

Thirty-Fourth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA 2023)

Florence, Italy
22-25 January 2023

Volume 1 of 7

ISBN: 978-1-7138-7473-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2023) by SIAM: Society for Industrial and Applied Mathematics
All rights reserved.

Printed with permission by Curran Associates, Inc. (2023)

For permission requests, please contact SIAM: Society for Industrial and Applied Mathematics
at the address below.

SIAM
3600 Market Street, 6th Floor
Philadelphia, PA 19104-2688 USA

Phone: (215) 382-9800

siambooks@siam.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

SODA 2023 TABLE OF CONTENTS

Session 1A

Dynamic Algorithms for Packing-Covering LPs via Multiplicative Weight Updates	1
Sayan Bhattacharya, Peter Kiss and Thatchaphol Saranurak	
Maintaining Expander Decompositions via Sparse Cuts	48
Yiding Hua, Rasmus Kyng, Maximilian Probst Gutenberg and Zihang Wu	
Fully Dynamic Exact Edge Connectivity in Sublinear Time	70
Gramoz Goranci, Monika Henzinger, Danupon Nanongkai, Thatchaphol Saranurak, Mikkel Thorup and Christian Wulff-Nilsen	
Faster Deterministic Worst-Case Fully Dynamic All-Pairs Shortest Paths via Decremental Hop-Restricted Shortest Paths	87
Shiri Chechik and Tianyi Zhang	
Dynamic Matching with Better-than-2 Approximation in Polylogarithmic Update Time	100
Sayan Bhattacharya, Peter Kiss, Thatchaphol Saranurak and David Wajc	
Dynamic Algorithms for Maximum Matching Size	129
Soheil Behnezhad	

Session 1B

Closing the Gap Between Directed Hopsets and Shortcut Sets	163
Aaron Bernstein and Nicole Wein	
Maximal k-Edge-Connected Subgraphs in Weighted Graphs via Local Random Contraction	183
Chaitanya Nalam and Thatchaphol Saranurak	
Faster and Unified Algorithms for Diameter Reducing Shortcuts and Minimum Chain Cover	212
Shimon Kogan and Merav Parter	
Near-Linear Time Approximations for Cut Problems via Fair Cuts	240
Jason Li, Danupon Nanongkai, Debmalya Panigrahi and Thatchaphol Saranurak	
Fast Discrepancy Minimization with Hereditary Guarantees	276
Kasper Green Larsen	

A Tight Quasi-polynomial Bound for Global Label Min-Cut	290
Lars Jaffke, Paloma T. Lima, Tomáš Masaří-k, Marcin Pilipczuk and Uevertton S. Souza	

Session 1C

Fair Allocation of a Multiset of Indivisible Items	304
Pranay Gorantla, Kunal Marwaha and Santhoshini Velusamy	
The Price of Stability for First Price Auction	332
Yaonan Jin and Pinyan Lu	
Competitive Information Design for Pandora's Box	353
Bolin Ding, Yiding Feng, Chien-Ju Ho, Wei Tang and Haifeng Xu	
Optimal Pricing Schemes for an Impatient Buyer	382
Yuan Deng, Jieming Mao, Balasubramanian Sivan and Kangning Wang	
Pricing Query Complexity of Revenue Maximization	399
Renato Paes Leme, Balasubramanian Sivan, Yifeng Teng and Pratik Worah	
Interdependent Public Projects	416
Avi Cohen, Michal Feldman, Divyarthi Mohan and Inbal Talgam-Cohen	

Session 2A

Stronger 3SUM-Indexing Lower Bounds	444
Eldon Chung and Kasper Green Larsen	
Tight Bounds for Monotone Minimal Perfect Hashing	456
Sepehr Assadi, Martín Farach-Colton and William Kuszmaul	
Tiny Pointers	477
Michael A. Bender, Alex Conway, Martín Farach-Colton, William Kuszmaul and Guido Tagliavini	
Improved Pattern-Avoidance Bounds for Greedy BSTs via Matrix Decomposition	509
Parinya Chalermsook, Manoj Gupta, Wanchote Jiamjitrak, Nidia Obscura Acosta, Akash Pareek and Sorrachai Yingchareonthawornchai	
A Nearly-tight Analysis of Multipass Pairing Heaps	535
Corwin Sinnamon and Robert E. Tarjan	
A Tight Analysis of Slim Heaps and Smooth Heaps	549
Corwin Sinnamon and Robert E. Tarjan	

