

SODA12 – List of Accepted Papers

Sublinear Time, Measurement-Optimal, Sparse Recovery For All
Ely Porat and Martin Strauss

Counting Perfect Matchings as Fast as Ryser
Andreas Björklund

Fixed-Parameter Tractability of Directed Multiway Cut Parameterized by the Size of the Cutset
Rajesh Chitnis, Mohammadtaghi Hajiaghayi and Dániel Marx

Analyzing Graph Structure via Linear Measurements
Kook Jin Ahn, Sudipto Guha and Andrew McGregor.

The maximum number of faces of the Minkowski sum of two convex polytopes
Menelaos I. Karavelas and Eleni Tzanaki

A Proof of the Boyd-Carr Conjecture
Frans Schalekamp, David Williamson and Anke Van Zuylen

A Little Advice Can Be Very Helpful
Arkadev Chattopadhyay, Jeff Edmonds, Faith Ellen and Toniann Pitassi

Online Scheduling with General Cost Functions
Sungjin Im, Benjamin Moseley and Kirk Pruhs

Approximate Counting via Correlation Decay in Spin Systems
Liang Li, Pinyan Lu and Yitong Yin

Popularity vs Maximum cardinality in the stable marriage setting
Telikepalli Kavitha

Physarum Can Compute Shortest Paths
Vincenzo Bonifaci, Kurt Mehlhorn and Girish Varma

An efficient polynomial-time approximation scheme for Steiner forest in planar graphs
David Eisenstat, Philip Klein and Claire Mathieu

Metastability of Logit Dynamics for Coordination Games
Vincenzo Auletta, Diodato Ferraioli, Francesco Pasquale and Giuseppe Persiano

Co-nondeterminism in compositions: A kernelization lower bound for a Ramsey-type problem
Stefan Kratsch

Approximation Algorithms and Hardness of the k-Route Cut Problem
Julia Chuzhoy, Yury Makarychev, Aravindan Vijayaraghavan and Yuan Zhou

Scheduling Heterogeneous Processors Isn't As Easy As You Think
Anupam Gupta, Sungjin Im, Ravishankar Krishnaswamy, Benjamin Moseley and Kirk Pruhs

A Near-Linear Algorithm for Projective Clustering Integer Points
Kasturi Varadarajan and Xin Xiao

A Satisfiability Algorithm for AC⁰
Russel Impagliazzo, William Matthews and Ramamohan Paturi

Weak Compositions and Their Applications to Polynomial Lower-Bounds for Kernelization
Danny Hermelin and Xi Wu

The Notion of a Rational Convex Program, and an Algorithm for the Arrow-Debreu Nash Bargaining Game
Vijay Vazirani

Parallelism and Time in Hierarchical Self-Assembly
Ho-Lin Chen and David Doty

Submodular Functions are Noise Stable
Homin Lee, Pravesh Kothari, Adam Klivans and Mahdi Cheraghchi

A Linear Time Algorithm for Seeds Computation
Tomasz Kociumaka, Marcin Kubica, Jakub Radoszewski, Wojciech Rytter and Tomasz Walen

On a Linear Program for Minimum-Weight Triangulation
Arman Yousefi and Neal Young

A Polynomial-time Approximation Scheme for Planar Multiway Cut
Mohammadhossein Bateni, Mohammadtaghi Hajiaghayi, Philip Klein and Claire Mathieu

An $O(n^2)$ Time Algorithm for Alternating Buchi Games
Krishnendu Chatterjee and Monika Henzinger

The condensation transition in random hypergraph 2-coloring
Amin Coja-Oghlan and Lenka Zdeborova

Jaywalking your Dog - Computing the Fréchet Distance with Shortcuts
Anne Driemel and Sariel Har-Peled

Wireless Connectivity and Capacity
Magnus Halldorsson and Pradipta Mitra

Approximate Distance Oracles with Improved Preprocessing Time
Christian Wulff-Nilsen

Learning k -Modal Distributions via Testing
Constantinos Daskalakis, Ilias Diakonikolas and Rocco Servedio

Gathering despite mischief
Yoann Dieudonne, Andrzej Pelc and David Peleg

I/O-Efficient Data Structures for Colored Range and Prefix Reporting
Kasper Green Larsen and Rasmus Pagh

Subexponential Parameterized Algorithm for Minimum Fill-in
Fedor V. Fomin and Yngve Villanger

