May 19-21
34th ACM Symposium on Theory of Computing
Montréal, Québec, Canada
2002

[STOC’02]

Sponsored by
Association for Computing Machinery
(ACM SIGACT)

With Support from
Microsoft Research
Ministère Recherche,
Science et Technologie, Québec
Centre de recherches mathématiques (CRM)
Université de Montréal
SIGACT Institutional Sponsors :
Academic Press, Inc., Akamai Technologies,
AT&T Laboratories, IBM Research,
Lucent Technologies-Bell Laboratories,
NEC Research Institute, STAR Lab

http://www.crm.umontreal.ca/STOC02
stoc02@crm.umontreal.ca
< Program Committee >

Pankaj Agarwal  
Duke University, USA

Allan Borodin  
University of Toronto, Canada

Sam Buss  
University of California, San Diego, USA

Shafi Goldwasser  
MIT, USA

Rao Kosaraju  
Johns Hopkins University, USA

Richard Ladner  
University of Washington, USA

Gary Miller  
Carnegie Mellon University, USA

Michael Mitzenmacher  
Harvard University, USA

Satish Rao  
University of California, Berkeley, USA

John H. Reif (Chair)  
Duke University, USA

Micha Sharir  
Tel Aviv University, Israel

Paul Spirakis  
Computer Technology Institute, Greece

Mikkel Thorup  
University of Copenhagen, Denmark

Leslie Valiant  
Harvard University, USA

< Organizing Committee >

Pierre McKenzie (Co-Chair)  
Université de Montréal, Canada

Denis Thérien (Co-Chair & Treasurer)  
McGill University, Canada

John H. Reif (Program Chair)  
Duke University, USA

Ian Parberry  
(Publicity Chair)  
University of North Texas, USA

Louis Pelletier (Local Arrangements Chair)  
Université de Montréal, Canada

< Program >

Important Note:
There will be a day long Joint Session with the 17th IEEE Conference on Computational Complexity (CCC 2002) on Tuesday, May 21, 2002.

< Welcome Reception & Registration >

Saturday, May 18
7:00 pm - 9:00 pm
Welcome Reception & Registration
(Wyndham Hotel, Room Salon des Arts)
8:00 am – 9:00 am
*Continental Breakfast*
(Wyndham Hotel, Room Grand Salon C)

---

**Session 1A**
(Wyndham Hotel, Room Grand Salon AB)
Chair: Rao Kosaraju

8:30 am
*Recognizing String Graphs in NP*
Marcus Schaefer, Eric Sedgwick and Daniel Stefankovic

8:55 am
*Dynamic Subgraph Connectivity with Geometric Applications*
Timothy M. Chan

9:20 am
*New Results on Monotone Dualization and Generating Hypergraph Transversals*
Thomas Eiter, Georg Gottlob and Kazuhisa Makino

9:45 am
*Combinatorial Optimization Problems in Self-Assembly*
Leonard Adleman, Qi Cheng, Ashish Goel, Ming-Deh Huang, David Kempe, Pablo M. de Moisset and Paul W. K. Rothemund

10:10 am - 10:30 am
*Coffee Break*
(Wyndham Hotel, Foyer Grand Salon)

---

**Session 1B**
(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Michael Mitzenmacher

8:30 am
*The Importance of Being Biased*
Irit Dinur and Shmuel Safra

8:55 am
*On the Advantage over a Random Assignment*
Johan Hastad and S. Venkatesh

9:20 am
*The Complexity of Choosing an H-Colouring (Nearly) Uniformly at Random*
Leslie Ann Goldberg, Steven Kelk and Mike Paterson

9:45 am
*Random Sampling in Residual Graphs*
David R. Karger and Matthew S. Levine

---
Session 2A

(Wyndham Hotel, Room Grand Salon AB)
Chair: John Reif

10:30 am
On the Complexity of Equilibria
Xiaotie Deng, Christos Papadimitriou
and Shmuel Safra

10:55 am
Competitive Generalized Auctions
Amos Fiat, Andrew V. Goldberg,
Jason D. Hartline and Anna R. Karlin

11:20 am
Competitive Recommendation Systems
Petros Drineas, Iordanis Kerenidis
and Prabhakar Raghavan

11:50 am
Lunch
(Wyndham Hotel, Room Jeanne-Mance)

Session 2B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Paul Spirakis

10:30 am
The Glauber Dynamics on the Colourings of a
Graph with High Girth and Maximum Degree
Michael Molloy

10:55 am
Clairvoyant Scheduling of Random Walks
Peter Gacs

11:20 am
Solving Convex Programs by Random Walks
Dimitris Bertsimas and Santosh Vempala

1:00 pm
Knuth Prize Plenary Talk
(Wyndham Hotel, Room Grand Salon AB)

