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May 19-21, 2002

[STOC '02]



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< STOC '02 >

< 34th ACM Symposium on Theory of Computing >

< Montréal, Québec, Canada >

< May 19-21, 2002 >

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34th ACM Symposium
on Theory of Computing

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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.

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. Rothmund

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)

1:00 pm

Knuth Prize Plenary Talk

(Wyndham Hotel, Room Grand Salon AB)

The Joy of Theory

Christos Papadimitriou

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

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

2:35pm

*Lower Bounds and Competitive Algorithms
for On-Line Scheduling of Unit-Size Tasks
to Related Machines*
Spyros Koutogiannis

3:00 pm

On Randomized Online Scheduling
Susanne Albers

3:25 pm - 4:45 pm

Coffee Break

(Wyndham Hotel, Foyer Grand Salon)

Session 3B

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

2:10 pm

On the Complexity of Matrix Product
Ran Raz

2:35pm

*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

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

8:00 am – 9:00 am

Continental Breakfast

(Wyndham Hotel, Room Grand Salon C)

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, Sarel Har-Peled
and Piotr Indyk

10:10 am -10:30 am

Coffee Break

(Wyndham Hotel, Foyer Grand Salon)

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

11:50 am

Lunch
(Wyndham Hotel, Room Jeanne-Mance)

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

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

3:05 pm - 3:30 pm

Coffee Break

(Wyndham Hotel, Foyer Grand Salon)

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

Session 8A

(Wyndham Hotel, Room Grand Salon AB)

Chair: Sam Buss

3:30 pm

An Exponential Separation between Regular and General Resolution

Michael Alekhovich, 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

7:00 pm

Conference Banquet

Marché Bonsecours
350, Saint Paul E. Street, Old Montréal
Salle de Bal

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

Yehuda Lindell, Anna Lysyanskaya
and Tal Rabin

5:00 pm

Wait-Free Consensus with Infinite Arrivals

James Aspnes, Gauri Shah and Jatin Shah

8:00 am – 9:00 am

Continental Breakfast

(Wyndham Hotel, Room Grand Salon C)

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

10:10 am - 10:30 am

Coffee Break

(Wyndham Hotel, Foyer Grand Salon)

Session 9B

(Wyndham Hotel, Room Alfred Rouleau AB)

Chair: Mikkel Thorup

8:30 am

Meldable Heaps and Boolean Union-Find

Haim Kaplan, Nira Shafir
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 $O(n \log \log n)$ Time
and Linear Space*

Yijie Han

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, Theodoros 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 ACO
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

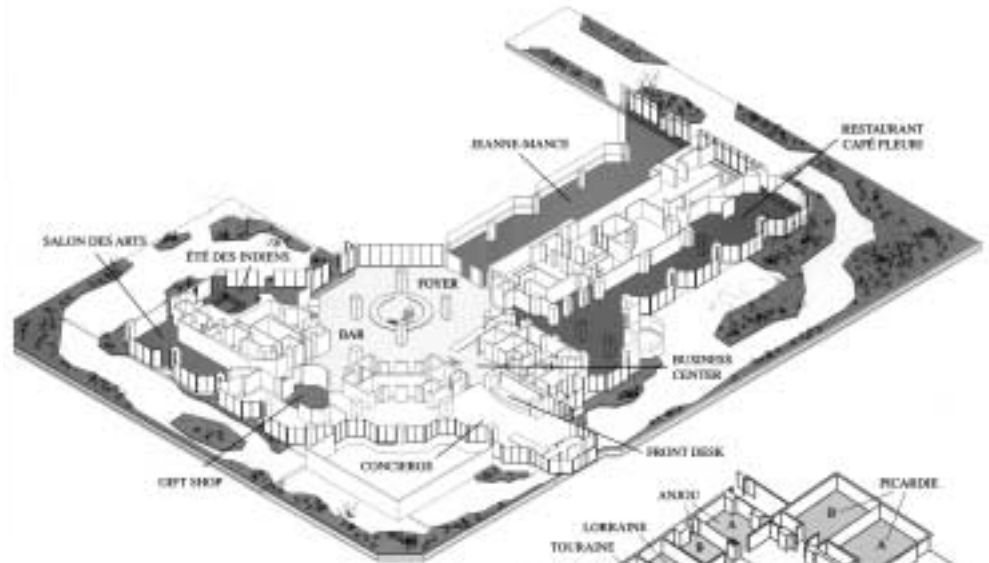
Limits to List Decodability of Linear Codes
Venkatesan Guruswami

4:35 pm

*Near-optimal Linear-Time Codes for Unique
Decoding and New List-Decodable Codes Over
Smaller Alphabets*
Venkatesan Guruswami and Piotr Indyk

< Event location map >

Lobby



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

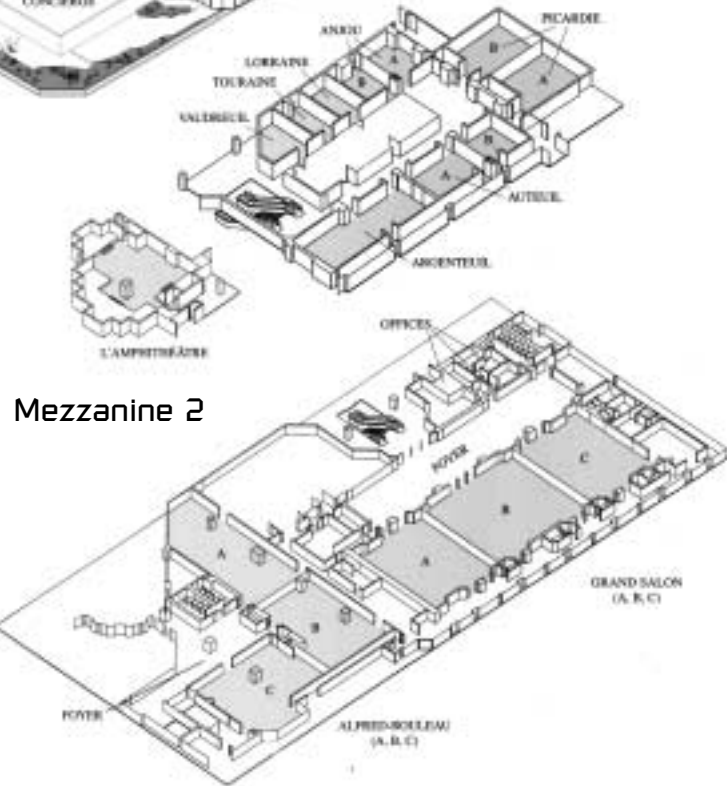
*Wyndham Hotel, Room Jeanne-Mance
(Lobby)*

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)*



Mezzanine 2

Mezzanine 1

< General Information >

Local information

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