

Annual ACM-SIAM Symposium on Discrete Algorithms (SODA25)

New Orleans, Louisiana, USA
12-15 January 2025

Volume 1 of 8

ISBN: 979-8-3313-1200-8

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© (2025) by SIAM: Society for Industrial and Applied Mathematics
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

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 2025 TABLE OF CONTENTS

Sunday, Session 1A

Connectivity Labeling Schemes for Edge and Vertex Faults via Expander Hierarchies	1
Yaowei Long, Seth Pettie and Thatchaphol Saranurak	
A Dichotomy Hierarchy for Linear Time Subgraph Counting in Bounded Degeneracy Graphs	48
Daniel Paul-Pena and C. Seshadhri	
Embedding Planar Graphs into Graphs of Treewidth $O(\log^3 N)$	88
Hsien-Chih Chang, Vincent Cohen-Addad, Jonathan Conroy, Hung Le, Marcin Pilipczuk and Michał Pilipczuk	
Deterministic Edge Connectivity and Max Flow Using Subquadratic Cut Queries	124
Aditya Anand, Thatchaphol Saranurak and Yunfan Wang	
Massively Parallel Minimum Spanning Tree in General Metric Spaces	143
Amir Azarmehr, Soheil Behnezhad, Rajesh Jayaram, Jakub Łącki, Vahab Mirrokni and Peilin Zhong	

Sunday, Session 1B

Beyond 2-Approximation for K-Center in Graphs	175
Ce Jin, Yael Kirkpatrick, Virginia Vassilevska Williams and Nicole Wein	
Dynamic Consistent K-Center Clustering with Optimal Recourse	212
Sebastian Forster and Antonis Skarlatos	
Clustering to Minimize Cluster-Aware Norm Objectives	255
Martin G. Herold, Evangelos Kipouridis and Joachim Spoerhase	
Clustering Mixtures of Bounded Covariance Distributions Under Optimal Separation	288
Ilias Diakonikolas, Daniel M. Kane, Jasper C.H. Lee and Thanasis Pittas	
Breaking the Two Approximation Barrier for Various Consensus Clustering Problems	323
Debarati Das and Amit Kumar	

Sunday, Session 1C

Relative-Error Monotonicity Testing	373
Xi Chen, Anindya De, Yizhi Huang, Yuhao Li, Shivam Nadimpalli, Rocco A. Servedio and Tianqi Yang	

Nearly Tight Bounds on Testing of Metric Properties	403
Yiqiao Bao, Sampath Kannan and Erik Waingarten	
Lower Bounds for Convexity Testing	446
Xi Chen, Anindya De, Shivam Nadimpalli, Rocco A. Servedio and Erik Waingarten	
Tight Sampling Bounds for Eigenvalue Approximation	489
William William and David P. Woodruff	
Near-Optimal-Time Quantum Algorithms for Approximate Pattern Matching	517
Tomasz Kociumaka, Jakob Nogler and Philip Wellnitz	

Sunday, Session 2A

A Subexponential Time Algorithm for Makespan Scheduling of Unit Jobs with Precedence Constraints	535
Jesper Nederlof, Céline M.F. Swennenhuis and Karol Węgrzycki	
Approximating Unrelated Machine Weighted Completion Time Using Iterative Rounding and Computer Assisted Proofs	553
Shi Li	
Lift-and-Project Integrality Gaps for Santa Claus	572
Etienne Bamas	

The Submodular Santa Claus Problem	616
Etienne Bamas, Sarah Morell and Lars Rohwedder	

A Tight $(3/2 + \epsilon)$-Approximation Algorithm for Demand Strip Packing	641
Franziska Eberle, Felix Hommelsheim, Malin Rau and Stefan Walzer	

Sunday, Session 2B

Tree-Packing Revisited: Faster Fully Dynamic Min-Cut and Arboricity	700
Tijn de Vos and Aleksander B.G. Christiansen	
Fully Dynamic Approximate Minimum Cut in Subpolynomial Time per Operation	750
Antoine El-Hayek, Monika Henzinger and Jason Li	
Fully Dynamic Algorithms for Graph Spanners via Low-Diameter Router Decomposition	785
Julia Chuzhoy and Merav Parter	
Nearly Optimal Dynamic Set Cover: Breaking the Quadratic-in-F Time Barrier	824
Anton Bukov, Shay Solomon and Tianyi Zhang	