The Joy of Theory
Christos Papadimitriou
Session 3A
(Wyndham Hotel, Room Grand Salon AB)
Chair: Michael Mitzenmacher

2:10 pm
Improved Decremental Algorithms for Transitive Closure and All-pairs Shortest Paths
Surender Baswana, Ramesh Hariharan and Sandeep Sen

2:35 pm
Lower Bounds and Competitive Algorithms for On-Line Scheduling of Unit-Size Tasks to Related Machines
Spyros Kontogiannis

3:00 pm
On Randomized Online Scheduling
Susanne Albers

Session 3B
(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Allan Borodin

2:10 pm
On the Complexity of Matrix Product
Ran Raz

2:35 pm
Near-Optimal Sparse Fourier Representations via Sampling
Anna C. Gilbert, Sudipto Guha, Piotr Indyk, S. Muthukrishnan and Martin J. Strauss

3:00 pm
Fitting Algebraic Curves to Noisy Data
Sanjeev Arora and Subhash Khot

3:25 pm - 4:45 pm
Coffee Break
(Wyndham Hotel, Foyer Grand Salon)
Session 4A

(Wyndham Hotel, Room Grand Salon AB)
Chair: Gary Miller

4:45 pm
A New average Case Analysis for Completion Time Scheduling
Mark Scharbrodt, Thomas Schickinger and Angelika Steger

5:10 pm
A Unified Analysis of Hot Video Schedulers
Wun-Tat Chan, Tak-Wah Lam, Hing-Fung Ting and Wai-Ha Wong

5:35 pm
Optimal Rate-based Scheduling on Multiprocessors
Anand Srinivasan and James H. Anderson

8:30 pm
Business Meeting
(Wyndham Hotel, Room Grand Salon AB)

Session 4B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Paul Spirakis

4:45 pm
Almost all graphs with average degree 4 are 3-colorable
Dimitris Achlioptas and Cristopher Moore

5:10 pm
Models and Thresholds for Random Constraint Satisfaction Problems
Michael Molloy

5:35 pm
Remier’s Inequality and Tardos’ Conjecture
Clifford Smyth
Session 5A

(Wyndham Hotel, Room Grand Salon AB)
Chair: Allan Borodin

8:30 am
Clifford algebras and Approximating the Permanent
Steve Chien, Lars Rasmussen and Alistair Sinclair

8:55 am
Random Sampling and Approximation of MAX-CSP Problems
Noga Alon, W. Fernandez de la Vega, Ravi Kannan and Marek Karpinski

9:20 am
A Polynomial Time Algorithm to Approximately Count Contingency
Mary Cryan and Martin Dyer

9:45 am
Approximate Clustering via Core-Sets
Mihai Badoiu, Sariel Har-Peled and Piotr Indyk

Session 5B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Michael Mitzenmacher

8:30 am
On Paging with Locality of Reference
Susanne Albers, Lene M. Favrholdt and Oliver Giel

8:55 am
Cache-Oblivious Priority Queue and Graph Algorithm Applications
Lars Arge, Michael A. Bender, Erik D. Demaine, Bryan Holland-Minkley and J. Ian Munro

9:20 am
Average Case Analysis for Batched Disk Scheduling and Increasing Sequences
E. Bachmat

9:45 am
Selfish Traffic Allocation for Server Farms
Artur Czumaj, Piotr Krysta and Berthold Voecking
Session 6A

(Wyndham Hotel, Room Grand Salon AB)
Chair: Satish Rao

10:30 am
*Approximation Schemes for Preemptive Weighted Flow Time*
Chandra Chekuri and Sanjeev Khanna

10:55 am
*Approximation Algorithms for Minimum-Cost k-Vertex Connected Subgraphs*
Joseph Cheriyan, Santosh Vempala and Adrian Vetta

11:20 am
*Equitable Truth-Revealing Cost Allocations via Primal-Dual-Type*
Kamal Jain and Vijay Vazirani

Session 6B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Sam Buss

10:30 am
2-Round Zero Knowledge and Proof Auditors
Cynthia Dwork and Larry Stockmeyer

10:55 am
Concurrent Zero-Knowledge With Timing Revisited
Oded Goldreich

11:20 am
Tight Security Proofs for the Bounded-Storage Model
Stefan Dziembowski and Ueli Maurer

11:50 am
*Lunch*
(Wyndham Hotel, Room Jeanne-Mance)
Session 7A

(Wyndham Hotel, Room Grand Salon AB)
Chair: Mikkel Thorup

1:00 pm
Hardness Results for Approximate Hypergraph Coloring
Subhash Khot

1:25 pm
Space Lower Bounds for Distance Approximation in the Data Stream Model
Michael Saks and Xiaodong Sun

1:50 pm
Approximate Counting of Inversions in a Data Stream
Miklos Ajtai, T.S. Jayram, Ravi Kumar and D. Sivakumar