Exact Distance Oracles for Planar Graphs
Shay Mozes and Christian Sommer

The Set of Solutions of Random XORSAT Formulae
Dimitris Achlioptas, Morteza Ibrahimi, Yashodhan Kanoria, Matt Kraning, Mike Molloy and Andrea Montanari

Spanning closed walks and TSP in 3-connected planar graphs
Ken-Ichi Kawarabayashi and Kenta Ozeki

A Faster Algorithm to Recognize Even-Hole-Free Graphs
Hsien-Chih Chang and Hsueh-I Lu

Sparsifier Johnson-Lindenstrauss Transforms
Daniel Kane and Jelani Nelson

Random Walks, Electric Networks and The Transience Class problem of Sandpiles
Ayush Chouh and Sundar Vishwanathan

Constructing high order elements through subspace polynomials
Qi Cheng, Shuhong Gao and Daqing Wan

A Matroid Approach to Stable Matchings with Lower Quotas
Tamas Fleiner and Naoyuki Kamiyama

Race to Idle: New Algorithms for Speed Scaling with a Sleep State
Susanne Albers and Antonios Antoniadis

Compression via Matroids: A Randomized Polynomial Kernel for Odd Cycle Transversal
Stefan Kratsch and Magnus Wahlström

Approximate Tree Decompositions of Planar Graphs in Linear Time
Frank Kammer and Torsten Tholey

Efficient Algorithms for Maximum Weight Matchings in General Graphs with Small Edge Weights
Chien-Chung Huang and Telikepalli Kavitha

Improved Output-Sensitive Quantum Algorithms for Boolean Matrix Multiplication
Francois Le Gall

Computing all maps into a sphere
Martin Čadek, Marek Krčál, Jiří Matoušek, Francis Sergeraert, Lukáš Vokřínek and Uli Wagner

Networks Cannot Compute Their Diameter in Sublinear Time
Silvio Frischknecht, Stephan Holzer and Roger Wattenhofer

Finding an induced path of given parity in planar graphs in polynomial time
Marcin Kaminski and Naomi Nishimura

A Universally-truthful Approximation Scheme for Multi-unit Auctions
Berthold Vöcking

Near Linear Time ϵ -Approximation for Restricted Shortest Paths in Undirected Graphs
Aaron Bernstein

Approximation Algorithms for Stochastic Orienteering
Anupam Gupta, Ravishankar Krishnaswamy, Viswanath Nagarajan and R. Ravi

Information Dissemination via Random Walks in d-Dimensional Space
Henry Lam, Zhenming Liu, Michael Mitzenmacher, Xiaorui Sun and Yajun Wang

A Scaling Algorithm for Maximum Weight Matching in Bipartite Graphs
Ran Duan and Hsin-Hao Su

Improved Competitive Ratio for the Matroid Secretary Problem
Sourav Chakraborty and Oded Lachish

An $O(\log k)$ -competitive Algorithm for Generalized Caching
Anna Adamaszek, Artur Czumaj, Matthias Englert and Harald Räcke

On the communication and streaming complexity of maximum bipartite matching
Ashish Goel, Michael Kapralov and Sanjeev Khanna

Tight bounds on the maximum size of a set of permutations with bounded VC-dimension
Josef Cibulka and Jan Kyncl

Fast zeta transforms for point lattices

Andreas Björklund, Thore Husfeldt, Petteri Kaski, Mikko Koivisto, Jesper Nederlof and Pekka Parviainen

The mixing time of the Newman--Watts small world

Louigi Addario-Berry and Tao Lei

Shortest Cycle Through Specified Elements

Andreas Björklund, Thore Husfeldt and Nina Taslaman

Partial match queries in random quadrees

Nicolas Broutin, Ralph Neininger and Henning Sulzbach

Mechanism Designs via Consensus Estimate and Cross-Check

Bach Ha and Jason Hartline

The Shifting Sands Algorithm

Andrew McGregor and Paul Valiant

Testing Odd-Cycle-Freeness in Boolean Functions

Arnab Bhattacharyya, Elena Grigorescu, Prasad Raghavendra and Asaf Shapira

Packing anchored rectangles

Adrian Dumitrescu and Csaba Toth

Inapproximability Results for the Multi-level Uncapacitated Facility Location Problem

