

Saturday, May 19, 2012 (at New York University)

TUTORIAL

9:45-10:45 Algorithmic Trading and Computational Finance, Part I
 - Michael Kearns
 WWH Room 109

10:45-11:00 **Coffee break**

11:00-12:00 Algorithmic Trading and Computational Finance, Part II
 - Michael Kearns
 WWH Room 109

12:00-1:30 **Lunch (Not Provided)**

WORKSHOP

1:30-3:30	<u>Computational Sustainability</u> - Steven Phillips Kirk Pruhs David Shmoys WWH Room 1302	<u>Algorithms for Distributed and Streaming Data</u> - Ashish Goel Andrew McGregor Sergei Vassilvitskii WWH Room 101	<u>Algorithms for Memory-Sensitive Computing</u> - Michael Bender Martin Farach-Colton WWH Room 102	<u>Unique Games Conjecture and Related Advances</u> - Sanjeev Arora Moses Charikar WWH Room 109
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3:30-4:00 **Coffee break**

4:00-6:00	<u>Computational Sustainability</u> - Steven Phillips Kirk Pruhs David Shmoys WWH Room 1302	<u>Algorithms for Distributed and Streaming Data</u> - Ashish Goel Andrew McGregor Sergei Vassilvitskii WWH Room 101	<u>Algorithms for Memory-Sensitive Computing</u> - Michael Bender Martin Farach-Colton WWH Room 102	<u>Unique Games Conjecture and Related Advances</u> - Sanjeev Arora Moses Charikar WWH Room 109
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7:00-9:00 **Reception (at the New Yorker Hotel)**

Note: WWH stands for Warren Weaver Hall of Courant Institute of Mathematical Sciences, New York University.

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Sunday, May 20, 2012 (at the New Yorker Hotel)