Settling the Pass Complexity of Approximate Matchings in Dynamic Graph Streams	864
Sepehr Assadi, Soheil Behnezhad, Christian Konrad, Kheeran K. Naidu and Janani Sundaresan	

Sunday, Session 2C

Quartic Quantum Speedups for Planted Inference	905
Alexander Schmidhuber, Ryan O'Donnell, Robin Kothari and Ryan Babbush	
Triply Efficient Shadow Tomography	914
Robbie King, David Gosset, Robin Kothari and Ryan Babbush	
On Estimating the Trace of Quantum State Powers	947
Yupan Liu and Qisheng Wang	
A Quantum Speed-Up for Approximating the Top Eigenvectors of a Matrix	994
Yanlin Chen, András Gilyén and Ronald de Wolf	
Polynomial-Time Classical Simulation of Noisy IQP Circuits with Constant Depth	1037
Joel Rajakumar, James D. Watson and Yi-Kai Liu	

Sunday, Session 3A

Lipschitz Continuous Algorithms for Covering Problems	1057
Soh Kumabe and Yuichi Yoshida	
Approximately Counting Knapsack Solutions in Subquadratic Time	1094
Weiming Feng and Ce Jin	
Balancing Notions of Equity: Trade-Offs Between Fair Portfolio Sizes and Achievable Guarantees	1136
Swati Gupta, Jai Moondra and Mohit Singh	

Approximating Traveling Salesman Problems Using a Bridge Lemma	1166
Martin Böhm, Zachary Friggstad, Tobias Mömke and Joachim Spoerhase	

Min-CSPs on Complete Instances	1178
Aditya Anand, Euiwoong Lee and Amatya Sharma	

Constraint Satisfaction Problems with Advice	1202
Suprovat Ghoshal, Konstantin Makarychev and Yury Makarychev	

Sunday, Session 3B

New Prophet Inequalities via Poissonization and Sharding	1222
Elfarouk Harb	

Prophet Inequalities: Competing with the Top ℓ Items Is Easy 1270

Mathieu Molina, Nicolas Gast, Patrick Loiseau and Vianney Perchet

New Combinatorial Insights for Monotone Apportionment 1308

Javier Cembrano, José Correa, Ulrike Schmidt-Kraepelin, Alexandros Tsigonias-Dimitriadis and Victor Verdugo

**Designing Automated Market Makers for Combinatorial Securities:
A Geometric Viewpoint 1329**

Prommy Sultana Hossain, Xintong Wang and Fang-Yi Yu

An Elementary Predictor Obtaining $2\sqrt{T} + 1$ Distance to Calibration 1366

Eshwar Ram Arunachaleswaran, Natalie Collina, Aaron Roth and Mirah Shi

Prophet Secretary and Matching: The Significance of the Largest Item 1371

Ziyun Chen, Zhiyi Huang, Dongchen Li and Zhihao Gavin Tang

Sunday, Session 3C

Fixed-Parameter Tractability of Hedge Cut 1402

Fedor V. Fomin, Petr A. Golovach, Tuukka Korhonen, Daniel Lokshtanov and Saket Saurabh

Crossing Number in Slightly Superexponential Time 1412

Daniel Lokshtanov, Fahad Panolan, Saket Saurabh, Roohani Sharma, Jie Xue and Meirav Zehavi

Packing Short Cycles 1425

Matthias Bentert, Fedor V. Fomin, Petr A. Golovach, Tuukka Korhonen, William Lochet, Fahad Panolan, M.S. Ramanujan, Saket Saurabh and Kirill Simonov

Unbreakable Decomposition in Close-to-Linear Time 1464

Aditya Anand, Euiwoong Lee, Jason Li, Yaowei Long and Thatchaphol Saranurak

The Primal Pathwidth SETH 1494

Michael Lampis

Parameterized Approximation for Capacitated D-Hitting Set with Hard Capacities 1565

