

45th International Colloquium on Automata, Languages, and Programming

ICALP 2018, Prague, Czech Republic, July 9–13, 2018

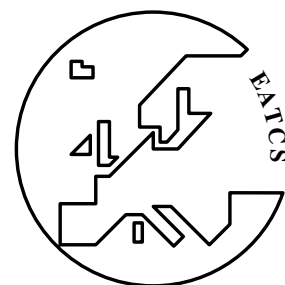
Edited by

Ioannis Chatzigiannakis

Christos Kaklamanis

Dániel Marx

Donald Sannella



Editors

Ioannis Chatzigiannakis
Department of Computer, Control,
and Management Engineering
Sapienza University of Rome
ichatz@dis.uniroma1.it

Christos Kaklamanis
Department of Computer Engineering and Informatics
University of Patras and
CTI "Diophantus"
ckakl@cti.gr

Dániel Marx
Institute for Computer Science and Control
Hungarian Academy of Sciences
dmarx@cs.bme.hu

Donald Sannella
School of Informatics
University of Edinburgh
dts@inf.ed.ac.uk

ACM Classification 2012
Theory of computation

ISBN 978-3-95977-076-7

PRINT ISBN: 978-1-5108-6562-4

Published online and open access by

Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany. Online available at <http://www.dagstuhl.de/dagpub/978-3-95977-076-7>.

Publication date
July, 2018

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://dnb.d-nb.de>.

License

This work is licensed under a Creative Commons Attribution 3.0 Unported license (CC-BY 3.0): <http://creativecommons.org/licenses/by/3.0/legalcode>.



In brief, this license authorizes each and everybody to share (to copy, distribute and transmit) the work under the following conditions, without impairing or restricting the authors' moral rights:

- Attribution: The work must be attributed to its authors.

The copyright is retained by the corresponding authors.

Digital Object Identifier: 10.4230/LIPICS.ICALP.2018.0

ISBN 978-3-95977-076-7

ISSN 1868-8969

<http://www.dagstuhl.de/lipics>

LIPICs – Leibniz International Proceedings in Informatics

LIPICs is a series of high-quality conference proceedings across all fields in informatics. LIPICs volumes are published according to the principle of Open Access, i.e., they are available online and free of charge.

Editorial Board

- Luca Aceto (*Chair*, Gran Sasso Science Institute and Reykjavik University)
- Susanne Albers (TU München)
- Chris Hankin (Imperial College London)
- Deepak Kapur (University of New Mexico)
- Michael Mitzenmacher (Harvard University)
- Madhavan Mukund (Chennai Mathematical Institute)
- Anca Muscholl (University Bordeaux)
- Catuscia Palamidessi (INRIA)
- Raimund Seidel (Saarland University and Schloss Dagstuhl – Leibniz-Zentrum für Informatik)
- Thomas Schwentick (TU Dortmund)
- Reinhard Wilhelm (Saarland University)

ISSN 1868-8969

<http://www.dagstuhl.de/lipics>

Printed from e-media 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.

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

■ Contents

Preface	
<i>Ioannis Chatzigiannakis, Christos Kaklamanis, Dániel Marx, and Donald Sannella</i>	0:xv–0:xvi
Organization	
.....	0:xvii–0:xxv
List of Authors	
.....	0:xxvii–0:xlvii

Invited Papers

Consistent Distributed Memory Services: Resilience and Efficiency	
<i>Theophanis Hadjistasi and Alexander A. Schwarzmann</i>	1:1–1:19
Sparsity – an Algorithmic Perspective	
<i>Jaroslav Nešetřil</i>	2:1–2:1
Probability Theory from a Programming Perspective	
<i>Sam Staton</i>	3:1–3:1
Lower Bounds by Algorithm Design: A Progress Report	
<i>Richard Ryan Williams</i>	4:1–4:1