Session 1A		Chair: Dan Spielman	Session 1B		Chair: Oded Regev
8:45-9:05	<u>Faster Approximate Multicommodity Flow Using Quadratically Coupled Flows</u> - Jonathan A. Kelner, Gary L. Miller, Richard Peng		<u>Quantum Money from Hidden Subspaces</u> - Scott Aaronson, Paul Christiano		
9:10-9:30	<u>When the Cut Condition is Enough: A Complete Characterization for Multiflow Problems in Series-Parallel Networks</u> - Amit Chakrabarti, Lisa Fleisher, Christophe Weibel		<u>Certifiable Quantum Dice: Or, True Random Number Generation Secure Against Quantum Adversaries</u> - Umesh Vazirani, Thomas Vidick		
9:35-9:55	<u>Strongly polynomial algorithm for a class of minimum-cost flow problems with separable convex objectives</u> - Laszlo A. Vegh		<u>Span Programs for Functions with Constant-Sized 1-certificates</u> - Aleksandrs Belovs		
Coffee break					
Session 2		Chair: Toniann Pitassi			
10:25-10:45	<u>The Cell Probe Complexity of Dynamic Range Counting</u> - Kasper Green Larsen				
10:50-11:10	<u>Linear vs. Semidefinite Extended Formulations: Exponential Separation and Strong Lower Bounds</u> - Samuel Fiorini, Serge Massar, Sebastian Pokutta, Hans Raj Tiwary, Ronald de Wolf				
Session 3A		Chair: Amin Saberi	Session 3B		Chair: Shubanghi Saraf
11:20-11:40	<u>Polyhedral Clinching Auctions and the Adwords Polytope</u> - Gagan Goel, Vahab Mirrokni, Renato Paes Leme		<u>Computing a Nonnegative Matrix Factorization – Provably</u> - Sanjeev Arora, Rong Ge, Ravi Kannan, Ankur Moitra		
11:45-12:05	<u>Matroid Prophet Inequalities</u> - Robert Kleinberg, Seth Matthew Weinberg		<u>On Identity Testing of Tensors, Low-rank Recovery and Compressed Sensing</u> - Michael A. Forbes, Amir Shpilka		
12:10-12:30	<u>Online matching with concave returns</u> - Nikhil R. Devanur, Kamal Jain		<u>Structure Theorem and Isomorphism Test for Graphs with Excluded Topological Subgraphs</u> - Martin Grohe, Daniel Marx		
Lunch (Not Provided)					
Session 4A		Chair: Toniann Pitassi	Session 4B		Chair: Oded Regev
2:00-2:20	<u>Short Proofs for the Determinant Identities</u> - Pavel Hrubes, Iddo Zameret		<u>Solution of the propeller conjecture in \mathbb{R}^3</u> - Steven Heilman, Aukosh Jagannath, Assaf Naor		
2:25-2:45	<u>Time-Space Tradeoffs in Resolution: Superpolynomial Lower Bounds for Superlinear Space</u> - Paul Beame, Christopher Beck, Russell Impagliazzo		<u>$2^{\log^{1-\epsilon} n}$ Hardness for Closest Vector Problem with Preprocessing</u> - Subhash Khot, Preyas Popat, Nisheeth Vishnoi		
2:50-3:10	<u>On the Virtue of Succinct Proofs: Amplifying Communication Complexity Hardness to Time-Space Tradeoffs in Proof Complexity</u> - Trinh Huynh, Jakob Nordstrom		<u>A new point of NP-hardness for Unique Games</u> - Ryan O'Donnell, John Wright		
3:15-3:35	<u>Determinism versus Nondeterminism with Arithmetic Tests and Computation</u> - Miklos Ajtai		<u>Hypercontractivity, Sum-of-Squares Proofs, and their Applications</u> - Boaz Barak, Fernando G.S.L. Brandao, Aram W. Harrow, Jonathan Kelner, David Steurer, Yuan Zhou		
Coffee Break					
Session 5A		Chair: Madhur Tulsiani	Session 5B		Chair: Sanjeev Khanna
4:05-4:25	<u>From Irreducible Representations to Locally Decodable Codes</u> - Klim Efremenko		<u>Approximation Algorithms for Semi-Random Partitioning Problems</u> - Konstantin Makarychev, Yury Makarychev, Aravindan Vijayaraghavan		
4:30-4:50	<u>Folded Codes from Function Field Towers and Improved Optimal Rate List Decoding</u> - Venkatesan Guruswami, Chaoping Xing		<u>A Near-Linear Time ϵ-Approximation Algorithm for Geometric Bipartite Matching</u> - R. Sharathkumar, Pankaj K. Agarwal		
4:55-5:15	<u>Subspace Evasive Sets</u> - Zeev Dvir, Shachar Lovett		<u>Using Petal-Decompositions to Build a Low Stretch Spanning Tree</u> - Ittai Abraham, Ofer Neiman		
5:20-5:40	<u>Edge Transitive Ramanujan Graphs and Symmetric LDPC Good Codes</u> - Tali Kaufman, Alexander Lubotzky		<u>Improved Smoothed Analysis of Multiobjective Optimization</u> - Tobias Brunsch, Heiko Roglin		
5:50 - 7:30	Poster Session				

Monday, May 21, 2012 (at the New Yorker Hotel)

