

Program of the Thirty-Second Annual ACM Symposium on Theory of Computing

May 21-23, 2000
Portland, Oregon, USA

Location: All conference events except the banquet will take place at the Portland Marriott Downtown in Portland, Oregon at 1401 SW Naito Parkway. The banquet will be held at the Crystal Ballroom, 1332 W. Burnside Street. Busses will be provided for conference attendees.

Registration: The registration desk will be open from 5:00 to 9:00 pm on Saturday, from 8:00 am to 5:00 pm on Sunday, and from 8:00 am to 2:00 pm on Monday and Tuesday.

Saturday, May 20, 2000

Welcoming Reception 6:30 pm – 10:00 pm Columbia & Willamette Rooms

Sunday, May 21, 2000

Continental Breakfast 7:30 am – 8:25 am Lobby near Salons F-I

Session 1A Chair: *Frances Yao* Salon F

8:30 am Extractors and pseudo-random generators with optimal seed length

Russell Impagliazzo, Ronen Shaltiel, and Avi Wigderson

8:55 am Pseudo-random functions and factoring

Moni Naor, Omer Reingold, and Alon Rosen

9:20 am Satisfiability of equations in free groups is in PSPACE

Claudio Gutiérrez

9:45 am Setting 2 variables at a time yields a new lower bound for random 3-SAT

Dimitris Achlioptas

Session 1B Chair: *Ding-Zhu Du* Salons G-I

8:30 am A new algorithmic approach to the general Lovasz Local Lemma with applications to scheduling and satisfiability problems

Artur Czumaj and Christian Scheideler

8:55 am A deterministic polynomial-time algorithm for approximating mixed discriminant and mixed volume

Leonid Gurvits and Alex Samorodnitsky

9:20 am Randomized metarounding

Robert Carr and Santosh Vempala

9:45 am Isomorphism testing for embeddable graphs through definability

Martin Grohe

Coffee Break 10:10 am - 10:30 am

- Session 2A** Chair: *Frances Yao* Salon F
- 10:30 am** Circuit minimization problem
Valentine Kabanets and Jin-Yi Cai
- 10:55 am** On the efficiency of local decoding procedures for error-correcting codes
Jonathan Katz and Luca Trevisan
- 11:20 am** Statistical mechanics, three-dimensionality and NP-completeness
Sorin Istrail
- Session 2B** Chair: *Ding-Zhu Du* Salons G-I
- 10:30 am** A combinatorial, strongly polynomial-time algorithm for minimizing submodular functions
Satoru Iwata and Lisa Fleischer and Satoru Fujishige
- 10:55 am** Improved algorithms for submodular function minimization and submodular flow
Lisa Fleischer and Satoru Iwata
- 11:20 am** On dual minimum cost flow algorithms
Jens Vygen
- Lunch 11:50 am** Salons A-D
- 1:20 pm** **Invited Session:** Some Problems Related to Content Distribution Salon F
Tom Leighton, Department of Mathematics, MIT, and Akamai Technologies
- Session 3A** Chair: *Steven Rudich* Salon F
- 2:20 pm** On the approximability of the traveling salesman problem
Christos H Papadimitriou and Santosh Vempala
- 2:45pm** Approximating the domatic number
Uriel Feige, Magnús M Halldórsson, and Guy Kortsarz
- 3:10 pm** The value of strong inapproximability results for clique
Aravind Srinivasan
- Session 3B** Chair: *Éva Tardos* Salons G-I
- 2:20 pm** Compression using efficient multicasting
Micah Adler and Tom Leighton
- 2:45 pm** The small-world phenomenon: an algorithmic perspective
Jon Kleinberg
- 3:10 pm** A random graph model for massive graphs
William Aiello, Fan Chung, and Linyuan Lu
- Coffee Break 3:35 - 3:55 pm**
- Session 4A** Chair: *Steven Rudich* Salon F
- 3:55 pm** List decoding algorithms for certain concatenated codes
Venkatesan Guruswami and Madhu Sudan
- 4:20 pm** A PCP characterization of NP with optimal amortized query complexity
Alex Samorodnitsky and Luca Trevisan
- 4:45 pm** On transformations of interactive proofs that preserve the prover's complexity
Salil Vadhan

Session 4B Chair: *Éva Tardos*

Salons G-I

3:55 pm On the sum-of-squares algorithm for bin packing

Janos Csirik, David S Johnson, Claire Kenyon, James B Orlin, Peter W Shor, and Richard R Weber