Daniel Lokshtanov, Abhishek Sahu, Saket Saurabh, Vaishali Surianarayanan and Jie Xue

Monday, Session 4A

Deterministic Online Bipartite Edge Coloring 1593

Joakim Blikstad, Ola Svensson, Radu Vintan and David Wajc

Eulerian Graph Sparsification by Effective Resistance Decomposition 1607

Arun Jambulapati, Sushant Sachdeva, Aaron Sidford, Kevin Tian and Yibin Zhao

A Cut-Matching Game for Constant-Hop Expanders	1651
Bernhard Haeupler, Jonas Huebner and Mohsen Ghaffari	
Quasilinear-Time Eccentricities Computation, and More, on Median Graphs	1679
Pierre Bergé, Guillaume Ducoffe and Michel Habib	
Parallel and Distributed Expander Decomposition: Simple, Fast, and Near-Optimal	1705
Daoyuan Chen, Simon Meierhans, Maximilian Probst Gutenberg and Thatchaphol Saranurak	

Monday, Session 4B

A Multi-Dimensional Online Contention Resolution Scheme for Revenue Maximization	1720
Shuchi Chawla, Dimitrios Christou, Trung Dang, Zhiyi Huang, Gregory Kehne and Rojin Rezvan	
Hiring for an Uncertain Task: Joint Design of Information and Contracts	1758
Matteo Castiglioni and Junjie Chen	
A Reduction from Multi-Parameter to Single-Parameter Bayesian Contract Design	1795
Matteo Castiglioni, Junjie Chen, Minming Li, Haifeng Xu and Song Zuo	

Majorized Bayesian Persuasion and Fair Selection	1837
Siddhartha Banerjee, Kamesh Munagala, Yiheng Shen and Kangning Wang	
Multi-Agent Combinatorial Contracts	1857
Paul Duetting, Tomer Ezra, Michal Feldman and Thomas Kesselheim	

Monday, Session 4C

Linear Equations with Monomial Constraints and Decision Problems in Abelian-by-Cyclic Groups	1892
Ruiwen Dong	
An Efficient Uniqueness Theorem for Overcomplete Tensor Decomposition	1909
Pascal Koiran	
Improving the Leading Constant of Matrix Multiplication	1933
Josh Alman and Hantao Yu	
Faster Linear Systems and Matrix Norm Approximation via Multi-Level Sketched Preconditioning	1972
Michał Dereziński, Christopher Musco and Jiaming Yang	
More Asymmetry Yields Faster Matrix Multiplication	2005
Josh Alman, Ran Duan, Virginia Vassilevska Williams, Yinzhan Xu, Zixuan Xu and Renfei Zhou	

Monday, Prize Session

- Improved List Size for Folded Reed-Solomon Codes** 2040
Shashank Srivastava

- Quasi-Monte Carlo Beyond Hardy-Krause** 2051
Nikhil Bansal and Haotian Jiang

- Tight Streaming Lower Bounds for Deterministic Approximate Counting** 2076
Yichuan Wang

Monday, Session 5A

- A Polylogarithmic Approximation for Directed Steiner Forest in Planar Digraphs** 2095
Chandra Chekuri and Rhea Jain

- Congestion-Approximators from the Bottom Up** 2111
Jason Li, Satish Rao and Di Wang

- (Almost) Ruling Out SETH Lower Bounds for All-Pairs Max-Flow** 2132
Ohad Trabelsi

- Certificates in P and Subquadratic-Time Computation of Radius, Diameter,
and All Eccentricities in Graphs** 2157
Feodor Dragan, Guillaume Ducoffe, Michel Habib and Laurent Viennot

- Flip Dynamics for Sampling Colorings: Improving $(11/6 - \varepsilon)$ Using a Simple Metric** 2194
Charlie Carlson and Eric Vigoda

Monday, Session 5B

- Testing Approximate Stationarity Concepts for Piecewise Affine Functions** 2213
Lai Tian and Anthony Man-Cho So