Session 6A Chair: Amin Saberi		Session 6B Chair: Rahul Santhanam	
8:50-9:10	<u>Prior-Free Auctions with Ordered Bidders</u> - Stefano Leonardi, Tim Roughgarden	<u>Tight bounds on computing error-correcting codes by bounded-depth circuits with arbitrary gates</u> - Anna Gal, Kristoffer Arnsfelt Hansen, Michal Koucky, Pavel Pudlak, Emanuele Viola	
9:15-9:35	<u>On the limits of black-box reductions in mechanism design</u> - Shuchi Chawla, Nicole Immorlica, Brendan Lucier	<u>Tight Bounds for Monotone Switching Networks via Fourier Analysis</u> - Siu Man Chan, Aaron Potechin	
9:40-10:00	<u>Budget Feasible Mechanism Design: From Prior-Free to Bayesian</u> - Xiaohui Bei, Ning Chen, Nick Gravin, Pinyan Lu	<u>Interactive Information Complexity</u> - Mark Braverman	
10:05-10:25	<u>An Algorithmic Characterization of Multi-Dimensional Mechanisms</u> - Yang Cai, Constantinos Daskalakis, S. Matthew Weinberg	<u>The Multiparty Communication Complexity of Set Disjointness</u> - Alexander A. Sherstov	
Coffee break			
Session 7A Chair: Satish Rao		Session 7B Chair: Shubhangi Saraf	
10:55-11:15	<u>Fast Matrix Rank Algorithms and Applications</u> - Ho Yee Cheung, Tsz Chiu Kwok, Lap Chi Lau	<u>Jacobian Hits Circuits: Hitting-sets, Lower Bounds for Depth-D Occur-k Formulas and Depth-3 Transcendence Degree-k Circuits</u> - Manindra Agrawal, Chandan Saha, Ramprasad Satharishi, Nitin Saxena	
11:20-11:40	<u>Nearly Optimal Sparse Fourier Transform</u> - Haitham Hassanieh, Piotr Indyk, Dina Katabi, Eric Price	<u>Separating multilinear branching programs and formulas</u> - Zeev Dvir, Guillaume Malod, Sylvain Perifel, Amir Yehudayoff	
11:45-12:05	<u>Polynomial Time Algorithms for Multi-Type Branching Processes and Stochastic Context-Free Grammars</u> - Kousha Etessami, Alistair Stewart, Mihalis Yannakakis	<u>Reconstruction of Depth-4 Multilinear circuits with Top Fan-in 2</u> - Ankit Gupta, Neeraj Kayal, Satya Lokam	
12:10-12:30	<u>Optimal Online Buffer Scheduling for Block Devices</u> - Anna Adamaszek, Artur Czumaj, Matthias Englert, Harald Raecke	<u>Affine Projections of Polynomials</u> - Neeraj Kayal	
LUNCH (PROVIDED !)			
Session 8A Chair: Suresh Venkatasubramanian		Session 8B Chair: Dana Ron	
2:00-2:20	<u>The traveling salesman problem: low dimensionality implies a polynomial time approximation scheme</u> - Yair Bartal, Lee-Ad Gottlieb, Robert Krauthgamer	<u>Learning Poisson Binomial Distributions</u> - Constantinos Daskalakis, Ilias Diakonikolas, Rocco Servedio	
2:25-2:45	<u>On Vertex Sparsifiers with Steiner Nodes</u> - Julia Chuzhoy	<u>Nearly optimal solutions for the Chow Parameters Problem and low- weight approximation of halfspaces</u> - Anindya De, Ilias Diakonikolas, Vitaly Feldman, Rocco Servedio	
2:50-3:10	<u>Approximation Algorithms and Hardness of Integral Concurrent Flow</u> - Parinya Chalermsook, Julia Chuzhoy, Alina Ene, Shi Li	<u>Making Polynomials Robust to Noise</u> - Alexander A. Sherstov	
Coffee Break			
Session 9A Chair: Rahul Santhanam		Session 9B Chair: Guy Rothblum	
3:30-3:50	<u>Competitive Contagion in Networks</u> - Sanjeev Goyal, Michael Kearns	<u>Pseudorandom Generators with Long Stretch and Low Locality from Random Local One-Way Functions</u> - Benny Applebaum	
3:55-4:15	<u>Finding red balloons with split contracts: robustness to individuals' selfishness</u> - Manuel Cebrian, Lorenzo Coviello, Andrea Vattani, Panagiotis Voulgaris	<u>Characterizing Pseudentropy and Simplifying Pseudorandom Generator Constructions</u> - Salil Vadhan, Colin Jia Zheng	
4:20-4:40	<u>A Rigorous Analysis of One-Dimensional Schelling Segregation</u> - Christina Brandt, Nicole Immorlica, Gautam Kamath, Robert Kleinberg	<u>Design Extractors, Non-Malleable Condensers and Privacy Amplification</u> - Xin Li	
Coffee break			
Session 10 Chair: David Williamson			
5:00-5:20	<u>Routing in Undirected Graphs with Constant Congestion</u> - Julia Chuzhoy		
5:25-5:45	<u>Improving Chrisofides' Algorithm for the s-t Path TSP</u> - Hyung-Chan An, Robert Kleinberg, David B. Shmoys		
5:50-6:10	<u>Multiplying Matrices Faster Than Coppersmith-Winograd</u> - Virginia Vassilevska Williams		
9:00	Business Meeting		

Tuesday, May 22, 2012 (at the New Yorker Hotel)