Session 2B

Hierarchies of Minion Tests for PCSPs through Tensors	568
Lorenzo Ciardo and Stanislav Živný	
Short Synchronizing Words for Random Automata	581
Guillaume Chapuy and Guillem Perarnau	
Approximate Trace Reconstruction from a Single Trace	605
Xi Chen, Anindya De, Chin Ho Lee, Rocco A. Servedio and Sandip Sinha	
Sharp Threshold Sequence and Universality for Ising Perceptron Models	638
Shuta Nakajima and Nike Sun	
On Complex Roots of the Independence Polynomial	675
Ferenc Bencs, Péter Csikvári, Piyush Srivastava and Jan Vondrák	
Elliptic Curve Fast Fourier Transform (ECFFT) Part I: Low-Degree Extension in Time $O(n \log n)$ over All Finite Fields	700
Eli Ben-Sasson, Dan Carmon, Swastik Kopparty and David Levit	

Session 2C

Low Degree Testing over the Reals	738
Vipul Arora, Arnab Bhattacharyya, Noah Fleming, Esty Kelman and Yuichi Yoshida	
Streaming Algorithms for the Missing Item Finding Problem	793
Manuel Stoeckl	
Single-Pass Streaming Algorithms for Correlation Clustering	819
Soheil Behnezhad, Moses Charikar, Weiyun Ma and Li-Yang Tan	
The ℓ_p-Subspace Sketch Problem in Small Dimensions with Applications to Support Vector Machines	850
Yi Li, Honghao Lin and David P. Woodruff	
Towards Multi-Pass Streaming Lower Bounds for Optimal Approximation of Max-Cut	878
Lijie Chen, Gillat Kol, Dmitry Paramonov, Raghuvaran R. Saxena, Zhao Song and Huacheng Yu	
Learning Hierarchical Cluster Structure of Graphs in Sublinear Time	925
Michael Kapralov, Akash Kumar, Silvio Lattanzi and Aida Mousavifar	

Session 3A

Breaching the 2 LMP Approximation Barrier for Facility Location with Applications to k-Median	940
Vincent Cohen-Addad Viallat, Fabrizio Grandoni, Euiwoong Lee and Chris Schwiegelshohn	
Improved Bi-point Rounding Algorithms and a Golden Barrier for k-Median	987
Kishen N Gowda, Thomas Pensyl, Aravind Srinivasan and Khoa Trinh	
A Nearly Tight Analysis of Greedy k-means++	1012
Christoph Grunau, Ahmet Alper Özüdođru, Václav Rozhoň and Jakub Tětek	
On the Integrality Gap of MFN Relaxation for the Capacitated Facility Location Problem	1071
Mong-Jen Kao	
Passing the Limits of Pure Local Search for Weighted k-set Packing	1090
Meike Neuwohner	
An Improved Approximation for Maximum Weighted k-Set Packing	1138
Theophile Thiery and Justin Ward	

Session 3B

Testing and Learning Quantum Juntas Nearly Optimally	1163
Thomas Chen, Shivam Nadimpalli and Henry Yuen	
Mean Estimation When You Have the Source Code; or, Quantum Monte Carlo Methods	1186
Robin Kothari and Ryan O'Donnell	
Efficient Decoding Up to a Constant Fraction of the Code Length for Asymptotically Good Quantum Codes	1216
Anthony Leverrier and Gilles Zémor	
A Sublinear-Time Quantum Algorithm for Approximating Partition Functions	1245
Arjan Cornelissen and Yassine Hamoudi	
Quantum Tomography Using State-Preparation Unitaries	1265
Joran van Apeldoorn, Arjan Cornelissen, András Gilyén and Giacomo Nannicini	
Unique Games Hardness of Quantum Max-Cut, and a Conjectured Vector-Valued Borell's Inequality	1319
Yeongwoo Hwang, Joe Neeman, Ojas Parekh, Kevin Thompson and John Wright	