- Forall-Exist Statements in Pseudopolynomial Time** 2225
Eleonore Bach, Friedrich Eisenbrand, Thomas Rothvoss and Robert Weismantel

- Complexity of Polytope Diameters via Perfect Matchings** 2234
Christian Nöbel and Raphael Steiner

- The Change-of-Measure Method, Block Lewis Weights, and Approximating
Matrix Block Norms** 2252
Naren Sarayu Manoj and Max Ovsiankin

Integer Programs with Nearly Totally Unimodular Matrices: The Cographic Case	2301
Manuel Aprile, Samuel Fiorini, Gwenaël Joret, Stefan Kober, Michal T. Seweryn, Stefan Weltge and Yelena Yuditsky	

Monday, Session 5C

Flipping Non-Crossing Spanning Trees	2313
Havard Bakke Bjerkevik, Linda Kleist, Torsten Ueckerdt and Birgit Vogtenhuber	

PTASes for Euclidean TSP with Unit Disk and Unit Square Neighborhoods	2326
Sayan Bandyapadhyay, Katie Clinch, William Lochet, Daniel Lokshtanov, Saket Saurabh and Jie Xue	

Fast Static and Dynamic Approximation Algorithms for Geometric Optimization Problems: Piercing, Independent Set, Vertex Cover, and Matching	2357
Sujoy Bhore and Timothy M. Chan	

Strict Self-Assembly of Discrete Self-Similar Fractals in the Abstract Tile Assembly Model	2387
Florent Becker, Daniel Hader and Matthew J. Patitz	

Path and Intersections: Characterization of Quasi-Metrics in Directed Okamura-Seymour Instances	2467
Yu Chen and Zihan Tan	

Monday, Session 6A

On the Uniqueness of Bayesian Coarse Correlated Equilibria in Standard First-Price and All-Pay Auctions	2491
Mete Şeref Ahunbay and Martin Bichler	

Approximating Competitive Equilibrium by Nash Welfare	2538
Jugal Garg, Yixin Tao and László A. Végh	

Tolls for Dynamic Equilibrium Flows	2560
Lukas Graf, Tobias Harks and Julian Schwarz	

Platforms for Efficient and Incentive-Aware Collaboration	2607
Nika Haghtalab, Mingda Qiao and Kunhe Yang	

Clock Auctions Augmented with Unreliable Advice	2629
Vasilis Gkatzelis, Daniel Schoepflin and Xizhi Tan	

Monday, Session 6B

Near-Optimal Hierarchical Matrix Approximation from Matrix-Vector Products	2656
Tyler Chen, Feyza Duman Keles, Diana Halikias, Cameron Musco, Christopher Musco and David Persson	

Improved Spectral Density Estimation via Explicit and Implicit Deflation	2693
Rajarshi Bhattacharjee, Rajesh Jayaram, Cameron Musco, Christopher Musco and Archan Ray	
On the Decidability of Presburger Arithmetic Expanded with Powers	2755
Toghrul Karimov, Florian Luca, Joris Nieuwveld, Joël Ouaknine and James Worrell	
Solving Polynomial Equations over Finite Fields	2779
Holger Dell, Anselm Haak, Melvin Kallmayer and Leo Wennmann	
Fast Deterministic Chromatic Number Under the Asymptotic Rank Conjecture	2804
Andreas Björklund, Radu Curticapean, Thore Husfeldt, Petteri Kaski and Kevin Pratt	

Monday, Session 6C

Private Mean Estimation with Person-Level Differential Privacy	2819
Sushant Agarwal, Gautam Kamath, Mahbod Majid, Argyris Mouzakis, Rose Silver and Jonathan Ullman	
Local Lipschitz Filters for Bounded-Range Functions with Applications to Arbitrary Real-Valued Functions	2881
Jane Lange, Ephraim Linder, Sofya Raskhodnikova and Arsen Vasilyan	
Almost Tight Bounds for Differentially Private Densest Subgraph	2908
Michael Dinitz, Satyen Kale, Silvio Lattanzi and Sergei Vassilvitskii	
Improved Differentially Private Continual Observation Using Group Algebra	2951
Monika Henzinger and Jalaj Upadhyay	