Session 11A Chair: Rina Panigrahy		Session 11B Chair: Dana Ron	
8:50-9:10	<u>Catching the k-NAESAT threshold</u> - Amin Coja-Oglan, Konstantinos Panagiotou	<u>Tight Bounds for Distributed Functional Monitoring</u> - David P. Woodruff, Qin Zhang	
9:15-9:35	<u>Complexity of Counting CSP with Complex Weights</u> - Jin-Yi Cai, Xi Chen	<u>Global Computation in a Poorly Connected World: Fast Rumor Spreading with No Dependence on Conductance</u> - Keren Censor-Hillel, Bernhard Haeupler, Jonathan A. Kelner, Petar Maymounkov	
9:40-10:00	<u>The freezing threshold for k-colourings of a random graph</u> - Michael Molloy	<u>Tight Time-Space Tradeoff for Mutual Exclusion</u> - Nikhil Bansal, Vibhor Bhatt, Prasad Jayanti, Ranganath Kondapally	
10:05-10:25	<u>Robust satisfiability of constraint satisfaction problems</u> - Libor Barto, Marcin Kozik	<u>A Tight RMR Lower Bound for Randomized Mutual Exclusion</u> - George Giakkoupis, Philipp Woelfel	
10:25-10:55	Coffee break		
Session 12A Chair: Andrew McGregor		Session 12B Chair: Tom Hayes	
10:55-11:15	<u>A Complementary Pivot Algorithm for Markets under Separable, Piecewise-Linear Concave Utilities</u> - Jugal Garg, Ruta Mehta, Milind Sohoni, Vijay V. Vazirani	<u>Monotone expansion</u> - Jean Bourgain, Amir Yehudayoff	
11:20-11:40	<u>Rational Proofs</u> - Pablo Azar, Silvio Micali	<u>Nearly Complete Graphs Decomposable into Large Induced Matchings and their Applications</u> - Noga Alon, Ankur Moitra, Benny Sudakov	
11:45-12:05	<u>Minimax Option Pricing Meets Black-Scholes in the Limit</u> - Jacob Abernethy, Rafael Frongillo, Andre Wibisono	<u>Probabilistic existence of rigid combinatorial structures</u> - Greg Kuperberg, Shachar Lovett, Ron Peled	
12:10-12:30	<u>A quantitative Gibbard-Satterthwaite theorem without neutrality</u> - Elchanan Mossel, Miklos Z. Racz	<u>From Query Complexity to Computational Complexity</u> - Shahar Dobzinski, Jan Vondrak	
12:30-2:00	Lunch (Not Provided)		
Session 13A Chair: Andrew McGregor		Session 13B Chair: Guy Rothblum	
2:00-2:20	<u>Multiway spectral partitioning and higher-order Cheeger inequalities / Many Sparse Cuts via Higher Eigenvalues</u> - James R. Lee, Shayan Oveis Gharan, Luca Trevisan / Anand Louis, Prasad Raghavendra, Prasad Tetali, Santosh Vempala	<u>On-the-Fly Multiparty Computation on the Cloud via Multikey Fully Homomorphic Encryption</u> - Adriana Lopez-Alt, Eran Tromer, Vinod Vaikuntanathan	
2:25-2:45	<u>Approximating the Exponential, the Lancos Method and an $\tilde{O}(m)$-Time Spectral Algorithm for Balanced Separator</u> - Lorenzo Orecchia, Sushant Sachdeva, Nisheeth Vishnoi	<u>Multiparty Computation Secure Against Continual Memory Leakage</u> - Elette Boyle, Shafi Goldwasser, Abhishek Jain, Yael Tauman Kalai	
2:50-3:10	<u>Matroids and Integrality Gaps for Hypergraphic Steiner Tree Relaxations</u> - Michel X. Goemans, Neil Olver, Thomas Rothvoss, Rico Zenklusen	<u>Beating Randomized Response on Incoherent Matrices</u> - Moritz Hardt, Aaron Roth	
3:15-3:35	<u>Strict Fibonacci Heaps</u> - Gerth Stolting Brodal, George Lagogiannis, Robert E. Tarjan	<u>Unconditionally Differentially Private Mechanisms for Linear Queries</u> - Aditya Bhaskara, Daniel Dadush, Ravishankar Krishnaswamy, Kunal Talwar	
3:40-4:00	<u>Tight lower bounds for the online labeling problem</u> - Jan Bulanek, Michal Koucky, Michael Saks	<u>Optimal Private Halfspace Counting via Discrepancy</u> - S. Muthukrishnan, Aleksandar Nikolov	
4:05-4:25	<u>Fully Dynamic Approximate Distance Oracles for Planar Graphs via Forbidden-Set Distance labels</u> - Ittai Abraham, Shiri Chechik, Cyril Gavoille		