Session 3C

Halving by a Thousand Cuts or Punctures	1385
Sariel Har-Peled and Da Wei Zheng	
On the Number of Incidences When Avoiding an Induced Biclique in Geometric Settings	1398
Timothy M. Chan and Sariel Har-Peled	
Curve Simplification and Clustering under Fréchet Distance	1414
Siu-Wing Cheng and Haoqiang Huang	
Gap-ETH-Tight Approximation Schemes for Red-Green-Blue Separation and Bicolored Euclidean Travelling Salesman Tours	1433
François Dross, Krzysztof Fleszar, Karol Węgrzycki and Anna Zych-Pawlewicz	
Map Matching Queries on Realistic Input Graphs under the Fréchet Distance	1464
Joachim Gudmundsson, Martin P. Seybold and Sampson Wong	
Simplex Range Searching Revisited: How to Shave Logs in Multi-Level Data Structures	1493
Timothy M. Chan and Da Wei Zheng	

Session 4A

Player-Optimal Stable Regret for Bandit Learning in Matching Markets	1512
Fang Kong and Shuai Li	
Almost Tight Bounds for Online Facility Location in the Random-Order Model	1523
Haim Kaplan, David Naori and Danny Raz	
Online Min-Max Paging	1545
Ashish Chiplunkar, Monika Henzinger, Sagar Sudhir Kale and Maximilian Vötsch	
Online and Bandit Algorithms Beyond ℓ_p Norms	1566
Thomas Kesselheim, Marco Molinaro and Sahil Singla	
The Power of Clairvoyance for Multi-Level Aggregation and Set Cover with Delay	1594
Ngoc Mai Le, Seeun William Umboh and Ningyuan Xie	
Online Prediction in Sub-linear Space	1611
Binghui Peng and Fred Zhang	

Session 4B

The Exact Bipartite Matching Polytope Has Exponential Extension Complexity	1635
Xinrui Jia, Ola Svensson and Weiqiang Yuan	
Shrunk Subspaces via Operator Sinkhorn Iteration	1655
Cole Franks, Tasuku Soma and Michel X. Goemans	
Small Shadows of Lattice Polytopes	1669
Alexander E. Black	
A Polynomial Time Algorithm for Finding a Minimum 4-Partition of a Submodular Function	1680
Tsuyoshi Hirayama, Yuhao Liu, Kazuhisa Makino, Ke Shi and Chao Xu	
Integrality Gaps for Random Integer Programs via Discrepancy	1692
Sander Borst , Daniel Dadush and Dan Mikulincer	
Discrepancy Minimization via Regularization	1734
Lucas Pesenti and Adrian Vladu	

Session 4C

A Subquadratic n^ϵ-approximation for the Continuous Fréchet Distance	1759
Thijs van der Horst, Marc van Kreveld, Tim Ophelders and Bettina Speckmann	
Finding Triangles and Other Small Subgraphs in Geometric Intersection Graphs	1777
Timothy M. Chan	
Online Sorting and Translational Packing of Convex Polygons	1806
Anders Aamand, Mikkel Abrahamsen, Lorenzo Beretta and Linda Kleist	
Economical Convex Coverings and Applications	1834
Sunil Arya, Guilherme D. da Fonseca and David M. Mount	
4D Range Reporting in the Pointer Machine Model in Almost-Optimal Time	1862
Yakov Nekrich and Saladi Rahul	
Approximate Distance Oracles for Planar Graphs with Subpolynomial Error Dependency	1877
Hung Le	