Tuesday, Session 7A

Improved Bounds for Fully Dynamic Matching via Ordered Ruzsa-Szemerédi Graphs	2971
Sepehr Assadi, Sanjeev Khanna and Peter Kiss	
Matching Composition and Efficient Weight Reduction in Dynamic Matching	2991
Aaron Bernstein, Jiale Chen, Aditi Dudeja, Zachary Langley, Aaron Sidford and Ta-Wei Tu	
New Philosopher Inequalities for Online Bayesian Matching, via Pivotal Sampling	3029
Mark Braverman, Mahsa Derakhshan, Tristan Pollner, Amin Saberi and David Wajc	
Entropy Regularization and Faster Decremental Matching in General Graphs	3069
Jiale Chen, Aaron Sidford and Ta-Wei Tu	
Online Dependent Rounding Schemes for Bipartite Matchings, with Applications	3116
Joseph (Seffi) Naor, Aravind Srinivasan and David Wajc	

Tuesday, Session 7B

Bounding ε-Scatter Dimension via Metric Sparsity	3155
Romain Bourneuf and Marcin Pilipczuk	
The Johnson-Lindenstrauss Lemma for Clustering and Subspace Approximation: From Coresets to Dimension Reduction	3172
Moses Charikar and Erik Waingarten	
Embedding Probability Distributions into Low Dimensional ℓ_1: Tree Ising Models via Truncated Metrics	3210
Moses Charikar, Spencer Compton and Chirag Pabbaraju	
Highway Dimension: A Metric View	3267
Andreas Emil Feldmann and Arnold Filtser	
Outlier-Robust Mean Estimation near the Breakdown Point via Sum-of-Squares	3277
Hongjie Chen, Deepak Narayanan Sridharan and David Steurer	

Tuesday, Session 7C

An Analogue of Reed's Conjecture for Digraphs	3310
Ken-ichi Kawarabayashi and Lucas Picasarri-Arrieta	
Weak Coloring Numbers of Minor-Closed Graph Classes	3325
Jędrzej Hodor, Hoang La, Piotr Micek and Clément Rambaud	
Unique-Neighbor Expanders with Better Expansion for Polynomial-Sized Sets	3335
Yeyuan Chen	
A Coarse Erdős-Pósa Theorem	3363
Jungho Ahn, J. Pascal Gollin, Tony Huynh and O-joung Kwon	
Planar Graphs in Blowups of Fans	3382
Vida Dujmović, Gwenaël Joret, Piotr Micek, Pat Morin and David R. Wood	

Tuesday, Session 8A

Streaming Algorithms via Local Algorithms for Maximum Directed Cut	3392
Raghuvansh R. Saxena, Noah G. Singer, Madhu Sudan and Santhoshini Velusamy	
Universal Perfect Samplers for Incremental Streams	3409
Seth Pettie and Dingyu Wang	

Streaming and Communication Complexity of Load-Balancing via Matching Contractors	3423
Sepehr Assadi, Aaron Bernstein, Zach Langley, Lap Chi Lau and Robert Wang	
Understanding Memory-Regret Trade-Off for Streaming Stochastic Multi-Armed Bandits	3450
Yuchen He, Zichun Ye and Chihao Zhang	
Near-Optimal Relative Error Streaming Quantile Estimation via Elastic Compactors	3486
Elena Gribelyuk, Pachara Sawettamalya, Hongxun Wu and Huacheng Yu	

Tuesday, Session 8B

A Fast Algorithm for Computing Zigzag Representatives	3530
Tamal K. Dey, Tao Hou and Dmitriy Morozov	
Minimum Convex Hull and Maximum Overlap of Two Convex Polytopes	3547
Mook Kwon Jung, Seokyun Kang and Hee-Kap Ahn	
Partitioning a Polygon into Small Pieces	3562
Mikkel Abrahamsen and Nichlas Langhoff Rasmussen	
Computing the Second and Third Systoles of a Combinatorial Surface	3590
Matthijs Ebbens and Francis Lazarus	
An Efficient Regularity Lemma for Semi-Algebraic Hypergraphs	3611
Natan Rubin	

