



47th Annual IEEE Foundations of Computer Science
Berkeley, CA Oct 21—24, 2006
IEEE Computer Society.

All conference events (except lunches) will take place at the **Doubletree Hotel & Executive Meeting Center, Berkeley Marina**. Session A talks will be held in the **Belvedere** room and Session B in the **Angel** room. For plenary sessions the two rooms will be combined. Lunch will be in **Yerba Buena** and **Treasure** rooms.

SATURDAY, Oct 21

Registration: 7-10pm
Reception: Angel Room 8-10pm

SUNDAY, Oct 22

Registration: Outside Angel/Belvedere 8am –11:30am, 1:30pm – 5pm

Session 1A: 8:35-9:45 (Belvedere)

Chair: Irit Dinur

Statistical Zero-Knowledge Arguments for NP from Any One-Way Function

Minh-Huyen Nguyen, Shien Jin Ong, and Salil Vadhan

Fault-Tolerant Distributed Computing in Full-Information Networks

Shafi Goldwasser, Elan Pavlov and Vinod Vaikuntanathan

Explicit Exclusive Set Systems with Cryptographic Applications

Craig Gentry, Zulfikar Ramzan, and David P. Woodruff

Session 2A: 10:10-11:20

Chair: Rajmohan Rajaraman

A local switch markov chain on given degree graphs with application in connectivity of peer-to-peer networks

Tomas Feder, Adam Guetz, Milena Mihail and Amin Saberi

Local Peering and Service Contracts in Strategic Network Formation

Elliot Anshelevich, Bruce Shepherd and Gordon Wilfong

Towards Secure and Scalable Computation in Peer-to-Peer Networks

Valerie King, Jared Saia, Vishal Sanwalani and Erik Vee

Session 1B: 8:35-9:45 (Angel)

Chair: Ravi Kannan

A simple condition implying rapid mixing of single-site dynamics on spin systems

Thomas P. Hayes

Heat flow and a faster algorithm to compute the surface area of a convex body

Mikhail Belkin, Hariharan Narayanan and Partha Niyogi

Fast Algorithms for Logconcave Functions: Sampling, Rounding, Integration and Optimization

Laszlo Lovasz and Santosh Vempala

Session 2B: 10:10-11:20

Chair: Sanjeev Arora

L_p metrics on the Heisenberg group and the Goemans-Linial conjecture

James R. Lee and Assaf Naor

Ramsey partitions and proximity data structures

Manor Mendel, Assaf Naor

Algorithms on negatively curved spaces

Robert Krauthgamer and James R. Lee

Session 3 11:30-12:30 Angel + Belvedere

Chair: Christos Papadimitriou

Invited Talk:

Theory of Computation as a Lens on the Sciences: The Example of Computational Molecular Biology

Richard Karp, UC Berkeley.

Lunch 12:30-2:00 Yerba Buena and Treasure Rooms

Session 4A: 2:00-3:35

Chair: Shanghua Teng

Beyond Hirsch Conjecture: walks on random polytopes and smoothed complexity of the simplex method

Roman Vershynin

Improved Approximation Algorithms for Large Matrices via Random Projections

Tamás Sarlós

Worst-case and Smoothed Analyses of the ICP Algorithm, With an Application to the k-means Method.

David Arthur and Sergei Vassilvitskii

The Effectiveness of Lloyd-type Methods for the k-Means Problem

Rafail Ostrovsky, Yuval Rabani, Leonard Schulman and Chaitanya Swamy

Session 5A: 4:05-4:50

Chair: Moses Charikar

SDP gaps and UGC-hardness for MaxCutGain

Subhash Khot and Ryan O'Donnell

Correlated Algebraic-Geometric Codes: Improved List Decoding over Bounded Alphabets

Venkatesan Guruswami and Anindya Patthak

Session 6: 5:00-5:40 Angel + Belvedere

Chair: Avrim Blum

Best Paper Award:

Settling the Complexity of 2-Player Nash-Equilibrium

Xi Chen and Xiaotie Deng

Business Meeting 8:30-9:30pm Angel.

Surprise Rock Show 9:30—11pm in Belvedere.