Session 5A

Minimizing Completion Times for Stochastic Jobs via Batched Free Times	1905
Anupam Gupta, Benjamin Moseley and Rudy Zhou	
Beating $(1-1/e)$-Approximation for Weighted Stochastic Matching	1931
Mahsa Derakhshan and Alireza Farhadi	
Superpolynomial Lower Bounds for Decision Tree Learning and Testing	1962
Caleb Koch, Carmen Strassle and Li-Yang Tan	
On (Random-order) Online Contention Resolution Schemes for the Matching Polytope of (Bipartite) Graphs	1995
Calum MacRury, Will Ma and Nathaniel Grammel	
Secretary Problems: The Power of a Single Sample	2015
Pranav Nuti and Jan Vondrák	
Lossless Online Rounding for Online Bipartite Matching (Despite its Impossibility)	2030
Niv Buchbinder, Joseph Naor and David Wajc	

Session 5B

Packing Cycles in Planar and Bounded-Genus Graphs	2069
Niklas Schlomberg, Hanjo Thiele and Jens Vygen	
Computing Square Colorings on Bounded-Treewidth and Planar Graphs	2087
Akanksha Agrawal, Daniel Marx, Daniel Neuen and Jasper Slusallek	
Excluding Single-Crossing Matching Minors in Bipartite Graphs	2111
Archontia C. Giannopoulou, Dimitrios M. Thilikos and Sebastian Wiederrecht	
A Distanced Matching Game, Decremental APSP in Expanders, and Faster Deterministic Algorithms for Graph Cut Problems	2122
Julia Chuzhoy	
Shortest Cycles with Monotone Submodular Costs	2214
Fedor V. Fomin, Petr A. Golovach, Tuukka Korhonen, Daniel Lokshantov and Giannos Stamoulis	
A Framework for Approximation Schemes on Disk Graphs	2228
Daniel Lokshantov, Fahad Panolan, Saket Saurabh, Jie Xue and Meirav Zehavi	

Session 5C

- Improved Girth Approximation in Weighted Undirected Graphs** 2242
Avi Kadaria, Liam Roditty, Aaron Sidford, Virginia Vassilevska Williams and Uri Zwick
- Approximate Graph Colouring and Crystals** 2256
Lorenzo Ciardo and Stanislav Živný
- Weisfeiler-Leman and Graph Spectra** 2268
Gaurav Rattan and Tim Seppelt
- Fast Algorithms for Solving the Hamilton Cycle Problem with High Probability** 2286
Michael Anastos
- A Simple and Sharper Proof of the Hypergraph Moore Bound** 2324
Jun-Ting Hsieh, Pravesh K. Kothari and Sidhanth Mohanty
- Small Subgraphs with Large Average Degree** 2345
Oliver Janzer, Benny Sudakov and István Tomon

Session 6A

- Exact Flow Sparsification Requires Unbounded Size** 2354
Robert Krauthgamer and Ron Mosenzon
- Improved Approximation for Two-Edge-Connectivity** 2368
Mohit Garg, Fabrizio Grandoni and Afrouz Jabal Ameli
- Timeliness through Telephones: Approximating Information Freshness in Vector Clock Models** 2411
Da Qi Chen, Lin An, Aidin Niaparast, R. Ravi and Oleksandr Rudenko
- Approximation Algorithms for Steiner Tree Augmentation Problems** 2429
R. Ravi, Weizhong Zhang and Michael Zlatin
- Steiner Connectivity Augmentation and Splitting-off in Poly-logarithmic Maximum Flows** 2449
Ruoxu Cen, William He, Jason Li and Debmalya Panigrahi
- Faster Computation of 3-Edge-Connected Components in Digraphs** 2489
Loukas Georgiadis, Evangelos Kipouridis, Charis Papadopoulos and Nikos Parotsidis