Tuesday, Session 8C

From Graph Properties to Graph Parameters: Tight Bounds for Counting on Small Subgraphs	3637
Simon Doring, Dániel Marx and Philip Wellnitz	
Counting Small Induced Subgraphs: Hardness via Fourier Analysis	3677
Radu Curticapean and Daniel Neuen	
Maximum Span Hypothesis: A Potentially Weaker Assumption than Gap-ETH for Parameterized Complexity	3696
Karthik C.S. and Subhash Khot	
Parameterizing the Quantification of CMSO: Model Checking on Minor-Closed Graph Classes	3728
Ignasi Sau, Giannos Stamoulis and Dimitrios M. Thilikos	

Losing Treewidth in the Presence of Weights	3743
Michał Włodarczyk	

Finding Irrelevant Vertices in Linear Time on Bounded-Genus Graphs	3762
Petr A. Golovach, Stavros G. Kolliopoulos, Giannos Stamoulis and Dimitrios M. Thilikos	

Tuesday, Session 9A

Competitive Strategies to Use “Warm Start” Algorithms with Predictions	3775
Avrim Blum and Vaidehi Srinivas	

Online Scheduling via Gradient Descent for Weighted Flow Time Minimization	3802
Qingyun Chen, Sungjin Im and Aditya Petety	

Stronger Adversaries Grow Cheaper Forests: Online Node-Weighted Steiner Problems	3842
Sander Borst, Marek Eliás and Moritz Venzin	

Putting Off the Catching Up: Online Joint Replenishment Problem with Holding and Backlog Costs	3865
Benjamin Moseley, Aidin Niaparast and R. Ravi	

Unweighted Layered Graph Traversal: Passing a Crown via Entropy Maximization	3884
Xingjian Bai, Christian Coester and Romain Cosson	

The Power of Proportional Fairness for Non-Clairvoyant Scheduling Under Polyhedral Constraints	3901
Sven Jäger, Alexander Lindermayr and Nicole Megow	

Tuesday, Session 9B

Efficient D-Ary Cuckoo Hashing at High Load Factors by Bubbling Up	3931
William Kuszmaul and Michael Mitzenmacher	

Fast and Simple Sorting Using Partial Information	3953
Bernhard Haeupler, Richard Hladík, John Iacono, Václav Rozhoň, Robert E. Tarjan and Jakub Tětek	

Tight Bounds and Phase Transitions for Incremental and Dynamic Retrieval	3974
William Kuszmaul, Aaron Putterman, Tingqiang Xu, Hangrui Zhou and Renfei Zhou	

A Cell Probe Lower Bound for the Predecessor Search Problem in PRAM	3998
Peyman Afshani and Nodari Sitchinava	

Top-K Document Retrieval in Compressed Space	4009
Gonzalo Navarro and Yakov Nekrich	

Faster Two-Dimensional Pattern Matching with K Mismatches	4031
Jonas Ellert, Paweł Gawrychowski, Adam Górkiewicz and Tatiana Starikovskaya	

Tuesday, Session 9C

Parks and Recreation: Color Fault-Tolerant Spanners Made Local	4061
Merav Parter, Asaf Petruschka, Shay Sapir and Elad Tzaik	

Asynchronous 3-Majority Dynamics with Many Opinions	4095
Colin Cooper, Frederik Mallmann-Trenn, Tomasz Radzik, Nobutaka Shimizu and Takeharu Shiraga	

Sublinear-Round Broadcast Without Trusted Setup	4132
Andreea B. Alexandru, Julian Loss, Charalampos Papamanthou, Giorgos Tsamos and Benedikt Wagner	

Fully-Distributed Byzantine Agreement in Sparse Networks	4172
John Augustine, Fabien Dufoulon and Gopal Pandurangan	

On the Locality of Hall's Theorem	4198
Sebastian Brandt, Yannic Maus, Ananth Narayanan, Florian Schager and Jara Uitto	

