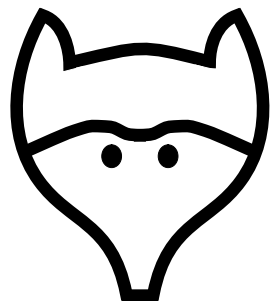


FOCS 2005 Program



The 46th Annual IEEE Symposium on Foundations of Computer Science

October 22-25, 2005 Omni William Penn Hotel,
Pittsburgh, PA

Sponsored by the IEEE Computer Society Technical
Committee on Mathematical Foundations of Computing
In cooperation with ACM SIGACT

FOCS '05 gratefully acknowledges financial support from
Microsoft Research, Yahoo! Research, and the CMU Aladdin
center

SATURDAY October 22, 2005

*Tutorials held at CMU University Center
Reception at Omni William Penn Hotel, Monongahela Room,
17th floor*

Tutorial 1: 1:30pm – 3:30pm

(McConomy Auditorium)

Chair: Irit Dinur

Subhash Khot

On the Unique Games Conjecture

Break 3:30pm – 4:00pm

Tutorial 2: 4:00pm – 6:00pm

(Rangos Hall, 2nd floor)

Chair: Sarel Har-Peled

Bernard Chazelle

*Algorithmic Techniques and Tools from Computational
Geometry*

WELCOME RECEPTION 7:00pm – 9:00pm

*Monongahela Room, 17th floor
Omni William Penn Hotel*

SUNDAY October 23, 2005

Talks in Grand Ballroom, 17th floor

Session 1: 8:50am – 10:10am

Chair: Éva Tardos

8:50 *Agnostically Learning Halfspaces*

Adam Kalai, Adam Klivans, Yishay Mansour and Rocco
Servedio

9:10 *Noise stability of functions with low influences: invari- ance and optimality*

Elchanan Mossel, Ryan O'Donnell and Krzysztof
Oleszkiewicz

9:30 *Every decision tree has an influential variable*

Ryan O'Donnell, Michael Saks, Oded Schramm and
Rocco Servedio

9:50 *Lower Bounds for the Noisy Broadcast Problem*

Navin Goyal, Guy Kindler and Michael Saks

Break 10:10am – 10:30am

Session 2: 10:30am – 12:10pm

Chair: Satish Rao

10:30 *The Unique Games Conjecture, Integrality Gap for Cut Problems and Embeddability of Negative Type Metrics into ℓ_1 [Best paper award]*

Subhash Khot and Nisheeth Vishnoi

10:50 *The Closest Substring problem with small distances*

Daniel Marx

11:10 *Fitting tree metrics: Hierarchical clustering and Phy- logeny*

Nir Ailon and Moses Charikar

11:30 *Metric Embeddings with Relaxed Guarantees*

Ittai Abraham, Yair Bartal, T-H. Hubert Chan, Kedar
Dhamdhere, Anupam Gupta, Jon Kleinberg, Ofer Neiman,
and Aleksandrs Slivkins

11:50 *Nonembeddability theorems via Fourier analysis*

Subhash Khot and Assaf Naor

Lunch 12:10pm – 1:30pm

Urban Room, 17th floor

Session 3: 1:30pm – 2:50pm

Chair: Ashish Goel

1:30 *On the Complexity of Two-Player Win-Lose Games [Machtley award]*

Tim Abbott, Daniel Kane and Paul Valiant

1:50 *Nash Equilibria in Random Games*
Imre Bárány, Santosh Vempala and Adrian Vetta

2:10 *Query Incentive Networks*
Jon Kleinberg and Prabhakar Raghavan

2:30 *Sink Equilibria and Convergence*
Michel Goemans, Vahab Mirrokni, and Adrian Vetta

Break 2:50pm – 3:10pm

Session 4: 3:10pm – 4:30pm
Chair: Paul Beame

3:10 *On the Complexity of Real Functions [Machtey award]*
Mark Braverman

3:30 *Linear Lower Bounds on Real-World Implementations of Concurrent Objects*
Faith Ellen Fich, Danny Hendler, and Nir Shavit

3:50 *Towards a Final Analysis of Pairing Heaps*
Seth Pettie

4:10 *Structuring labeled trees for optimal succinctness, and beyond*
P. Ferragina, F. Luccio, G. Manzini and S. Muthukrishnan

