SODA14 – Accepted Papers

Andreas Björklund, Petteri Kaski and Łukasz Kowalik
Counting thin subgraphs via packings faster than meet-in-the-middle time

Anand Louis and Konstantin Makarychev
Approximation Algorithm for Sparsest k-Partitioning

Konstantin Makarychev, Yury Makarychev and Aravindan Vijayaraghavan
Bilu--Linial Stable Instances of Max Cut and Minimum Multiway Cut

Siu-Wing Cheng and Man Kwun Chiu
Implicit Manifold Reconstruction

Noga Alon, Sagi Snir and Raphael Yuster
On the compatibility of quartet trees

Will Ma
Improvements and Generalizations of Stochastic Knapsack and Multi-Armed Bandit Approximation Algorithms: Extended Abstract

Andrea Farruggia, Paolo Ferragina, Antonio Frangioni and Rossano Venturini.
Bicriteria data compression

Yixin Cao and Dániel Marx
Interval Deletion is Fixed-Parameter Tractable

Justin Thaler, Graham Cormode, Navin Goyal and Amit Chakrabarti
Annotations for Sparse Data Streams

Valerie King and Jared Saia
Faster Agreement via a Spectral Method for Detecting Malicious Behavior

Michel X. Goemans and Thomas Rothvoss
Polynomiality for Bin Packing with a Constant Number of Item Types

Alexandr Andoni, Piotr Indyk, Huy Nguyen and Ilya Razenshteyn
Beyond Locality-Sensitive Hashing

Fedor Fomin, Daniel Lokshtanov and Saket Saurabh
Efficient Computation of Representative Sets with Applications in Parameterized and Exact Algorithms

Peyman Afshani
Fast Computation of Output Sensitive Maxima in a Word RAM

Daniel Bienstock and Alexander Michalka
Polynomial solvability of variants of the trust-region subproblem

Isabelle Stanton
Streaming Balanced Graph Partitioning for Random Graphs

Venkatesan Guruswami and Chaoping Xing
Optimal rate list decoding of folded algebraic-geometric codes over constant-sized alphabets

Xavier Pérez Giménez, Pu Gao and Cristiane Sato
Arboricity and spanning-tree packing in random graphs with an application to load balancing

Tereza Klimosova and Daniel Kral
Hereditary properties of permutations are strongly testable

Thomas Dueholm Hansen, Mike Paterson and Uri Zwick
Improved upper bounds for Random-Edge and Random-Jump on abstract cubes

Thomas Dueholm Hansen, Haim Kaplan and Uri Zwick
Dantzig's pivoting rule for shortest paths, deterministic MDPs, and minimum cost to time ratio cycles

T-H. Hubert Chan, Fei Chen, Xiaowei Wu and Zhichao Zhao
Ranking on Arbitrary Graphs: Rematch via Continuous LP with Monotone and Boundary Condition Constraints

Jelani Nelson, Eric Price and Mary Wootters
New constructions of RIP matrices with fast multiplication and fewer rows

Gregory T. Minton and Eric Price
Improved Concentration Bounds for Count-Sketch

David Harris and Aravind Srinivasan
Improved bounds and algorithms for graph cuts and network reliability

David Harris and Aravind Srinivasan
A constructive algorithm for the Lovasz Local Lemma on permutations

Anna Adamaszek and Andreas Wiese
A QPTAS for Maximum Weight Independent Set of Polygons with Polylogarithmically Many Vertices

Aris Anagnostopoulos, Fabrizio Grandoni, Stefano Leonardi and Andreas Wiese
A Mazing 2+eps Approximation for Unsplittable Flow on a Path

Esther Ezra
A Size-Sensitive Discrepancy Bound for Set Systems of Bounded Primal Shatter Dimension

Sungjin Im and Benjamin Moseley
New Approximations for Reordering Buffer Management

Ishay Haviv and Oded Regev
On the Lattice Isomorphism Problem

Subhash Khot and Rishi Saket
Hardness of Finding Independent Sets in 2-Colorable and Almost 2-Colorable Hypergraphs

Antonios Antoniadis, Sungjin Im, Ravishankar Krishnaswamy, Benjamin Moseley, Vishwanath Nagarajan, Kirk Pruhs and Clifford Stein
Hallucination Helps: Energy Efficient Virtual Circuit Routing

Pierre-Etienne Meunier, Matthew Patitz, Scott Summers, Guillaume Theyssier, Andrew Winslow and Damien Woods
Intrinsic universality in tile self-assembly requires cooperation