Partial Synchrony for Free: New Upper Bounds for Byzantine Agreement	4227
Pierre Civit, Muhammad Ayaz Dzulfikar, Seth Gilbert, Rachid Guerraoui, Jovan Komatovic, Manuel Vidigueira and Igor Zablotchi	

Wednesday, Session 10A

Spanners in Planar Domains via Steiner Spanners and Non-Steiner Tree Covers	4292
Sujoy Bhore, Balázs Keszegh, Andrey Kupavskii, Hung Le, Alexandre Louvet, Dömötör Pálvölgyi and Csaba D. Tóth	

A Lower Bound for Light Spanners in General Graphs	4327
Greg Bodwin and Jeremy Flics	

Subquadratic Algorithms in Minor-Free Digraphs: (Weighted) Distance Oracles, Decremental Reachability, and More	4338
Adam Karczmarz and Da Wei Zheng	

Having Hope in Missing Spanners: New Distance Preservers and Light Hopsets	4352
Shimon Kogan and Merav Parter	

Improved Online Reachability Preservers	4375
Greg Bodwin and Tuong Le	

Wednesday, Session 10B

New Separations and Reductions for Directed Hopsets and Preservers	4405
Gary Hoppenworth, Yinzhan Xu and Zixuan Xu	
Tree Independence Number IV. Even-Hole-Free Graphs	4444
Maria Chudnovsky, Peter Gartland, Sepehr Hajebi, Daniel Lokshtanov and Sophie Spirkl	
A Refutation of the Pach-Tardos Conjecture for 0–1 Matrices	4462
Seth Pettie and Gábor Tardos	
Recognizing Sumsets Is NP-Complete	4484
Amir Abboud, Nick Fischer, Ron Safier and Nathan Wallheimer	
A Topological Proof of the Hell-Nešetřil Dichotomy	4507
Sebastian Meyer and Jakub Opršal	

Wednesday, Session 10C

Sumsets, 3SUM, Subset Sum: Now for Real!	4520
Nick Fischer	
New Applications of 3SUM-Counting in Fine-Grained Complexity and Pattern Matching	4547
Nick Fischer, Ce Jin and Yinzhan Xu	
Beating Bellman’s Algorithm for Subset Sum	4596
Karl Bringmann, Nick Fischer and Vasileios Nakos	
Average-Case Hardness of Parity Problems: Orthogonal Vectors, K-SUM and More	4613
Mina Dalirrooyfard, Andrea Lincoln, Barna Saha and Virginia Vassilevska Williams	
Exact Thresholds for Noisy Non-Adaptive Group Testing	4644
Junren Chen and Jonathan Scarlett	

Wednesday, Session 11A

Inapproximability of Maximum Diameter Clustering for Few Clusters	4707
Henry Fleischmann, Kyrylo Karlov, Karthik C.S., Ashwin Padaki and Stepan Zharkov	
Coresets for Constrained Clustering: General Assignment Constraints and Improved Size Bounds	4732
Lingxiao Huang, Jian Li, Pinyan Lu and Xuan Wu	
A Tight VC-Dimension Analysis of Clustering Coresets with Applications	4783
Vincent Cohen-Addad, Andrew Draganov, Matteo Russo, David Saulpic and Chris Schwiegelshohn	

Efficient Approximation Algorithm for Computing Wasserstein Barycenter Under Euclidean Metric	4809
Pankaj K. Agarwal, Sharath Raghvendra, Pouyan Shirzadian and Keegan Yao	

Gains-from-Trade in Bilateral Trade with a Broker	4827
Ilya Hajiaghayi, Mohammad Taghi Hajiaghayi, Gary Peng and Suho Shin	

Wednesday, Session 11B

Faster Vizing and Near-Vizing Edge Coloring Algorithms	4861
Sepehr Assadi	

A Sublinear-Time Algorithm for Nearly-Perfect Matchings in Regular Non-Bipartite Graphs	4899
Varsha Dani and Thomas P. Hayes	

Even Faster ($\Delta + 1$)-Edge Coloring via Shorter Multi-Step Vizing Chains	4914
Sayan Bhattacharya, Martín Costa, Shay Solomon and Tianyi Zhang	

