, Jon Kleinberg and Tom Leighton
MIT

9:45 am

On the Boosting Ability of Top-Down Decision Tree Learning Algorithms
Michael Kearns
AT&T Bell Laboratories
Yishay Mansour
Tel Aviv Univ.

10:10 am

Robot Navigation with Range Queries
Dana Angluin, Jeffery Westbrook and Wenhong Zhu
Yale

S9
B

Session 9B

Friday, May 24, 1996
9:20 am – 10:30 am
Joe Kilian, Chair
NECI

9:20 am

Correlated Pseudorandomness and the Complexity of Private Computations
Donald Beaver
Transarc Corp.

9:45 am

Digital Signets for Protection of Digital Information
Cynthia Dwork and Jeffery Lotspiech
IBM Almaden
Moni Naor
Weizmann Institute

10:10 am

Witness-Based Cryptographic Program Checking and Robust Function Sharing
Yair Frankel and Peter Gemmell
Sandia National Labs
Moti Yung
IBM T.J. Watson

10:30 am Coffee Break

S10
A

Session 10A

Friday, May 24, 1996
11:00 am – 12:20 pm
Serge Plotkin, Chair
Stanford

11:00 am

Non-Expansive Hashing
Nathan Linial and Ori Sasson
Hebrew Univ.

11:25 am

Making Commitments in the Face of Uncertainty: How to Pick a Winner Almost Every Time
Baruch Awerbuch
Johns Hopkins
Yossi Azar and Amos Fiat
Tel Aviv Univ.
Tom Leighton
MIT

11:50 am

Lower Bounds for On-line Graph Problems with Application to On-Line Circuit and Optical Routing
Yair Bartal
UC Berkeley
Amos Fiat
Tel Aviv Univ.
Stefano Leonardi
Università di Roma

Sessions

**S10
B**

Session 10B

Friday, May 24, 1996
11:00 am – 12:10 pm

Noam Nisan, Chair
Hebrew Univ.

11:00 am

Characterizing Linear Size Circuits in Terms of Privacy

Eyal Kushilevitz
Technion
Rafail Ostrovsky
Bellcore
Adi Rosen
Tel Aviv Univ.

11:25 am

Nondeterministic Communication with a Limited Number of Advice Bits

Juraj Hromkovic
Universität zu Kiel
Georg Schnitger
Johann Wolfgang Goethe-Universität

11:50 am

Public vs. Private Coin Flips in One Round Communication Games

Ilan Newman
Haifa Univ.
Mario Szegedy
AT&T Bell Laboratories

**S11
A**

Session 11A

Friday, May 24, 1996
2:00 pm – 3:35 pm

Alan Frieze, Chair
CMU

2:00 pm

Efficiently Four-coloring Planar Graphs

Neil Robertson and Daniel P. Sanders
Ohio State
Paul Seymour
Bellcore
Robin Thomas
Georgia Tech

2:25 pm

The Angle-TSP Problem and the Weighted Linear Matroid Parity Problem

A. Aggarwal, D. Coppersmith and B. Schieber
IBM T.J. Watson
S. Khanna and R. Motwani
Stanford

2:50 pm

Faster Isomorphism Testing of Strongly Regular Graphs

Daniel A. Spielman
UC Berkeley

3:15 pm

Node-Disjoint Paths on the Mesh and a New Trade-off in VLSI Layout

Alok Aggarwal and David P. Williamson
IBM Research
Jon M. Kleinberg
MIT

**S11
B**

Session 11B

Friday, May 24, 1996
2:00 pm – 3:35 pm

Alistair Sinclair, Chair
UC Berkeley

2:00 pm

Modular 2 Counting Formulas Are Hard for Cutting Planes Proofs

Xudong Fu
Univ. of Toronto

2:25 pm

Extremal Bipartite Graphs and Superpolynomial Lower Bounds for Monotone Span Programs

Laszlo Babai
Univ. of Chicago
Anna Gal
Institute for Advanced Study
Janos Kollar
Univ. of Utah
Lajos Ronyai
Hungarian Academy of Sciences
Tibor Szabo
Ohio State
Avi Wigderson
Hebrew Univ.

2:50 pm

A Lower Bound for Randomized Algebraic Decision Trees

Dima Grigoriev
Penn State
Marek Karpinski and Roman Smolensky
Univ. of Bonn
Friedhelm Meyer auf der Heide
Univ. of Paderborn

3:15 pm

Lower Bounds for Noisy Boolean Decision Trees

William Evans and Nicholas Pippenger
UBC

3:35 pm Coffee Break

S12

Session 12

Friday, May 24, 1996
4:05 pm – 5:40 pm

Sanjeev Arora, Chair
Princeton

4:05 pm

Adaptive Zero Knowledge and Computational Equivocation

Donald Beaver
Transarc Corp.

4:30 pm

Adaptively Secure Multiparty Computation

Ran Canetti
MIT
Uri Feige, Oded Goldreich and Moni Naor
Weizmann Institute

4:55 pm

On Relationships between Statistical Zero-Knowledge Proofs

Tatsuaki Okamoto
NTT Labs.

Committees

David S. Johnson

AT&T Research
General Chair

Gary L. Miller

Carnegie-Mellon University
Program Chair

Alok Aggarwal

IBM Research
Finance Chair

PROGRAM COMMITTEE

Sanjeev Arora

Princeton

Jin-Yi Cai

SUNY Buffalo

Alan Frieze

CMU

Erich Kaltofen

RPI

Joe Kilian

NECI

Michel Goemans

MIT

Monika R. Henzinger

Cornell

Maurice Herlihy

Brown

Thomas Lengauer

GMD

Gary L. Miller

CMU

Noam Nisan

Hebrew Univ.

Serge Plotkin

Stanford

Pavel Pudlak

Prague

Abhiram Ranade

Berkeley

Ronitt Rubinfeld

Cornell/MIT

Alistair Sinclair

UC Berkeley

ShangHua Teng

Univ. of Minnesota

Les Valiant

Harvard

Vijay Vazirani

Georgia Tech

Exhibits

Wednesday – Sunday

9:00 am – 6:00 pm

Room: Franklin Hall