Ravishankar Krishnaswamy and Maxim Sviridenko

Directed Nowhere Dense Classes of Graphs

Stephan Kreutzer and Siamak Tazari

Approximating Rooted Steiner Networks

J. Cheriyan, Bundit Laekhanukit, Guylain Naves and Adrian Vetta

The Entropy Rounding Method in Approximation Algorithms

Thomas Rothvoss

Constant Factor Approximation Algorithm for the Knapsack Median Problem

Amit Kumar

Resource Augmentation for Weighted Flow-time explained by Dual Fitting

S. Anand, Naveen Garg and Amit Kumar

Rumor Spreading and Vertex Expansion

George Giakkoupis and Thomas Sauerwald

Erdős-Pósa property and its algorithmic applications --- parity constraints, subset feedback set, and subset packing

Naonori Kakimura, Ken-Ichi Kawarabayashi and Yusuke Kobayashi

Approximation algorithms for two-state anti-ferromagnetic spin systems on bounded degree graphs

Alistair Sinclair, Piyush Srivastava and Marc Thurley

Confluent Persistence Revisited

Sebastien Collette, John Iacono and Stefan Langerman

Using Hashing to Solve the Dictionary Problem (In External Memory)

John Iacono and Mihai Patrascu

Towards Robust and Efficient Computation in Dynamic Peer-to-Peer Networks

John Augustine, Gopal Pandurangan, Peter Robinson and Eli Upfal

On the (In)security of Hash-based Oblivious RAM and a New Balancing Scheme

Eyal Kushilevitz, Steve Lu and Rafail Ostrovsky

Subquadratic time approximation algorithms for the girth

Liam Roditty and Virginia Vassilevska Williams

Kernelization of Packing Problems

Holger Dell and Dániel Marx

List-Coloring Graphs without Subdivisions and without Immersions

Ken-Ichi Kawarabayashi and Yusuke Kobayashi

Submatrix maximum queries in Monge matrices and Monge partial matrices, and their applications

Haim Kaplan, Shay Mozes, Yahav Nussbaum and Micha Sharir

The complexity of conservative valued CSPs

Vladimir Kolmogorov and Stanislav Zivny

Linear Index Coding via Semidefinite Programming

Eden Chlamtac and Ishay Haviv

LSH-Preserving Functions and Their Applications

Flavio Chierichetti and Ravi Kumar

Lower Bounds for Number-in-Hand Multiparty Communication Complexity, Made Easy

Jeff Phillips, Elad Verbin and Qin Zhang

Voting with Limited Information and Many Alternatives
Flavio Chierichetti and Jon Kleinberg

A simple algorithm for random colouring $G(n, d/n)$ using $(2+\epsilon)d$ colours
Charilaos Efthymiou

Beyond Myopic Best Response (in Cournot Competition)
Amos Fiat, Elias Koutsoupias, Katrina Ligett, Yishay Mansour and Svetlana Olonetsky

Sequential Auctions and Externalities
Renato Paes Leme, Vasilis Syrgkanis and Eva Tardos

Outperforming LRU via Competitive Analysis on Parametrized Inputs for Paging
Gabriel Moruz and Andrei Negoescu

Approximating CSPs with Global Cardinality Constraints Using SDP Hierarchies
Prasad Raghavendra and Ning Tan

Bypassing UGC from some Optimal Geometric Inapproximability Results
Venkatesan Guruswami, Prasad Raghavendra, Rishi Saket and Yi Wu

SINR Diagram with Interference Cancellation
Chen Avin, Asaf Cohen, Yoram Haddad, Erez Kantor, Zvi Lotker, Merav Parter and David Peleg

Optimal Column-Based Low-Rank Matrix Reconstruction
Venkatesan Guruswami and Ali Sinop

Private Data Release Via Learning Thresholds
Moritz Hardt, Guy Rothblum and Rocco Servedio

Linear Kernels for (Connected) Dominating Set on H -minor-free graphs
Fedor V. Fomin, Daniel Lokshtanov, Saket Saurabh and Dimitrios Thilikos

Computing distance between piecewise linear bivariate functions
Boris Aronov and Guillaume Moroz

Matroidal Degree-Bounded Minimum Spanning Trees
Rico Zenklusen

Ultra-Fast Rumor Spreading in Social Networks
Nikolaos Fountoulakis, Konstantinos Panagiotou and Thomas Sauerwald

A Near-Optimal Sublinear-Time Algorithm for Approximating the Minimum Vertex Cover Size
Krzysztof Onak, Dana Ron, Michal Rosen and Ronitt Rubinfeld

Deterministic Construction of l -type Ellipsoids and its Application to Derandomizing Lattice Algorithms