Session 6B

Improved Distributed Network Decomposition, Hitting Sets, and Spanners, via Derandomization	2532
Mohsen Ghaffari, Christoph Grunau, Bernhard Haeupler, Saeed Ilchi and Václav Rozhoň	
Fast Distributed Brooks' Theorem	2567
Manuela Fischer, Magnús M. Halldórsson and Yannic Maus	
Optimal Deterministic Massively Parallel Connectivity on Forests	2589
Alkida Balliu, Rustam Latypov, Yannic Maus, Dennis Olivetti and Jara Uitto	
Distributed Maximal Matching and Maximal Independent Set on Hypergraphs	2632
Alkida Balliu, Sebastian Brandt, Fabian Kuhn and Dennis Olivetti	
Optimal Fully Dynamic k-Center Clustering for Adaptive and Oblivious Adversaries	2677
MohammadHossein Bateni, Hossein Esfandiari, Hendrik Fichtenberger, Monika Henzinger, Rajesh Jayaram, Vahab Mirrokni and Andreas Wiese	
A New Approach to Estimating Effective Resistances and Counting Spanning Trees in Expander Graphs	2728
Lawrence Li and Sushant Sachdeva	

Session 6C

The Complete Classification for Quantified Equality Constraints	2746
Dmitriy Zhuk, Barnaby Martin and Michał Wrona	
Approaching the Soundness Barrier: A Near Optimal Analysis of the Cube versus Cube Test	2761
Dor Minzer and Kai Zheng	
Weak Bisimulation Finiteness of Pushdown Systems with Deterministic ϵ-Transitions Is 2-ExpTime-Complete	2777
Stefan Göller and Paweł Parys	
Algorithmizing the Multiplicity Schwartz-Zippel Lemma	2816
Siddharth Bhandari, Prahladh Harsha, Mrinal Kumar and Ashutosh Shankar	
Query Complexity of Inversion Minimization on Trees	2836
Ivan Hu, Dieter van Melkebeek and Andrew Morgan	
Efficient Resilient Functions	2867
Peter Ivanov, Raghu Meka and Emanuele Viola	

Session 7A

Improved Integrality Gap in Max-Min Allocation: or Topology at the North Pole	2875
Penny Haxell and Tibor Szabó	
Generalized Unrelated Machine Scheduling Problem	2898
Shichuan Deng, Jian Li and Yuval Rabani	
Improved Approximation Algorithms for Unrelated Machines	2917
Sungjin Im and Shi Li	
On Minimizing Tardy Processing Time, Max-Min Skewed Convolution, and Trianglar Structured ILPs	2947
Kim-Manuel Klein, Adam Polak and Lars Rohwedder	
Approximating Knapsack and Partition via Dense Subset Sums	2961
Mingyang Deng, Ce Jin and Xiao Mao	
On Problems Related to Unbounded SubsetSum: A Unified Combinatorial Approach	2980
Mingyang Deng, Xiao Mao and Ziqian Zhong	

Session 7B

Conflict-Free Hypergraph Matchings	2991
Stefan Glock, Felix Joos, Jaehoon Kim, Marcus Kühn and Lyuben Lichev	
Sparse Graphs with Bounded Induced Cycle Packing Number Have Logarithmic Treewidth	3006
Marthe Bonamy, Édouard Bonnet, Hugues Déprés, Louis Esperet, Colin Geniet, Claire Hilaire, Stéphan Thomassé and Alexandra Wesolek	
Zigzagging through Acyclic Orientations of Chordal Graphs and Hypergraphs	3029
Jean Cardinal, Hung P. Hoang, Arturo Merino and Torsten Mütze	
A Half-Integral Erdős-Pósa Theorem for Directed Odd Cycles	3043
Ken-ichi Kawarabayashi, Stephan Kreutzer, O-joung Kwon and Qiqin Xie	
Graph Classes With Few Minimal Separators. I. Finite Forbidden Subgraphs	3063
Peter Gartland and Daniel Lokshantov	
Graph Classes with Few Minimal Separators. II. A Dichotomy	3098
Peter Gartland and Daniel Lokshantov	