Break 4:30pm – 4:50pm

Session 5: 4:50pm – 6:10pm
Chair: Irit Dinur

4:50 *Approximation Algorithms for Unique Games*
Luca Trevisan

5:10 *On Non-Approximability for Quadratic Programs*
Sanjeev Arora, Eli Berger, Elad Hazan, Guy Kindler and Muli Safra

5:30 *Hardness of Approximating the Closest Vector Problem with Pre-Processing*
Mikhail Alekhnovich, Subhash A. Khot, Guy Kindler and Nisheeth K. Vishnoi

5:50 *Hardness of the Undirected Edge-disjoint Paths Problem with Congestion*
Matthew Andrews, Julia Chuzhoy, Sanjeev Khanna, and Lisa Zhang

**FOCS Business meeting, panel discussion,
and TCS advocacy report
8:30pm – 11:00pm**

MONDAY October 24, 2005

Talks in Grand Ballroom, 17th floor

Session 6: 8:50am – 10:10am
Chair: Éva Tardos

8:50 *A Recursive Greedy Algorithm for Walks in Directed Graphs*
Chandra Chekuri and Martin Pál

9:10 *Approximation Algorithms for Scheduling on Multiple Machines*
V. S. Anil Kumar, Madhav V. Marathe, Srinivasan Parthasarathy and Aravind Srinivasan

9:30 *AdWords and Generalized On-line Matching*
Aranyak Mehta, Amin Saberi, Umesh Vazirani and Vijay Vazirani

9:50 *The Parking Permit Problem*
Adam Meyerson

Break 10:10am – 10:30am

Session 7: 10:30am – 12:10pm
Chair: Venkatesan Guruswami

10:30 *Correcting Errors Beyond the Guruswami-Sudan Radius in Polynomial Time [Best paper award]*
Farzad Parvaresh and Alexander Vardy

10:50 *Error Correction via Linear Programming*
Emmanuel J. Candes and Mark Rudelson and Terence Tao and Roman Vershynin

11:10 *Error-Correcting Codes for Automatic Control*
Rafail Ostrovsky, Yuval Rabani and Leonard J. Schulman

11:30 *Almost Orthogonal Linear Codes are Locally Testable*
Tali Kaufman and Simon Litsyn

11:50 *On Delsarte's Linear Programming Bounds for Binary Codes*
Michael Navon and Alex Samorodnitsky

Lunch 12:10pm – 1:30pm
Urban Room, 17th floor

Session 8: 1:30pm – 2:50pm
Chair: Ashish Goel

1:30 *Fast Algorithms for Approximate Semidefinite Programming using the Multiplicative Weights Update Method*
Sanjeev Arora, Elad Hazan and Satyen Kale

1:50 *Improved Smoothed Analysis of the Shadow Vertex Simplex Method*

Amit Deshpande and Daniel A. Spielman

2:10 *Sampling-based Approximation Algorithms for Multi-Stage Stochastic Optimization*

Chaitanya Swamy and David B. Shmoys

2:30 *How to Pay, Come What May: Approximation Algorithms for Demand-Robust Covering Problems*

Kedar Dhamdhere, Vineet Goyal, R. Ravi and Mohit Singh

Break 2:50pm – 3:10pm

Session 9: 3:10pm – 4:30pm

Chair: David Zuckerman

3:10 *Group-theoretic Algorithms for Matrix Multiplication*

Henry Cohn, Robert Kleinberg, Balazs Szegedy and Christopher Umans

3:30 *Answering distance queries in directed graphs using fast matrix multiplication*

Raphael Yuster and Uri Zwick

3:50 *A Randomness-Efficient Sampler for Matrix-valued Functions and Applications*

Avi Wigderson and David Xiao

4:10 *Deterministic Extractors for Affine Sources over Large Fields*

Ariel Gabizon and Ran Raz

Break 4:30pm – 4:50pm

Session 10: 4:50pm – 5:50pm

Chair: David Zuckerman

4:50 *Additive Approximation for Edge-Deletion Problems*

Noga Alon, Asaf Shapira and Benny Sudakov

5:10 *A Characterization of the (natural) Graph Properties Testable with One-Sided Error*