Daniel Dadush and Santosh Vempala

Optimal Crowdsourcing Contests

Shuchi Chawla, Jason D. Hartline and Balasubramanian Sivan

Polynomial integrality gaps for strong SDP relaxations of Densest k -Subgraph

Aditya Bhaskara, Moses Charikar, Venkatesan Guruswami, Aravindan Vijayaraghavan and Yuan Zhou

Algorithms and Data Structures for the Transportation Problem in Geometric Settings

R Sharathkumar and Pankaj Agarwal

Single source distance oracle for planar digraphs avoiding a failed node or link

Surender Baswana, Utkarsh Lath, and Anuradha Mehta

Approximating Fixation Probabilities in the Generalized Moran Process

Josep Diaz, Leslie Ann Goldberg, George Mertzios, David Richerby, Maria Serna and Paul Spirakis

On the hardness of pricing loss leaders

Preyas Popat and Yi Wu

A new approach to the orientation of random hypergraphs

Marc Lelarge

Privacy-Preserving Group Data Access via Stateless Oblivious RAM Simulation

Michael Goodrich, Michael Mitzenmacher, Olga Ohrimenko and Roberto Tamassia

On Multiplicative λ -Approximations and some Geometric Applications

Ilan Newman and Yuri Rabinovich

Fully Persistent B-trees

Gerth Stølting Brodal, Spyros Sioutas, Konstantinos Tsakalidis and Kostas Tsichlas

Simple and Practical Algorithm for Sparse Fourier Transform

Haitham Hassanieh, Piotr Indyk, Dina Katabi and Eric Price

The MAX-CUT of sparse random graphs

Hervé Daudé, Conrado Martinez, Vonjy Rasendrasahina and Vlady Ravelomanana

Competitive Routing in the Half- θ_6 -Graph

Prosenjit Bose, Sander Verdonschot, Rolf Fagerberg and Andre Van Renssen

Dimension reduction for finite trees in L_1

James Lee, Arnaud De Mesmay and Mohammad Moharrami

Weighted Capacitated, Priority, and Geometric Set Cover via Improved Quasi-Uniform Sampling

Timothy Chan, Elyot Grant, Jochen Koenemann and Malcolm Sharpe

Global Minimum Cuts in Surface Embedded Graphs

Jeff Erickson, Kyle Fox and Amir Nayyeri

Expanders are Universal for the Class of all Spanning Trees

Daniel Johannsen, Michael Krivelevich and Wojciech Samotij

Concentration and Moment Inequalities for Polynomials of Independent Random Variables

Warren Schudy and Maxim Sviridenko

Separating stable sets in claw-free graphs via Padberg-Rao and compact linear programs

Yuri Faenza, Gianpaolo Oriolo and Gautier Stauffer

Simultaneous Approximations for Adversarial and Stochastic Online Budgeted Allocation

Vahab Mirrokni, Shayan Oveis Gharan and Morteza Zadimoghaddam

Approximate Duality of Multicommodity Multiroute Flows and Cuts: Single Source Case

Christian Scheideler and Petr Kolman

Concentration Inequalities for Nonlinear Matroid Intersection

Konstantin Makarychev, Warren Schudy and Maxim Sviridenko

Traffic-redundancy aware network design

Siddharth Barman and Shuchi Chawla

Space-efficient Local Computation Algorithms

Noga Alon, Ronitt Rubinfeld, Shai Vardi and Ning Xie

Stochastic coalescence in logarithmic time

Po-Shen Loh and Eyal Lubetzky

Black-Box Reductions for Cost-Sharing Mechanism Design

Konstantinos Georgiou and Chaitanya Swamy

The Maximum Degree of Random Planar Graphs

Michael Drmota, Omer Gimenez, Marc Noy, Konstantinos Panagiotou and Angelika Steger

Sketching Valuation Functions

Ashwinkumar Badanidiyuru, Shahar Dobzinski, Hu Fu, Robert Kleinberg, Noam Nisan and Tim Roughgarden

Data reduction for weighted and outlier-resistant clustering
Dan Feldman and Leonard J. Schulman

Bidimensionality and Geometric Graphs
Fedor V. Fomin, Daniel Lokshtanov and Saket Saurabh.

Polytope Approximation and the Mahler Volume
Sunil Arya, Guilherme D. Da Fonseca and David Mount

Width of Points in the Streaming Model
Alexandr Andoni and Huy Nguyen

Top- k Document Retrieval in Optimal Time and Linear Space
Gonzalo Navarro and Yakov Nekrich

Local Homology Transfer and Stratification Learning
Paul Bendich, Bei Wang and Sayan Mukherjee