

Program for FOCS 2014

55th IEEE Symposium on Foundations of Computer Science

October 18–21 2014, Radisson Blue Warwick Hotel, Philadelphia, PA



Saturday, October 18

9:00 am–6:00 pm	Tutorial and workshops (Full schedule on page 6)
10:30–11:00 am	Coffee break – Mezzanine Foyer
	Lunch (On your own)
3:30–4:00 pm	Coffee break – Mezzanine Foyer
6:00–7:30 pm	How might FOCS and STOC evolve? A panel-led discussion – Grand Ballroom
7:00–9:00 pm	Reception – Crystal Ballroom

Sunday, October 19

8:30–9:00 am	Breakfast – Mezzanine Foyer	
	Session 1 – Grand Ballroom Chair: Kunal Talwar	
9:00–9:20 am	Threesomes, Degenerates, and Love Triangles Allan Grønlund and Seth Pettie	
9:25–9:45	Constructive discrepancy minimization for convex triangles Thomas Rothvoss	
9:50–10:10	Hardness of Coloring 2-Colorable 12-Uniform Hypergraphs with $2^{(\log n)^{\Omega(1)}}$ Colors Subhash Khot and Rishi Saket	
10:10–10:40	Coffee break – Mezzanine Foyer	
	Session 2A – Grand Ballroom Chair: Valerie King	Session 2B – Crystal Ballroom Chair: Robert Kleinberg
10:40–11:00 am	The Dyck Language Edit Distance Problem in Near-linear Time Barna Saha	(2+ϵ)-SAT is NP-hard Per Austrin, Venkatesan Guruswami, and Johan Håstad
11:05–11:25	Network Sparsification for Steiner Problems on Planar and Bounded-Genus Graphs Marcin Pilipczuk, Michał Pilipczuk, Piotr Sankowski, and Erik Jan van Leeuwen	Parallel Repetition From Fortification Dana Moshkovitz

11:30–11:50	Popular conjectures imply strong lower bounds for dynamic problems Amir Abboud and Virginia Vassilevska Williams	Complexity of counting subgraphs: only the boundedness of the vertex-cover number counts Radu Curticapean and Dániel Marx
11:55–12:15	Why walking the dog takes time: Frechet distance has no strongly subquadratic algorithms unless SETH fails Karl Bringmann	The Complexity of Counting Edge Colorings and a Dichotomy for Some Higher Domain Holant Problems (Extended Abstract) Jin-Yi Cai, Heng Guo, and Tyson Williams
12:15–2:15	Lunch – Cherry, Walnut, and Chestnut Rooms	
	Session 3A – Grand Ballroom Chair: Aaron Roth	Session 3B – Crystal Ballroom Chair: Ankur Moitra
2:15–2:35	Achieving Target Equilibria in Network Routing Games without Knowing the Latency Functions Umang Bhaskar, Katrina Ligett, Leonard J. Schulman, and Chaitanya Swamy	Decremental Single-Source Shortest Paths on Undirected Graphs in Near-Linear Total Update Time Monika Henzinger, Sebastian Krinninger, and Danupon Nanongkai
2:40–3:00	Barriers to Near-Optimal Equilibria Tim Roughgarden	Dynamic Integer Sets with Optimal Rank, Select, and Predecessor Search Mihai Patrascu and Mikkel Thorup
3:05–3:25	A Counter-Example to Karlin’s Strong Conjecture for Fictitious Play Constantinos Daskalakis, Qinxuan Pan	Generating k-independent variables in constant time Tobias Christiani and Rasmus Pagh
3:25–3:55	Coffee break – Mezzanine Foyer	
	Session 4A – Grand Ballroom Chair: Robert Kleinberg	Session 4B – Crystal Ballroom Chair: Scott Aaronson
3:55–4:15	Ramanujan Complexes and bounded degree topological expanders Tali Kaufman, David Kazhdan, and Alexander Lubotzky	Local tests for global entanglement and a counterexample to the generalized area law Dorit Aharonov, Aram Harrow, Zeph Landau, Daniel Nagaj, Mario Szegedy, and Umesh Vazirani
4:20–4:40	On the AC0 Complexity of Subgraph Isomorphism Yuan Li, Alexander Razborov, and Benjamin Rossman	Complexity classification of local Hamiltonian problems Toby Cubitt and Ashley Montanaro
4:45–5:05	Shrinkage of De Morgan Formulae by Spectral Techniques Avishay Tal	
5:05–5:20	Coffee break – Mezzanine Foyer	
	Session 5 – Grand Ballroom Chair: Julia Chuzhoy	
5:20–5:40 pm	LP-Based Algorithms for Capacitated Facility Location Hyung-Chan An, Mohit Singh, and Ola Svensson	
5:45–6:05	List and Unique Coding for Interactive Communication in the Presence of Adversarial Noise Mark Braverman and Klim Efremenko	
9:00–11:00 pm	FOCS 2014 business meeting – Grand Ballroom	