Session 4B: 2:00-3:35

Chair: Avi Wigderson

Better lossless condensers through derandomized curve samplers

Amnon Ta-Shma and Christopher Umans

List-decoding direct product codes and uniform hardness amplification

Russell Impagliazzo, Ragesh Jaiswal and Valentine Kabanets

Index Coding with Side Information

Ziv Bar-Yossef, Yitzhak Birk, T. S. Jayram and Tomer Kol

Subspace Polynomials and List Decoding of Reed-Solomon Codes

Eli Ben-Sasson, Swastik Kopparty and Jaikumar Radhakrishnan

Session 5B: 4:05-4:50

Chair: Ashwin Nayak

Cryptography from Anonymity

Yuval Ishai, Eyal Kushilevitz, Rafail Ostrovsky and Amit Sahai

Secure Multiparty Quantum Computation with (Only) a Strict Honest Majority

Michael Ben-Or, Claude Crepeau, Daniel Gottesman, Avinatan Hassidim, and Adam Smith

MONDAY, Oct 23

Registration: Foyer 8am – 11:30am, 1:30pm – 3:00pm

Session 7A: 8:35-9:45

Chair: Anna Karlin

Minimum Bounded Degree Spanning Trees

Michel Goemans

Tight Approximate Min-Max Relations for Steiner Rooted-Orientations of Graphs and Hypergraphs

Tamas Kiraly and Lap Chi Lau

Improved Bounds for Online Routing and Packing via a Primal-Dual Approach

Niv Buchbinder and Seffi Naor

Session 8A: 10:10-11:20

Chair: Shafi Goldwasser

Concurrent Non-Malleable Zero Knowledge

Boaz Barak, Manoj Prabhakaran and Amit Sahai

Succinct Non-Interactive Zero-Knowledge Proofs with Preprocessing for LOGSNP

Yael Tauman Kalai and Ran Raz

Input-Indistinguishable Computation

Silvio Micali, Rafael Pass and Alon Rosen

Session 9: 11:30-12:30 Angel + Belvedere

Chair: Sanjeev Arora

Invited Talk:

A critique of pure vision

Terry Sejnowski, Salk Institute

Lunch 12:30-2:00 **Yerba Buena and Treasure Rooms**

Session 7B: 8:35-9:45

Chair: Harald Raecke

Improved Dynamic Planar Point Location

Lars Arge, Gerth Stolting Brodal and Loukas Georgiadis

Coresets for Weighted Facilities and Their Applications

Dan Feldman, Amos Fiat, and Micha Sharir

Planar Point Location in Sublogarithmic Time

Mihai Patrascu

AND

Point Location in $o(\log n)$ Time, Voronoi diagrams in $o(n \log n)$ time, and Other Transdichotomous Results in Computational Geometry

Timothy M. Chan

Session 8B: 10:10-11:20

Chair: Shuchi Chawla

Generalization of Binary Search: Searching in Trees and Forest-Like Partial Orders

Krzysztof Onak and Pawel Parys

Lower Bounds for Additive Spanners, Emulators, and More

David P. Woodruff

Solving Evacuation Problems Efficiently - Earliest Arrival Flows with Multiple Sources

Nadine Baumann and Martin Skutella

Session 10A: 2:00-3:35

Chair: Ashwin Nayak

New limits on fault-tolerant quantum computation
Harry Buhrman, Richard Cleve, Monique Laurent, Noah Linden, Alexander Schrijver and Falk Unger

Postselection threshold against biased noise
Ben W. Reichardt

On the Quantum Query Complexity of Local Search in Two and Three Dimensions
Xiaoming Sun and Andrew C. Yao

On the time complexity of 2-tag systems and small universal Turing machines
Damien Woods, Turlough Neary

Session 11A: 4:05-4:50

Chair: Moses Charikar

Norm of the inverse of a random matrix
Mark Rudelson

Witnesses for non-satisfiability of dense random 3CNF formulas
Uriel Feige, Jeong Han Kim and Eran Ofek

Session 12: 5:00-5:30 Angel + Belvedere

Chair: Avrim Blum

Machtey Award for Best Student Paper:

Algebraic Structures and Algorithms for Matching and Matroid Problems
Nicholas J. A. Harvey