2:15 pm
Similarity Estimation Techniques from Rounding Algorithms
Moses Charikar

2:40 pm
Fast Small-space Algorithms for Approximate Histogram Maintenance
Anna Gilbert, Sudipto Guha, Piotr Indyk, Yannis Kotidis, S. Muthukrishnan and Martin J. Strauss

Session 7B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Gary Miller

1:00 pm
Load Balancing in Dynamic Adversarial Systems
Elliot Anshelevich, David Kempe and Jon Kleinberg

1:25 pm
Tradeoffs in Probabilistic Packet Marking for IP Traceback
Micah Adler

1:50 pm
Crawling on Web Graphs
Colin Cooper and Alan Frieze

2:15 pm
The Price of Anarchy is Independent of the Network Topology
Tim Roughgarden

2:40 pm
Combinatorial Logarithmic Approximation Algorithm for the Directed Telephone Broadcast Problem
Michael Elkin and Guy Kortsarz

3:05 pm - 3:30 pm
Coffee Break
(Wyndham Hotel, Foyer Grand Salon)
Session 8A

(Wyndham Hotel, Room Grand Salon AB)
Chair: Sam Buss

3:30 pm
An Exponential Separation between Regular and General Resolution
   Michael Alekhnovich, Jan Johannsen, Toniann Pitassi and Alasdair Urquhart

3:55 pm
Size Space Tradeoffs for Resolution
   Eli Ben-Sasson

4:10 pm
Exact learning of DNF formulas using DNF hypotheses
   Lisa Hellerstein and Vijay Raghavan

4:35 pm
Monotonicity Testing over General Poset Domains
   Eldar Fischer, Eric Lehman, Ilan Newman, Sofya Raskhodnikova, Ronitt Rubinfeld and Alex Samorodnitsky

Session 8B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Pankaj Agarwal

3:30 pm
Strict Polynomial-time in Simulation and Extraction
   Boaz Barak and Yehuda Lindell

3:55 pm
Universally Composable Two-party Computation
   Ran Canetti and Yehuda Lindell, Rafail Ostrovsky and Amit Sahai

4:10 pm
The Invasiveness of Off-line Memory Checking
   Miklos Ajtai

4:35 pm
On the Composition of Authenticated Byzantine Agreement
   Ydhuda Lindell, Anna Lysyanskaya and Tal Rabin

5:00 pm
Wait-Free Consensus with Infinite Arrivals
   James Aspnes, Gauri Shah and Jatin Shah

7:00 pm
Conference Banquet
   Marché Bonsecours
   350, Saint Paul E. Street, Old Montréal
   Salle de Bal
Session 9A
(Wyndham Hotel, Room Grand Salon AB)
(Joint Session with Complexity 2002)
Chair: Sam Buss

8:30 am
Relations between Average Case Complexity and Approximation Complexity
Uriel Feige

8:55 am
Vertex Cover on 4-regular Hyper-graphs is Hard to Approximate Within 2-epsilon
Jonas Holmerin

9:20 am
Resolution Lower Bounds for the Weak Pigeon Hole Principle
Ran Raz

9:45 am
Hard Examples for Bounded Depth Frege
Eli Ben-Sasson

Session 9B
(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Mikkel Thorup

8:30 am
Meldable Heaps and Boolean Union-Find
Haim Kaplan, Nira Shafrir and Robert E. Tarjan

8:55 am
Optimal Finger Search Trees in the Pointer Machine
Gerth S. Brodal, George Lagogiannis, Christos Makris, Athanasios Tsakalidis and Kostas Tsichlas

9:20 am
Verifying Candidate Matches in Sparse and Wildcard Matching
Richard Cole and Ramesh Hariharan

9:45 am
Deterministic Sorting in O(nloglogn) Time and Linear Space
Yijie Han

8:00 am – 9:00 am
Continental Breakfast
(Wyndham Hotel, Room Grand Salon C)
Session 10A

(Wyndham Hotel, Room Grand Salon AB)
(Joint Session with Complexity 2002)
Chair: Anne Condon

10:30 am
Improved Cryptographic Hash Functions with
Worst-case/Average-case Connection
Daniele Micciancio

10:55 am
Algorithmic Derandomization
via Complexity Theory
D. Sivakumar

11:20 am
Pseudo-Random Generators for all Hardnesses
Christopher Umans

11:50 am
Lunch
(Wyndham Hotel, Room Jeanne-Mance)

Session 10B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: John Reif

10:30 am
Quantum Lower Bound for the Collision
Problem
Scott Aaronson

10:55 am
Secure Multi-party Quantum Computing
Claude Crépeau, Daniel Gottesman
and Adam Smith

11:20 am
Polynomial-Time Quantum Algorithms for Pell’s
Equation and the Principal Ideal Problem
Sean Hallgren
Session 11A