Monday, October 20

8:30–9:00 am	Breakfast – Mezzanine Foyer	
	Session 6 – Grand Ballroom Chair: Ankur Moitra	
9:00–9:20 am	Exponential Separation of Information and Communication Anat Ganor, Gillat Kol, and Ran Raz	
9:25–9:45	Fixed-parameter tractable canonization and isomorphism test for graphs of bounded treewidth Daniel Lokshantov, Marcin Pilipczuk, Michał Pilipczuk, and Saket Saurabh	
9:50–10:10	Chasing Ghosts: Competing with Stateful Policies Uriel Feige, Tomer Koren, and Moshe Tennenholtz	
10:10–10:40	Coffee break – Mezzanine Foyer	
	Session 7A – Grand Ballroom Chair: Kunal Talwar	Session 7B – Crystal Ballroom Chair: Boaz Barak
10:40–11:00 am	Sample-Optimal Fourier Sampling in Any Constant Dimension Piotr Indyk and Michael Kapralov	Outsourcing Private RAM Computation Craig Gentry, Shai Halevi, Mariana Raykova, and Daniel Wichs
11:05–11:25	Spectral Approaches to Nearest Neighbor Search Amirali Abdullah, Alexandr Andoni, Ravi Kannan, Robert Krauthgamer	One-Way Functions and (Im)perfect Obfuscation Ilan Komargodski, Tal Moran, Moni Naor, Rafael Pass, Alon Rosen, and Eylon Yogev
11:30–11:50	Solving Optimization Problems with Diseconomies of Scale via Decoupling Konstantin Makarychev and Maxim Sviridenko	Non-Malleable Codes Against Constant Split-State Tampering Eshan Chattopadhyay and David Zuckerman
11:55–12:15	Settling the APX-hardness Status for Geometric Set Cover Nabil H. Mustafa, Rajiv Raman, and Saurabh Ray	An Algebraic Approach to Non-Malleability Vipul Goyal, Silas Richelson, Alon Rosen, and Margarita Vald
12:15–2:15	Lunch – Cherry, Walnut, and Chestnut Rooms	
	Session 8A – Grand Ballroom Chair: Aaron Roth	Session 8B – Crystal Ballroom Chair: Alexander Russell
2:15–2:35 pm	On the Hardness of Signaling Shaddin Dughmi	Novel Polynomial Basis and Its Application to Reed-Solomon Erasure Codes Sian-Jheng Lin, Wei-Ho Chung, and Yunghsiang S. Han
2:40–3:00	Mechanism Design for Crowdsourcing: An Optimal $1-1/e$ Competitive Budget-Feasible Mechanism for Large Markets Nima Anari, Gagan Goel, and Afshin Nikzad	Bi-Lipschitz Bijection between the Boolean Cube and the Hamming Ball Itai Benjamini, Gil Cohen, and Igor Shinkar

3:05–3:25	A Simple and Approximately Optimal Mechanism for an Additive Buyer Moshe Babaioff, Nicole Immorlica, Brendan Lucier, and S. Matthew Weinberg	Bounds on the permanent and some applications Leonid Gurvits and Alex Samorodnitsky
3:25–3:55	Coffee break – Mezzanine Foyer	
	Session 9A – Grand Ballroom Chair: Scott Aaronson	Session 9B – Crystal Ballroom Chair: Aaron Roth
3:55–4:15 pm	Noisy Interactive Quantum Communication Gilles Brassard, Ashwin Nayak, Alain Tapp, Dave Touchette, and Falk Unger	Total space in resolution Ilario Bonacina, Nicola Galesi, and Neil Thapen
4:20–4:40	Improved Quantum Algorithm for Triangle Finding via Combinatorial Arguments Francois Le Gall	Circuit Complexity, Proof Complexity, and Polynomial Identity Testing Joshua A. Grochow and Toniann Pitassi
4:45–5:05	Quantum Attacks on Classical Proof Systems (The Hardness of Quantum Rewinding) Andris Ambainis, Ansis Rosmanis, and Dominique Unruh	Pre-Reduction Graph Products: Hardnesses of Properly Learning DFAs and Approximating EDP on DAGs Parinya Chalermsook, Bundit Laekhanukit, and Danupon Nanongkai
5:05–5:20	Coffee break – Mezzanine Foyer	
	Session K – Grand Ballroom Chair: Boaz Barak	
5:20–6:20 pm	Knuth Prize Lecture Richard Lipton	

Tuesday, October 21

8:30–9:00 am	Breakfast – Mezzanine Foyer	
	Session 10 – Grand Ballroom Chair: Julia Chuzhoy	
9:00–9:20 am	Single Pass Spectral Sparsification in Dynamic Streams Michael Kapralov, Yin Tat Lee, Cameron Musco, Christopher Musco, and Aaron Sidford	
9:25–9:45	On the power of homogeneous depth 4 arithmetic circuits Mrinal Kumar and Shubhangi Saraf An Exponential Lower Bound for Homogeneous Depth Four Arithmetic Formulas Neeraj Kayal, Nutan Limaye, Chandan Saha, and Srikanth Srinivasan	
9:50–10:10	An Automatic Inequality Prover and Instance Optimal Identity Testing Gregory Valiant and Paul Valiant	
10:10–10:30	Coffee break – Mezzanine Foyer	