Keren Censor-Hillel, Mohsen Ghaffari and Fabian Kuhn
A New Perspective on Vertex Connectivity

Michael Cohen, Brittany Terese Fasy, Gary Miller, Amir Nayyeri, Richard Peng and Noel Walkington
Solving 1-Laplacians of Convex Simplicial Complexes in Nearly Linear Time: Collapsing and Expanding a Topological Ball

Wang Chi Cheung, Michel Goemans and Sam Chiu-Wai Wong
Improved Algorithms for Vertex Cover with Hard Capacities on Multigraphs and Hypergraphs

David Woodruff and Qin Zhang
An Optimal Lower Bound for Distinct Elements in the Message Passing Model

Manuel Kauers, Ryan O'Donnell, Li-Yang Tan and Yuan Zhou
Hypercontractive inequalities via SOS, and the Frankl-Rodl graph

Niv Buchbinder, Moran Feldman, Seffi Naor and Roy Schwartz
Submodular Maximization with Cardinality Constraints

Enrica Duchi, Dominique Poulalhon and Gilles Schaeffer
Uniform random sampling of simple branched coverings of the sphere by itself

David Doty
Timing in chemical reaction networks

Fedor Fomin, Ioan Todinca and Yngve Villanger
Large induced subgraphs via triangulations and CMSO

Attila Bernáth and Yusuke Kobayashi
The Generalized Terminal Backup Problem

Prateek Bhakta, Sarah Miracle and Dana Randall
Clustering and Mixing Times for Segregation Models

Clément Canonne, Dana Ron and Rocco A. Servedio
Testing equivalence between distributions using conditional samples

Lin Chen, Klaus Jansen and Guochuan Zhang
On the optimality of approximation schemes for the classical scheduling problem

Michael A. Bender, Roozbeh Ebrahimi, Jeremy T. Fineman, Golnaz Ghasemiesfeh, Rob Johnson and Samuel McCauley
Cache-Adaptive Algorithms

Peyman Afshani and Konstantinos Tsakalidis
Determistic Shallow Cuttings for 3D Dominance Ranges

Kevin Buchin, Maike Buchin, Wouter Meulemans and Wolfgang Mulzer
Four Soviets Walk the Dog---with an Application to Alt's Conjecture

Alberto Del Pia and Robert Weismantel
Integer quadratic programming in the plane

Charilaos Efthymiou
MCMC sampling colourings and independent sets of G(n,d/n) near uniqueness threshold.

Monik Khare, Claire Mathieu and Neal Young
First-Come-First-Served for Online Slot Allocation and Huffman Coding

Constantinos Daskalakis, Alan Deckelbaum and Christos Tzamos
The Complexity of Optimal Mechanism Design

Kook Jin Ahn and Sudipto Guha
Near Linear Time Approximation Schemes for Uncapacitated and Capacitated b--Matching Problems in Nonbipartite Graphs

Amol Deshpande, Lisa Hellerstein and Devorah Kletenik
Approximation Algorithms for Stochastic Boolean Function Evaluation and Stochastic Submodular Set Cover

Jugal Garg and Vijay Vazirani
On Computability of Equilibria in Markets with Production

Ryan Williams and Huacheng Yu
Finding orthogonal vectors in discrete structures

Lorenzo Orecchia and Zeyuan Allen Zhu
Flow-Based Algorithms for Local Graph Clustering

Michael Etscheid and Heiko Röglin
Smoothed Analysis of Local Search for the Maximum-Cut Problem

Pablo Azar, Robert Kleinberg and S. Matthew Weinberg
Prophet Inequalities with Limited Information

Lior Kamma, Robert Krauthgamer and Huy Nguyen
Cutting corners cheaply, or how to remove Steiner points

Mohit Singh and Laszlo Vegh
Approximating Minimum Cost Connectivity Orientation and Augmentation

Peter Franek and Marek Krčál
Robust Satisfiability of Systems of Equations

Primoz Skraba and Bei Wang
Approximating Local Homology from Samples

Constantinos Daskalakis, Anindya De, Ilias Diakonikolas, Ankur Moitra and Rocco Servedio
A Polynomial-time Approximation Scheme for Fault-tolerant Distributed Storage

Marcin Bienkowski, Jarek Byrka, Marek Chrobak, Lukasz Jez and Jiri Sgall
Better Approximation Bounds for the Joint Replenishment Problem

Piotr Indyk, Michael Kapralov and Eric Price
(Nearly) Sample-Optimal Sparse Fourier Transform