4:20 pm Sharing the cost of multicast transmissions

Joan Feigenbaum, Christos Papadimitriou, and Scott Shenker

4:45 pm The risk profile problem for stock portfolio optimization

Ming-Yang Kao and Andreas Nolte and Stephen R Tate

Business Meeting 8:00 pm – 10:00 pm

Mt. Hood Room

Monday, May 22, 2000

Continental Breakfast 7:30 am – 8:25 am

Lobby near Salons F-I

Session 5A Chair: *Rafail Ostrovsky*

Salon F

8:30 am Resettable zero-knowledge

Ran Canetti, Oded Goldreich, Shafi Goldwasser and Silvio Micali

8:55 am Complete characterization of security notions for probabilistic private-key encryption

Jonathan Katz and Moti Yung

9:20 am On zero-knowledge proofs: “from membership to decision”

Giovanni Di Crescenzo, Kouichi Sakurai, and Moti Yung

9:45 am Finding smooth integers in short intervals using CRT decoding

Dan Boneh

Session 5B Chair: *David Eppstein*

Salon G-I

8:30 am Smoothing and cleaning up slivers

Herbert Edelsbrunner, Xiang-Yang Li, Garry Miller, Andreas Stathopoulos, Dafna Talmor, Shang-Hua Teng, Alper Üngör, and Noel Walkington

8:55 am Hard-potato routing

Costas Busch, Maurice Herlihy, and Roger Wattenhofer

9:20 am Approximation algorithms for geometric shortest path problems

Lyudmil Aleksandrov, Anil Maheshwari, and Jörg-Rüdiger Sack

9:45 am Improved approximations of crossings in graph drawings and VLSI layout areas

Guy Even, Sudipto Guha, and Baruch Schieber

Coffee Break 10:10 am - 10:30 am

Session 6A Chair: *Rafail Ostrovsky*

Salon F

10:30 am On the decidability of accessibility problems

Rajeev Motwani, Rina Panigrahy, Vijay Saraswat, and Suresh Venkatasubramanian

10:55 am More general completeness theorems for secure two-party computation

Joe Kilian

11:20 am On the complexity of verifiable secret sharing and multiparty computation

Ronald Cramer, Ivan Damgård, and Stefan Dziembowski

Session 6B Chair: *David Eppstein* Salon G-I

10:30 am Tight(er) worst-case bounds on dynamic searching and priority queues
Arne Andersson and Mikkel Thorup

10:55 am Near-optimal fully-dynamic graph connectivity
Mikkel Thorup

11:20 am A new NC-algorithm for finding a perfect matching in bipartite planar and small genus graphs
Meena Mahajan and Kasturi R Varadarajan

Lunch 11:50 am Salons A-D

Session 7A Chair: *Sally Goldman* Salon F

1:20 pm Space complexity in propositional calculus
Michael Alekhnovich, Eli Ben-Sasson, Alexander A Razborov, and Avi Wigderson

1:45 pm A new proof of the weak pigeonhole principle
Alexis Maciel, Toniann Pitassi, and Alan R Woods

2:10 pm Higher lower bounds on monotone size
Danny Harnik and Ran Raz

2:35 pm Tighter lower bounds for nearest neighbor search and related problems in the cell probe model
Omer Barkol and Yuval Rabani

Session 7B Chair: *Pavel Pevzner* Salons G-I

1:20 pm Compressed suffix arrays and suffix trees with applications to text indexing and string matching
Roberto Grossi and Jeffrey Scott Vitter

1:45 pm Faster suffix tree construction with missing suffix links
Richard Cole and Ramesh Hariharan

2:10 pm Approximate nearest neighbors and sequence comparison with block operations
S Muthukrishnan and Suleyman Cenk Sahinalp

2:35 pm Near optimal multiple alignment within a band in polynomial time
Ming Li, Bin Ma, and Lusheng Wang

Coffee Break 3:00 - 3:20 pm

Session 8A Chair: *Sally Goldman* Salon F

3:20 pm Noise-tolerant learning, the parity problem, and the statistical query model
Avrim Blum and Adam Kalai and Hal Wasserman

3:45 pm More theory revision with queries
Judy Goldsmith and Robert H Sloan

4:10 pm Are bitvectors optimal?
H Buhrman and PB Miltersen and J Radhakrishnan and S Venkatesh

Session 8B Chair: *Pavel Pevzner* Salon G-I

3:20 pm The program-size complexity of self-assembled squares
Paul W K Rothmund and Erik Winfree

3:45 pm Shortest path queries in planar graphs
Danny Z Chen and Jinhui Xu

4:10 pm How tall is a tree?
Bruce Reed

Banquet 6:00 pm – 10:00 pm Crystal Ballroom (McMenamins Pub & Breweries)
Busses leave from front of Marriott at **6:00 pm**

Tuesday, May 23, 2000

Continental Breakfast 7:30 am – 8:25 am

Lobby near Salons F-I

Session 9A Chair: *Eli Upfal*

Salon F

8:30 am Random walks with “back buttons”