Noga Alon and Asaf Shapira

5:30 *An algorithmic version of the hypergraph regularity method*

P. Haxell, B. Nagle and V. Rödl

Knuth Prize Talk: 6:00pm – 7:00pm

Chair: Umesh Vazirani

Knuth Prize winner: Mihalis Yannakakis

TUESDAY October 25, 2005

Talks in Grand Ballroom, 17th floor

Session 11: 8:50am – 10:10am

Chair: John Watrous

8:50 *Cryptography in the Bounded Quantum-Storage Model*

Ivan Damgård, Serge Fehr, Louis Salvail and Christian Schaffner

9:10 *Quantum Information and the PCP Theorem*

Ran Raz

9:30 *From optimal measurement to efficient quantum algorithms for the hidden subgroup problem over semidirect product groups*

Dave Bacon, Andrew M. Childs and Wim van Dam

9:50 *The Symmetric Group Defies Strong Fourier Sampling*

Cristopher Moore, Alexander Russell and Leonard J. Schulman

Break 10:10am – 10:30am

Session 12: 10:30am – 12:10pm

Chair: Frank McSherry

10:30 *On Learning Mixtures of Heavy-Tailed Distributions*

Anirban Dasgupta, John Hopcroft, Jon Kleinberg and Mark Sandler

10:50 *Learning mixtures of product distributions over discrete domains*

Jon Feldman, Ryan O'Donnell and Rocco A. Servedio

11:10 *A general lower bound for mixing of single-site dynamics on graphs*

Thomas P. Hayes and Alistair Sinclair

11:30 *Analysis and Prediction of the Long-Run Behavior of Probabilistic Sequential Programs with Recursion*

Tomas Brázdil, Javier Esparza and Antonin Kučera

11:50 *Safraless Decision Procedures*

Orna Kupferman and Moshe Y. Vardi

Lunch 12:10pm – 1:30pm

Urban Room, 17th floor

Session 13: 1:30pm – 2:50pm

Chair: Richard Lipton

1:30 *How To Play Almost Any Mental Game Over the Net: Concurrent Composition via Super-Polynomial Simulation*

Boaz Barak and Amit Sahai

- 1:50** *On the Impossibility of Obfuscation with Auxiliary Inputs*
Shafi Goldwasser and Yael Tauman Kalai
- 2:10** *Concurrent Non-Malleable Commitments*
Rafael Pass and Alon Rosen
- 2:30** *The Complexity of Online Memory Checking*
Moni Naor and Guy N. Rothblum

Break 2:50pm – 3:10pm

Session 14: 3:10pm – 4:30pm

Chair: Richard Lipton

- 3:10** *Rational Secure Computation and Ideal Mechanism Design*
Sergei Izmalkov, Matt Lepinski and Silvio Micali
- 3:30** *Truthful and Near-optimal Mechanism Design via Linear Programming*
Ron Lavi and Chaitanya Swamy
- 3:50** *Mechanism Design via Machine Learning*
Maria-Florina Balcan, Avrim Blum, Jason Hartline and Yishay Mansour
- 4:10** *Beyond VCG: Frugality of Truthful Mechanisms*
Anna R. Karlin, David Kempe and Tami Tamir

Break 4:30pm – 4:50pm

Session 15: 4:50pm – 6:10pm

Chair: Mihalis Yannakakis

- 4:50** *An Approximation Algorithm for the Disjoint Paths Problem in Even-Degree Planar Graphs*
Jon Kleinberg
- 5:10** *Algorithmic Graph Minor Theory: Decomposition, Approximation, and Coloring*
Erik D. Demaine, MohammadTaghi Hajiaghayi and Ken-ichi Kawarabayashi
- 5:30** *A linear-time approximation scheme for planar weighted TSP*
Philip N. Klein
- 5:50** *A Tale of Two Dimensional Bin Packing*
Nikhil Bansal, Andrea Lodi and Maxim Sviridenko

Conference ends 6:10pm

Committees

Program Committee Chair: Éva Tardos

Program Committee: Ziv Bar-Yossef, Paul Beame, Ran Canetti, Irit Dinur, Ashish Goel, Venkatesan Guruswami, Sarel Har-Peled, Michael Kearns, Richard Lipton, Frank McSherry, Satish Rao, Omer Reingold, Eva Tardos (chair), Mikkel Thorup, Berthold Voecking, John Watrous, Mihalis Yannakakis, David Zuckerman

Local arrangements: Avrim Blum and Anupam Gupta

General Chair: Andrei Broder

Finance Chair: Michael Mitzenmacher