Shengyu Zhang
Efficient quantum protocols for XOR functions

Michael Kapralov, Sanjeev Khanna and Madhu Sudan
Approximating matching size from random streams

Nikhil Devanur and Zhiyi Huang
Primal Dual Gives Almost Optimal Energy Efficient Online Algorithms

Zhiyi Huang and Aaron Roth
Exploiting Metric Structure for Efficient Private Query Release

Samir Khuller, Manish Purohit and Kanthi Sarpatwar
Analyzing the Optimal Neighborhood: Algorithms for Partial and Budgeted Connected Dominating Set Problems

Alexandr Andoni, Rina Panigrahy, Gregory Valiant and Li Zhang
Learning Sparse Polynomial Functions

Shiri Chechik, Daniel H. Larkin, Liam Roditty, Grant Schoenebeck, Robert E. Tarjan and Virginia Vassilevska Williams
Better Approximation Algorithms for the Graph Diameter

Ben Cousins and Santosh Vempala
A Cubic Algorithm for Computing Gaussian Volume

Yi Li, Huy Nguyen and David Woodruff
On Sketching Matrix Norms and the Top Singular Vector

Chengyu Lin, Jingcheng Liu and Pinyan Lu
A Simple FPTAS for Counting Edge Covers

Anupam Gupta and Anastasios Sidiropoulos
Minimum d-dimensional arrangement with fixed points

Xi Chen, Ilias Diakonikolas, Dimitris Paparas, Xiaorui Sun and Mihalis Yannakakis
The Complexity of Optimal Multidimensional Pricing

Siu On Chan, Ilias Diakonikolas, Gregory Valiant and Paul Valiant
Optimal Algorithms for Testing Closeness of Discrete Distributions

Jian Li, Mohammadtaghi Hajiaghayi, Wei Hu, Barna Saha and Shi Li
A Constant Factor Approximation Algorithm for Fault-Tolerant k-Median

Ken-Ichi Kawarabayashi and Stephan Kreutzer
An Excluded Grid Theorem for Digraphs with Forbidden Minors

Stefan Kratsch, Geevarghese Philip and Saurabh Ray
Point Line Cover: The Easy Kernel is Essentially Tight

Laszlo Egri, Pavol Hell, Benoit Larose and Arash Rafiey
Space complexity of list H-coloring: a dichotomy

Robert Krauthgamer, Seffi Naor, Roy Schwartz and Kunal Talwar
Non-Uniform Graph Partitioning

Philip Klein and Dániel Marx
A subexponential parameterized algorithm for Subset TSP on planar graphs

Sylvain Guillemot and Dániel Marx
Finding small patterns in permutations in linear time

Georgios Piliouras and Jeff S. Shamma
Optimization Despite Chaos: Convex Relaxations to Complex Limit Sets via Poincar\'{e} Recurrence

Bart M. P. Jansen, Daniel Lokshtanov and Saket Saurabh
A Near-Optimal Planarization Algorithm

Bubacarr Bah, Luca Baldassarre and Volkan Cevher
Model-based Sketching and Recovery with Expanders

Merav Parter and David Peleg
Fault Tolerant Approximate BFS Trees

Stephen Alstrup, Esben Bistrup Halvorsen and Kasper Green Larsen
Near-optimal labeling schemes for nearest common ancestors

Justin Ward and Stanislav Zivny
Maximizing Bisubmodular and k-Submodular Functions

Rene Sitters
Polynomial time approximation schemes for the traveling repairman and other minimum latency problems

Yutaro Yamaguchi
Packing A-paths in Group-Labelled Graphs via Linear Matroid Parity

Nikhil Bansal, Moses Charikar, Ravishankar Krishnaswamy and Shi Li
Better Algorithms and Hardness for Broadcast Scheduling via a Discrepancy Approach

Herbert Edelsbrunner and Salman Parsa
On Computational Complexity of Betti Numbers: Reductions From Matrix Rank

Shaddin Dughmi, Nicole Immorlica and Aaron Roth
Constrained Signaling in Auction Design

Niv Buchbinder, Shahar Chen and Seffi Naor
Competitive Analysis via Regularization

Jean Cardinal, Kolja Knauer, Piotr Micek and Torsten Ueckerdt
Making Octants Colorful and Related Covering Decomposition Problems

Rajesh Chitnis, Mohammadtaghi Hajiaghayi and Dániel Marx
Tight Bounds for Planar Strongly Connected Steiner Subgraph with Fixed Number of Terminals (and Extensions)