	Session 11A – Grand Ballroom Chair: Valerie King	Session 11B – Crystal Ballroom Chair: Julia Chuzhoy
10:30–10:50 am	Randomized Mutual Exclusion with Constant Amortized RMR Complexity on the DSM George Giakkoupis and Philipp Woelfel	On Learning and Testing Dynamic Environments Oded Goldreich and Dana Ron
10:55–11:15	Online bipartite matching in offline time Bartłomiej Bosek, Dariusz Leniowski, Piotr Sankowski, and Anna Zych	Preventing False Discovery in Interactive Data Analysis is Hard Moritz Hardt and Jonathan Ullman
11:20–11:40	$O(\log \log \text{rank})$ Competitive-Ratio for the Matroid Secretary Problem Oded Lachish	Differentially Private Empirical Risk Minimization: Efficient Algorithms and Tight Error Bounds Raef Bassily, Adam Smith, and Abhradeep Thakurta
11:45–12:05	SelfishMigrate: A Scalable Algorithm for Non-clairvoyantly Scheduling Heterogeneous Processors Sungjin Im, Janardhan Kulkarni, Kamesh Munagala, and Kirk Pruhs	New algorithms and lower bounds for monotonicity testing Xi Chen, Rocco A. Servedio, and Li-Yang Tan
12:05–2:05	Lunch – Cherry, Walnut, and Chestnut Rooms	
	Session 12A – Grand Ballroom Chair: Scott Aaronson	Session 12B – Crystal Ballroom Chair: Alexander Russell
2:05–2:25 pm	Satisfiability and Evolution Adi Livnat, Christos Papadimitriou, Aviad Rubinfeld, Andrew Wan, and Gregory Valiant	Interactive Channel Capacity Revisited Bernhard Haeupler
2:30–2:50	Random Walks that Find Perfect Objects and the Lovasz Local Lemma Dimitris Achlioptas and Fotis Iliopoulos	Optimal Error Rates for Interactive Coding II: Efficiency and List Decoding Mohsen Ghaffari and Bernhard Haeupler
2:55–3:15	Digital morphogenesis via Schelling segregation George Barmpalias, Richard Elwes, and Andy Lewis-Pye	Topology Matters in Communication Arkadev Chattopadhyay, Jaikumar Radhakrishnan, and Atri Rudra
3:20–3:40	Understanding Alternating Minimization for Matrix Completion Moritz Hardt	
3:40–4:00	Coffee break – Mezzanine Foyer	
	Session 13 (Best Paper) – Grand Ballroom Chair: Boaz Barak	
4:00–4:20 pm	Path-Finding Methods for Linear Programming : Solving Linear Programs in $\tilde{O}(\sqrt{\text{rank}})$ Iterations and Faster Algorithms for Maximum Flow Yin Tat Lee and Aaron Sidford	

Tutorial and Workshops – Saturday, October 18

2:00–6:00 pm	Tutorial – Obfuscation: How to Encrypt a Functionality – Walnut Room (third floor)
2:00–3:30	Introduction to Obfuscation/Obfuscation Constructions and Security Amit Sahai
4:00–5:00	Applications of Obfuscation Allison Bishop Lewko
5:00–6:00	Multilinear Maps and Efficiency of Obfuscation Dan Boneh
9:00 am–3:30 pm	Workshop – Sparse Fourier Transform: Theory and Applications – Crystal Ballroom Organizers: Anna Gilbert, Piotr Indyk, and Dina Katabi
9:00–9:40	Overview of Sparse Fourier Transform Algorithms Eric Price
9:40–10:05	Discrete Inverse Problems and Fourier Sampling Anna Gilbert
10:05–10:30	Computing Sparse Chebyshev and Legendre Coefficient Expansions via SFTs Mark Iwen
11:00–11:45	Sparse Fourier Transforms Based on Sparse-Graph Alias Codes Kannan Ramchandran
11:45–12:30	Overview of Sparse Fourier Transform Applications Haitham Hassanieh and Dina Katabi
2:00–3:00	Overview of Fourier sampling over the Boolean cube Eric Blais
3:00–3:30	The Threshold for Super-resolution Ankur Moitra
11:00 am–5:30 pm	Workshop – Higher-order Fourier Analysis – Grand Ballroom Organizers: Arnab Bhattacharyya and Shachar Lovett
11:00–11:50	Background on higher-order Fourier Analysis Arnab Bhattacharyya
11:55–12:35	Regularity of polynomials and linear forms Pooya Hatami
2:00–2:40	Algorithmic higher-order Fourier analysis Madhur Tulsiani
2:50–3:30	Applications to algebraic property testing Yuichi Yoshida
4:00–4:40	Applications to coding theory Abhishek Bhowmick
4:50–5:30	Interleaved products in special linear groups: mixing & communication complexity Emanuele Viola

Sponsors

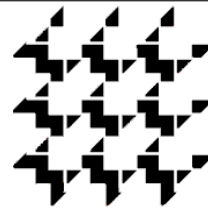


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