Randomized Greedy Online Edge Coloring Succeeds for Dense and Randomly-Ordered Graphs	4948
Aditi Dudeja, Rashmika Goswami and Michael Saks	

Fully Dynamic ($\Delta + 1$)-Coloring Against Adaptive Adversaries	4983
Soheil Behnezhad, Rajmohan Rajaraman and Omer Wasim	

Wednesday, Session 11C

Relating Interleaving and Fréchet Distances via Ordered Merge Trees	5027
Thijs Beurskens, Tim Ophelders, Bettina Speckmann and Kevin Verbeek	

Facet-Hamiltonicity	5051
Hugo Akitaya, Jean Cardinal, Stefan Felsner, Linda Kleist and Robert Lauff	

Differentiable Approximations for Distance Queries	5065
Ahmed Abdelkader and David M. Mount	

Fréchet Distance in Subquadratic Time	5100
Siu-Wing Cheng and Haoqiang Huang	

A Discrete Analog of Tutte's Barycentric Embeddings on Surfaces	5114
Éric Colin de Verdière, Vincent Despré and Loïc Dubois	

Wednesday, Session 12A

Fine-Grained Optimality of Partially Dynamic Shortest Paths and More	5147
Barna Saha, Virginia Vassilevska Williams, Yinzhan Xu and Christopher Ye	
All-Hops Shortest Paths	5191
Virginia Vassilevska Williams, Zoe Xi, Yinzhan Xu and Uri Zwick	
New Approximation Algorithms and Reductions for N-Pairs Shortest Paths and All-Nodes Shortest Cycles	5207
Shiri Chechik, Itay Hoch and Gur Lifshitz	
Faster Single-Source Shortest Paths with Negative Real Weights via Proper Hop Distance	5239
Yufan Huang, Peter Jin and Kent Quanrud	
Improved Shortest Path Restoration Lemmas for Multiple Edge Failures: Trade-Offs Between Fault-Tolerance and Subpaths	5245
Greg Bodwin and Lily Wang	
Faster Approximation Algorithms for Restricted Shortest Paths in Directed Graphs	5263
Vikrant Ashvinkumar, Aaron Bernstein and Adam Karczmarz	

Wednesday, Session 12B

Renyi-Infinity Constrained Sampling with D³ Membership Queries	5278
Yunbum Kook and Matthew S. Zhang	
Potential Hessian Ascent: The Sherrington-Kirkpatrick Model	5307
David Jekel, Juspreet Singh Sandhu and Jonathan Shi	
Spectral Independence Beyond Total Influence on Trees and Related Graphs	5388
Xiaoyu Chen, Xiongxin Yang, Yitong Yin and Xinyuan Zhang	
Optimal Mixing for Randomly Sampling Edge Colorings on Trees Down to the Max Degree	5418
Charlie Carlson, Xiaoyu Chen, Weiming Feng and Eric Vigoda	
Mean-Field Potts and Random-Cluster Dynamics from High-Entropy Initializations	5434
Antonio Blanca, Reza Gheissari and Xusheng Zhang	
FPTAS for Holant Problems with Log-Concave Signatures	5468
Kun He, Zhidan Li, Guoliang Qiu and Chihao Zhang	

Wednesday, Session 12C

Low Degree Local Correction over the Boolean Cube	5504
Prashanth Amireddy, Amik Raj Behera, Manaswi Paraashar, Srikanth Srinivasan and Madhu Sudan	
Quantum Locally Recoverable Codes	5512
Louis Golowich and Venkatesan Guruswami	
Locally Testable Tree Codes	5523
Tamer Mour, Alon Rosen and Ron Rothblum	
Improved Explicit Near-Optimal Codes in the High-Noise Regimes	5560
Xin Li and Songtao Mao	
More Efficient Approximate K-Wise Independent Permutations from Random Reversible Circuits via Log-Sobolev Inequalities	5582
Lucas Gretta, William He and Angelos Pelecanos	
Hermitian Diagonalization in Linear Precision	5599
Rikhav Shah	