(Wyndham Hotel, Room Grand Salon AB)
(Joint Session with Complexity 2002)
Chair: Michael Saks

1:00 pm
Randomness Conductors and Constant-Degree Lossless Expanders
Michael Capalbo, Omer Reingold, Salil Vadhan and Avi Wigderson

1:25 pm
Expanders from Symmetric Codes
Roy Meshulam and Avi Wigderson

1:50 pm
The Complexity of Approximating the Entropy
Tugkan Batu, Sanjoy Dasgupta, Ravi Kumar and Ronitt Rubinfeld

2:15 pm
Time-Space Tradeoffs Multiparty Communication Complexity and Nearest Neighbor Problems
Paul Beame and Erik Vee

2:40 pm
On Communication over an Entanglement-Assisted Quantum Channel
Ashwin Nayak and Julia Salzman

3:00 pm - 3:20 pm
Coffee Break
(Wyndham Hotel, Foyer Grand Salon)

Session 11B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Pankaj Agarwal

1:00 pm
Girth and Euclidean Distortion
Nathan Linial, Avner Magen and Assaf Naor

1:25 pm
Computing the Betti Numbers of Arrangements
Saugata Basu

1:50 pm
Space-Efficient Approximate Voronoi Diagrams
Sunil Arya, Theocharis Malamatos and David M. Mount

2:15 pm
A New Greedy Approach for Facility Location Problems
Kamal Jain, Mohammad Mahdian and Amin Saberi

2:40 pm
Finding Nearest Neighbors in Growth-restricted Metrics
David Karger and Matthias Ruhl
Session 12A

(Wyndham Hotel, Room Grand Salon AB)
(Joint Session with Complexity 2002)
Chair: Sam Buss

3:20 pm
Hardness Amplification Within NP
Ryan O'Donnell

3:45 pm
3-MANIFOLD KNOT GENUS is NP-complete
Ian Agol, Joel Hass
and William P. Thurston

4:10 pm
On the Power of Unique 2-Prover 1-Round Games
Subhash Khot

4:35 pm
Learnability Beyond AC0
Jeffrey C. Jackson, Adam R. Klivans
and Rocco A. Servedio

Session 12B

(Wyndham Hotel, Room Alfred Rouleau AB)
Chair: Rao Kosaraju

3:20 pm
Huffman Coding with Unequal Letter Costs
Mordecai J. Golin, Claire Kenyon
and Neal E. Young

3:45 pm
Approximating The Smallest Grammar:
Kolmogorov Complexity in Natural Models
Moses Charikar, Eric Lehman, Ding Liu,
Rina Panigrahy, Manoj Prabhakaran,
April Rasala, Amit Sahai and Abhi Shelat

4:10 pm
Limits to List Decodability of Linear Codes
Venkatesan Guruswami

4:35 pm
Near-optimal Linear-Time Codes for Unique Decoding and New List-Decodable Codes Over Smaller Alphabets
Venkatesan Guruswami and Piotr Indyk
Welcome Reception and Registration, May 18
   Wyndham Hotel, Room Salon des Arts
      (Lobby)

Registration and Information, May 19-21
   Wyndham Hotel, Foyer Grand Salon
      (Mezzanine 1)

Coffee Break, May 19-21
   Wyndham Hotel, Foyer Grand Salon
      (Mezzanine 1)

Lunch, May 19-21
   Wyndham Hotel, Room Jeanne-Mance
      (Lobby)

Banquet, May 20
   Marché Bonsecours,
      350 Saint Paul E. Street, Old Montréal
         (Salle de Bal)

Internet Café and Connections
   Wyndham Hotel, Room Anjou AB
      (Mezzanine 2)
< General Information >

Local information

Hôtel Wyndham Montréal
1255 Jeanne-Mance, C.P. 130
Montréal, Québec
Canada H5B 1E5
Tel.: 514-285-1450
Fax: 514-285-1243

Centre de recherches mathématiques (CRM)
Université de Montréal
C.P. 6128, succ. Centre-ville
Montréal, Québec
Canada H3C 3J7
Tel.: 514-843-7501
Fax: 514-343-2254

Taxis

Taxis La Salle 277-2552
Taxis Diamond 273-6331

Fire, Police or Ambulance 911

Air Lines

Aeroflot 288-2125
Air Canada 1-888-247-2262
Air France 847-1106
Alitalia 842-5201
American Airlines 397-9635
British Airlines 287-9161
Delta 337-5520
Iberia 1-800-772-4642
KLM 939-4040
LOT 1-800-668-5928
Lufthansa 1-800-563-5954
Olympic Airways 878-9691
Swiss 1-800-221-4750
US Airways 1-800-428-4322
Japan Air Lines 1-800-525-3663

< 30 >