Session 7C

- Almost Consistent Systems of Linear Equations** 3179
Konrad K. Dabrowski, Peter Jonsson, Sebastian Ordyniak, George Osipov and Magnus Wahlström
- Flow-Augmentation III: Complexity Dichotomy for Boolean CSPs Parameterized by the Number of Unsatisfied Constraints** 3218
Eun Jung Kim, Stefan Kratsch, Marcin Pilipczuk and Magnus Wahlström
- Fixed-Parameter Tractability of Directed Multicut with Three Terminal Pairs Parameterized by the Size of the Cutset: Twin-Width Meets Flow-Augmentation** 3229
Meike Hatzel, Lars Jaffke, Paloma T. Lima, Tomáš Masarík, Marcin Pilipczuk, Roohani Sharma and Manuel Sorge
- Polynomial Formulations as a Barrier for Reduction-Based Hardness Proofs** 3245
Tatiana Belova, Alexander Golovnev, Alexander S. Kulikov, Ivan Mihajlin and Denil Sharipov
- A Logic-Based Algorithmic Meta-Theorem for Mim-Width** 3282
Benjamin Bergougnoux, Jan Dreier and Lars Jaffke
- Constant Approximating Parameterized k -SetCover is $W[2]$ -Hard** 3305
Bingkai Lin, Xuandi Ren, Yican Sun and Xiuhan Wang

Session 8A

- Subexponential Mixing for Partition Chains on Grid-Like Graphs** 3317
Alan Frieze and Wesley Pegden
- Improved Bounds for Sampling Solutions of Random CNF Formulas** 3330
Kun He, Kewen Wu and Kuan Yang
- Moser-Tardos Algorithm: Beyond Shearer's Bound** 3362
Kun He, Qian Li and Xiaoming Sun
- Deterministic Counting Lovász Local Lemma beyond Linear Programming** 3388
Kun He, Chunyang Wang and Yitong Yin
- Instability of Backoff Protocols with Arbitrary Arrival Rates** 3426
Leslie Ann Goldberg and John Lapinskas
- From Algorithms to Connectivity and Back: Finding a Giant Component in Random k -SAT** 3437
Zongchen Chen, Nitya Mani and Ankur Moitra

Session 8B

Robust Voting Rules from Algorithmic Robust Statistics	3471
Allen Liu and Ankur Moitra	
Higher Degree Sum-of-Squares Relaxations Robust against Oblivious Outliers	3513
Tommaso d'Orsi, Rajai Nasser, Gleb Novikov and David Steurer	
Non-Stochastic CDF Estimation Using Threshold Queries	3551
Princewill Okoroafor, Vaishnavi Gupta, Robert Kleinberg and Eleanor Goh	
Positivity of the Symmetric Group Characters Is as Hard as the Polynomial Time Hierarchy	3573
Christian Ikenmeyer, Igor Pak and Greta Panova	
Interactive Coding with Small Memory	3587
Klim Efremenko, Bernhard Haeupler, Yael Tauman Kalai, Gillat Kol, Nicolas Resch and Raghuvansh R. Saxena	
Concentration of Polynomial Random Matrices via Efron-Stein Inequalities	3614
Goutham Rajendran and Madhur Tulsiani	

Session 8C

Kernelization for Graph Packing Problems via Rainbow Matching	3654
Stéphane Bessy, Marin Bougeret, Dimitrios M. Thilikos and Sebastian Wiederrecht	
Tight Complexity Bounds for Counting Generalized Dominating Sets in Bounded-Treewidth Graphs	3664
Jacob Focke, Dániel Marx, Fionn Mc Inerney, Daniel Neuen, Govind S. Sankar, Philipp Schepper and Philip Wellnitz	
Model-Checking for First-Order Logic with Disjoint Paths Predicates in Proper Minor-Closed Graph Classes	3684
Petr A. Golovach, Giannos Stamoulis and Dimitrios M. Thilikos	
Fixed-Parameter Tractability of Maximum Colored Path and Beyond	3700
Fedor V. Fomin, Petr A. Golovach, Tuukka Korhonen, Kirill Simonov and Giannos Stamoulis	
Parameterized Approximation Scheme for Biclique-free Max k-Weight SAT and Max Coverage	3713
Pallavi Jain, Lawqueen Kanesh, Fahad Panolan, Souvik Saha, Abhishek Sahu, Saket Saurabh and Anannya Upasana	