Ronald Fagin, Anna Karlin, Jon Kleinberg, Prabhakar Raghavan, Sridhar Rajagopalan, Ronitt Rubinfeld, Madhu Sudan, and Andrew Tomkins

8:55 am From partial consistency to global broadcast

Matthias Fitzi and Ueli Maurer

9:20 am Connectivity and inference problems for temporal networks

David Kempe, Jon Kleinberg, and Amit Kumar

9:45 am Strictly non-blocking WDM cross-connects for heterogeneous networks

April Rasala and Gordon Wilfong

Session 9B Chair: *Sanjeev Khanna*

Salon G-I

8:30 am Finding long paths and cycles in sparse Hamiltonian graphs

Tomas Feder, Rajeev Motwani, and Carlos Subi

8:55 am Approximating the minimum bisection size

Uriel Feige, Robert Krauthgamer, and Kobbi Nissim

9:20 am A matter of degree: Improved approximation algorithms for degree-bounded minimum spanning trees

J Könemann and R Ravi

9:45 am Clustering for edge-cost minimization

Leonard J Schulman

Coffee Break 10:10 am - 10:30 am

Session 10A Chair: *Eli Upfal*

Salon F

10:30 am Exact computation of the inertia of symmetric integer matrices

Steven Fortune

10:55 am ϵ -optimization schemes and L -bit precision: alternative perspectives in combinatorial optimization

James B Orlin, Andreas S Schulz, and Sudipta Sengupta

11:20 am Matrix-vector product for confluent Cauchy-like matrices with application to confluent rational interpolation

Vadim Olshevsky and Amin Shokrollahi

Session 10B Chair: *Sanjeev Khanna*

Salon G-I

10:30 am Query strategies for priced information

Moses Charikar, Ron Fagin, Venkatesan Guruswami, Jon Kleinberg, Prabhakar Raghavan, and Amit Sahai

10:55 am A guessing game and randomized online algorithms

Steven S Seiden

11:20 am Computing the median with uncertainty

Tomas Feder, Rajeev Motwani, Rina Panigrahy, Chris Olston, and Jennifer Widom

Lunch 11:50 am

Salon E

Session 11A Chair: *Charles Bennett* Salon F

1:20 pm Parallelization, amplification, and exponential time simulation of quantum interactive proof systems
Alexei Kitaev and John Watrous

1:45 pm Rapid sampling through quantum computing
Lov K Grover

2:10 pm Normal subgroup reconstruction and quantum computation using group representations
Sean Hallgren, Alexander Russell, and Amnon Ta-Shma

2:35 pm Quantum lower bounds by quantum arguments
Andris Ambainis

3:00 pm On quantum and probabilistic communication: Las Vegas and one-way protocols
Hartmut Klauck

Session 11B Chair: *Andrei Broder* Salon G-I

1:20 pm A constant factor approximation algorithm for a class of classification problems
Anupam Gupta and Éva Tardos

1:45 pm Polynomial-time approximation scheme for data broadcast
Claire Kenyon, Nicolas Schabanel, and Neal Young

2:10 pm Approximating permanents of complex matrices
Martin Fürer

2:35 pm Combining fairness with throughput: Online routing with multiple objectives
Ashish Goel, Adam Meyerson, and Serge Plotkin

3:00 pm Improvements in throughput maximization for real-time scheduling
Piotr Berman and Bhaskar DasGupta

Coffee Break 3:25 - 3:40 pm

Session 12A Chair: *Charles Bennett* Salon F

3:40 pm Self-testing of universal and fault-tolerant sets of quantum gates
Wim van Dam, Frédéric Magniez, Michele Mosca, and Miklos Santha

4:05 pm Computing with highly mixed states
Andris Ambainis, Leonard J Schulman, and Umesh V Vazirani

4:30 pm Quantum bit escrow
Dorit Aharonov, Amnon Ta-Shma, Umesh Vazirani and Andrew C Yao

4:55 pm A proof of security of quantum key distribution
Eli Biham, Michel Boyer, P Oscar Boykin, Tal Mor, and Vwani Roychowdhury

Session 12B Chair: *Andrei Broder* Salon G-I

3:40 pm Better algorithms for unfair metrical task systems and applications
Amos Fiat and Manor Mendel

4:05 pm A unified approach to approximating resource allocation and scheduling
Amotz Bar-Noy, Reuven Bar-Yehuda, Ari Freund, Joseph (Seffi) Naor, and Baruch Schieber

4:30 pm Balanced allocations: the heavily loaded case
Petra Berenbrink, Artur Czumaj, Angelika Steger, Berthold Vöcking

End of Program