Session 10B: 2:00-3:35

Chair: Timothy Chan

On the Optimality of the Dimensionality Reduction Method
Alexandr Andoni, Piotr Indyk and Mihai Patrascu

Near-Optimal Hashing Algorithms for Approximate Nearest Neighbor in High Dimensions
Alexandr Andoni and Piotr Indyk

Points on Computable Curves
Xiaoyang Gu, Jack H. Lutz, Elvira Mayordomo

Local Graph Partitioning using PageRank Vectors
Reid Andersen, Fan Chung and Kevin Lang

Session 11B: 4:05-4:50

Chair: Christos Papadimitriou

Accidental Algorithms
Leslie Valiant

The Kesten-Stigum Reconstruction Bound Is Tight for Roughly Symmetric Binary Channels
Christian Borgs, Jennifer Chayes, Elchanan Mossel, and Sebastien Roch

TUESDAY, Oct 24

Registration: Foyer 8am – 11:30am, 1:30pm – 3:00pm

Session 13A: 8:35-9:45

Chair: Avrim Blum

Hardness of Learning Halfspaces with Noise
Venkatesan Guruswami and Prasad Raghavendra

Cryptographic Hardness Results for Learning Intersections of Halfspaces
Adam R. Klivans and Alexander A. Sherstov

New Results for Learning Noisy Parities and Halfspaces
Vitaly Feldman, Parikshit Gopalan, Subhash Khot and Ashok Kumar Ponnuswami

Session 14A: 10:10-11:20

Chair: Shuchi Chawla

Computing Nash Equilibria: Approximation and Smoothed Complexity
Xi Chen, Xiaotie Deng and Shang-Hua Teng

On the Impact of Combinatorial Structure on Congestion Games
Heiner Ackermann, Heiko Roeglin and Berthold Voecking

Balanced Allocations of Cake
Jeff Edmonds and Kirk Pruhs

Session 13B: 8:35-9:45

Chair: Mikkel Thorup

Inclusion-Exclusion Algorithms for Counting Set Partitions
Andreas Björklund and Thore Husfeldt

An $O(2^n)$ Algorithm for Graph Coloring and Other Partitioning Problems via Inclusion-Exclusion
Mikko Koivisto

Faster Algorithms for Approximate Distance Oracles and All-Pairs Small Stretch Paths
Surender Baswana and Telikepalli Kavitha

Session 14B: 10:10-11:20

Chair: Harald Raecke

A Geometric Generalization of the Upper Bound Theorem
Uli Wagner

Higher Lower Bounds for Near-Neighbor and Further Rich Problems
Mihai Patrascu and Mikkel Thorup

Planar Earthmover is not in L_1
Assaf Naor and Gideon Schechtman

Session 15: 11:30-12:30 Angel + Belvedere

Chair: Sanjeev Arora

Invited Talk:

The Emerging Intersection of Social and Technological Networks: Open Questions and Algorithmic Challenges
Jon Kleinberg, Cornell

Lunch 12:30-2:00 Yerba Buena and Treasure Rooms

Session 16A: 2:00-3:35

Chair: Rajmohan Rajaraman

Approximation algorithms for allocation problems:

Improving the factor of $1-1/e$

Uriel Feige, Jan Vondrak

Approximation Algorithms for Non-Uniform Buy-at-Bulk
Network Design Problems

*Chandra Chekuri, MohammadTaghi Hajiaghayi, Guy
Kortsarz, Mohammad R. Salavatipour*

How to Play Unique Games Using Embeddings

*Eden Chlamtac and Konstantin Makarychev and Yury
Makarychev*

Improved approximation algorithms for multidimensional bin
packing problems

Nikhil Bansal, Alberto Caprara and Maxim Sviridenko

Session 16B: 2:00-3:35

Chair: TBA

Lower bounds for circuits with MOD_m gates

*Arkadev Chattopadhyay, Navin Goyal, Pavel Pudlak and
Denis Therien*

On the Compressibility of NP Instances and Cryptographic
Applications

Danny Harnik and Moni Naor

Dispersion of Mass and the Complexity of Randomized
Algorithms

Luis Rademacher and Santosh Vempala

An $\Omega(n^{1/3})$ Lower Bound for Bilinear Group Based
Private Information Retrieval

Alexander A. Razborov and Sergey Yekhanin