Parameterized Algorithm for the Disjoint Path Problem on Planar Graphs: Exponential in k^2 and Linear in $n^{*†}$	3734
Kyungjin Cho, Eunjin Oh and Seunghyeok Oh	

Session 9A

“Who is Next in Line?” On the Significance of Knowing the Arrival Order in Bayesian Online Settings	3759
Tomer Ezra, Michal Feldman, Nick Gravin and Zhihao Gavin Tang	

A Polynomial-Time Algorithm for 1/2-Well-Supported Nash Equilibria in Bimatrix Games	3777
Argyrios Deligkas, Michail Fasoulakis and Evangelos Markakis	

Bidder Subset Selection Problem in Auction Design	3788
Xiaohui Bei, Nick Gravin, Pinyan Lu and Zhihao Gavin Tang	

Simple Mechanisms for Non-linear Agents	3802
Yiding Feng, Jason D. Hartline and Yingkai Li	

Sampling Equilibria: Fast No-Regret Learning in Structured Games	3817
Daniel Beaglehole, Max Hopkins, Daniel Kane, Sihan Liu and Shachar Lovett	

Foundations of Transaction Fee Mechanism Design	3856
Hao Chung and Elaine Shi	

Session 9B

Beating Greedy Matching in Sublinear Time	3900
Soheil Behnezhad, Mohammad Roghani, Aviad Rubinfeld and Amin Saberi	

Spencer’s Theorem in Nearly Input-Sparsity Time	3946
Vishesh Jain, Ashwin Sah and Mehtaab Sawhney	

Near-Linear Sample Complexity for L_p Polynomial Regression	3959
Raphael A. Meyer, Cameron Musco, Christopher Musco, David P. Woodruff and Samson Zhou	

Optimal Algorithms for Linear Algebra in the Current Matrix Multiplication Time	4026
Yeshwanth Cherapanamjeri, Sandeep Silwal, David P. Woodruff and Samson Zhou	

Testing Convex Truncation	4050
Anindya De, Shivam Nadimpalli and Rocco A. Servedio	

Streaming Complexity of CSPs with Randomly Ordered Constraints 4083
Raghuvansh R. Saxena, Noah Singer, Madhu Sudan and Santhoshini Velusamy

Session 9C

Nonlinear codes exceeding the Gilbert-Varshamov and Tsfasman-Vlăduț-Zink 4104
Shu Liu, Tingyi Wu and Chaoping Xing

On the Orbit Closure Intersection Problems for Matrix Tuples under Conjugation and Left-Right Actions 4115
Gábor Ivanyos and Youming Qiao

Toeplitz Low-Rank Approximation with Sublinear Query Complexity 4127
Michael Kapralov, Hannah Lawrence, Mikhail Makarov, Cameron Musco and Kshiteej Sheth

Smaller Low-Depth Circuits for Kronecker Powers 4159
Josh Alman, Yunfeng Guan and Ashwin Padaki

Algebraic Algorithms for Fractional Linear Matroid Parity via Non-commutative Rank 4188
Taihei Oki and Tasuku Soma

Equivalence Test for Read-Once Arithmetic Formulas 4205
Nikhil Gupta, Chandan Saha and Bhargav Thankey

Session 10A

Improved Distributed Algorithms for the Lovász Local Lemma and Edge Coloring 4273
Peter Davies

A Nearly Time-Optimal Distributed Approximation of Minimum Cost k -Edge-Connected Spanning Subgraph 4296
Michal Dory and Mohsen Ghaffari

Byzantine Agreement with Optimal Resilience via Statistical Fraud Detection 4335
Shang-En Huang, Seth Pettie and Leqi Zhu