Chenggang Wu, Ryan O'Donnell, Amir Nayyeri and Pravesh Kothari
Testing Surface Area

Greg Aloupis, John Iacono, Stefan Langerman, Ozgur Ozkan and Stefanie Wuhrer
The Complexity of Order Type Isomorphism

Monika Henzinger, Sebastian Krinninger and Danupon Nanongkai
A Subquadratic-Time Algorithm for Dynamic Single-Source Shortest Paths

Joel Ouaknine and James Worrell
Positivity Problems for Low-Order Linear Recurrence Sequences

David Eisenstat, Philip N. Klein and Claire Mathieu
Approximating k-center in planar graphs

Daniel Lokshtanov, Martin Vatshelle and Yngve Villanger
Independent Set in P5-Free Graphs in Polynomial Time

George Giakkoupis
Tight Bounds for Rumor Spreading with Vertex Expansion

Ashwinkumar Badanidiyuru and Jan Vondrak
Fast algorithms for maximizing submodular functions

Laurent Bulteau and Christian Komusiewicz
Minimum Common String Partition Parameterized by Partition Size is Fixed-Parameter Tractable

Nicholas Harvey and Neil Olver
Pipage Rounding, Pessimistic Estimators and Matrix Concentration

Harald Räcke, Chintan Shah and Hanjo Täubig
Computing Cut-Based Hierarchical Decompositions in Almost Linear Time

Peyman Afshani, Bryan Wilkinson, Yufei Tao and Cheng Sheng
Concurrent Range Reporting in Two-Dimensional Space

Sanjeev Khanna and Brendan Lucier
Influence Maximization in Undirected Networks

Jonathan Kelner, Yin Tat Lee, Lorenzo Orecchia and Aaron Sidford
An Almost-Linear-Time Algorithm for Approximate Max Flow in Undirected Graphs, and its Multicommodity Generalizations

Nikhil Bansal and Arindam Khan
Improved Approximation Algorithm for Two-Dimensional Bin Packing

Shayan Oveis Gharan and Luca Trevisan
Partitioning into Expanders

Christian Borgs, Michael Brautbar, Jennifer Chayes and Brendan Lucier
Maximizing Social Influence in Nearly Optimal Time

Anupam Gupta, Amit Kumar and Clifford Stein
Maintaining Assignments Online: Matching, Scheduling, and Flows

Chinmay Hegde, Piotr Indyk and Ludwig Schmidt
Approximation-Tolerant Model-Based Compressive Sensing

Dan Alistarh, James Aspnes, Michael Bender, Rati Gelashvili and Seth Gilbert
Dynamic Task Allocation

Anupam Gupta and Amit Kumar
Online Steiner Tree with Deletions

Bundit Laekhanukit
Parameters of Two-Prover-One-Round Game and The Hardness of Connectivity Problems

Magnus Wahlström
Half-integrality, LP-branching and FPT Algorithms

Raef Bassily and Adam Smith
Causal-Erasure Adversarial Channels

Alexandr Andoni, Anupam Gupta and Robert Krauthgamer
Towards $(1+\epsilon)$-Approximate Flow Sparsifiers

Mina Ghashami and Jeff Phillips
Relative Error Heavy Hitters and Sparse Directions

Timothy M. Chan, Ian Munro and Venkatesh Raman
Selection and Sorting in the "Restore" Model

Noga Alon, Mohsen Ghaffari, Bernhard Haeupler and Majid Khabbazian
Broadcast Throughput in Radio Networks: Routing vs. Network Coding

Flavio Chierichetti, Anirban Dasgupta, Ravi Kumar and Silvio Lattanzi
Learning Entangled Single-Sample Gaussians

Ashish Goel, Sanjeev Khanna, Daniel Larkin and Robert Tarjan
Disjoint Set Union with Randomized Linking

Martin Dietzfelbinger and Philipp Woelfel
Tight Lower Bounds for Greedy Routing in Higher-Dimensional Small-World Grids

Ryan O'Donnell, John Wright, Chenggang Wu and Yuan Zhou
Hardness of Robust Graph Isomorphism, Lasserre Gaps, and Asymmetry of Random Graphs

Ramanujan M. S. and Saket Saurabh
Linear Time Parameterized Algorithms via Skew-Symmetric Multicuts

Yoichi Iwata, Keigo Oka and Yuichi Yoshida
Linear-Time FPT Algorithms via Network Flow