Parallel Exact Shortest Paths in Almost Linear Work and Square Root Depth 4354
Nairen Cao and Jeremy T. Fineman

Massively Parallel Computation on Embedded Planar Graphs 4373
Jacob Holm and Jakub Tětek

Local Distributed Rounding: Generalized to MIS, Matching, Set Cover, and Beyond 4409
Salwa Faour, Mohsen Ghaffari, Christoph Grunau, Fabian Kuhn and Václav Rozhoň

Session 10B

Balanced Allocations with Heterogeneous Bins: The Power of Memory 4448
Dimitrios Los, Thomas Sauerwald and John Sylvester

A Near-Linear Time Sampler for the Ising Model with External Field 4478
Xiaoyu Chen and Xinyuan Zhang

Almost-Linear Planted Cliques Elude the Metropolis Process 4504
Zongchen Chen, Elchanan Mossel and Ilias Zadik

The Need for Seed (in the abstract Tile Assembly Model) 4540
Andrew Alseth and Matthew J. Patitz

Faster Algorithm for Turn-based Stochastic Games with Bounded Treewidth 4590
Krishnendu Chatterjee, Tobias Meggendorfer, Raimundo Saona and Jakub Svoboda

Spatial Mixing and the Random-Cluster Dynamics on Lattices 4606
Reza Gheissari and Alistair Sinclair

Session 10C

Online Lewis Weight Sampling 4622
David P. Woodruff and Taisuke Yasuda

Super-resolution and Robust Sparse Continuous Fourier Transform in Any Constant Dimension: Nearly Linear Time and Sample Complexity 4667
Yaonan Jin, Daogao Liu and Zhao Song

Traversing the FFT Computation Tree for Dimension-Independent Sparse Fourier Transforms 4768
Karl Bringmann, Michael Kapralov, Mikhail Makarov, Vasileios Nakos, Amir Yagudin and Amir Zandieh

Cubic Goldreich-Levin 4846
Dain Kim, Anqi Li and Jonathan Tidor

Query Complexity of the Metric Steiner Tree Problem 4893
Yu Chen, Sanjeev Khanna and Zihan Tan

Sublinear-Time Algorithms for Max Cut, Max E2Lin(q), and Unique Label Cover on Expanders	4936
Pan Peng and Yuichi Yoshida	

Session 11A

Stronger Privacy Amplification by Shuffling for Rényi and Approximate Differential Privacy	4966
Vitaly Feldman, Audra McMillan and Kunal Talwar	

Private Query Release via the Johnson-Lindenstrauss Transform	4982
Aleksandar Nikolov	

Almost Tight Error Bounds on Differentially Private Continual Counting	5003
Monika Henzinger, Jalaj Upadhyay and Sarvagya Upadhyay	

Differentially Private All-Pairs Shortest Path Distances: Improved Algorithms and Lower Bounds	5040
Justin Y. Chen, Badih Ghazi, Ravi Kumar, Pasin Manurangsi, Shyam Narayanan, Jelani Nelson and Yinzhan Xu	

Private Convex Optimization in General Norms	5068
Sivakanth Gopi, Yin Tat Lee, Daogao Liu, Ruoqi Shen and Kevin Tian	

Session 11B

Quantum Speed-ups for String Synchronizing Sets, Longest Common Substring, and k-mismatch Matching	5090
Ce Jin and Jakob Nogler	

Breaking the $O(n)$-Barrier in the Construction of Compressed Suffix Arrays and Suffix Trees	5122
Dominik Kempa and Tomasz Kociumaka	

Simple, Deterministic, Fast (but Weak) Approximations to Edit Distance and Dyck Edit Distance	5203
Michal Koucký and Michael Saks	

Optimal Square Detection Over General Alphabets	5220
Jonas Ellert, Paweł Gawrychowski and Garance Gourdel	

Time-Space Tradeoffs for Element Distinctness and Set Intersection via Pseudorandomness	5243
Xin Lyu and Weihao Zhu	