Track A: Algorithms, Complexity, and Games

Power of d Choices with Simple Tabulation	
<i>Anders Aamand, Mathias Bæk Tejs Knudsen, and Mikkel Thorup</i>	5:1–5:14
One-Way Trail Orientations	
<i>Anders Aamand, Niklas Hjuler, Jacob Holm, and Eva Rotenberg</i>	6:1–6:13
Dynamic Matching: Reducing Integral Algorithms to Approximately-Maximal Fractional Algorithms	
<i>Moab Arar, Shiri Chechik, Sarel Cohen, Cliff Stein, and David Wajc</i>	7:1–7:16
Tighter Connections Between Formula-SAT and Shaving Logs	
<i>Amir Abboud and Karl Bringmann</i>	8:1–8:18
New Approximation Algorithms for (1,2)-TSP	
<i>Anna Adamaszek, Matthias Mnich, and Katarzyna Paluch</i>	9:1–9:14
Union of Hypercubes and 3D Minkowski Sums with Random Sizes	
<i>Pankaj K. Agarwal, Haim Kaplan, and Micha Sharir</i>	10:1–10:15
Noise-Tolerant Testing of High Entanglement of Formation	
<i>Rotem Arnon-Friedman and Henry Yuen</i>	11:1–11:12
A Complete Dichotomy for Complex-Valued Holant ^c	
<i>Miriam Backens</i>	12:1–12:14

Tight Bounds on Online Checkpointing Algorithms <i>Achiya Bar-On, Itai Dinur, Orr Dunkelman, Rani Hod, Nathan Keller, Eyal Ronen, and Adi Shamir</i>	13:1–13:13
Fast Reed-Solomon Interactive Oracle Proofs of Proximity <i>Eli Ben-Sasson, Iddo Bentov, Yinon Horesh, and Michael Riabzev</i>	14:1–14:17
NP-Hardness of Coloring 2-Colorable Hypergraph with Poly-Logarithmically Many Colors <i>Amev Bhangale</i>	15:1–15:11
Sublinear Algorithms for MAXCUT and Correlation Clustering <i>Aditya Bhaskara, Samira Daruki, and Suresh Venkatasubramanian</i>	16:1–16:14
Parameterized Intractability of Even Set and Shortest Vector Problem from Gap-ETH <i>Arnab Bhattacharyya, Suprovat Ghoshal, Karthik C. S., and Pasin Manurangsi</i> ..	17:1–17:15
Rollercoasters and Caterpillars <i>Therese Biedl, Ahmad Biniaz, Robert Cummings, Anna Lubiw, Florin Manea, Dirk Nowotka, and Jeffrey Shallit</i>	18:1–18:15
New algorithms for Steiner tree reoptimization <i>Davide Bilò</i>	19:1–19:14
Efficient Shortest Paths in Scale-Free Networks with Underlying Hyperbolic Geometry <i>Thomas Bläsius, Cedric Freiberger, Tobias Friedrich, Maximilian Katzmann, Felix Montenegro-Retana, and Marianne Thieffry</i>	20:1–20:14
Approximate Convex Hull of Data Streams <i>Aurim Blum, Vladimir Braverman, Ananya Kumar, Harry Lang, and Lin F. Yang</i>	21:1–21:13
Small Bias Requires Large Formulas <i>Andrej Bogdanov</i>	22:1–22:12
Geodesic Obstacle Representation of Graphs <i>Prosenjit Bose, Paz Carmi, Vida Dujmovic, Saeed Mehrabi, Fabrizio Montecchiani, Pat Morin, and Luis Fernando Schultz Xavier da Silveira</i>	23:1–23:13
The Bottleneck Complexity of Secure Multiparty Computation <i>Elette Boyle, Abhishek Jain, Manoj Prabhakaran, and Ching-Hua Yu</i>	24:1–24:16
Revisiting Frequency Moment Estimation in Random Order Streams <i>Vladimir Braverman, Emanuele Viola, David P. Woodruff, and Lin F. Yang</i>	25:1–25:14
Proportional Approval Voting, Harmonic k-median, and Negative Association <i>Jarosław Byrka, Piotr Skowron, and Krzysztof Sornat</i>	26:1–26:14
Fine-Grained Derandomization: From Problem-Centric to Resource-Centric Complexity <i>Marco L. Carmosino, Russell Impagliazzo, and Manuel Sabin</i>	27:1–27:16
Ranking with Fairness Constraints <i>L. Elisa Celis, Damian Straszak, and Nisheeth K. Vishnoi</i>	28:1–28:15

Interpolating between k -Median and k -Center: Approximation Algorithms for Ordered k -Median <i>Deeparnab Chakrabarty and Chaitanya Swamy</i>	29:1–29:14
Generalized Center Problems with Outliers <i>Deeparnab Chakrabarty and Maryam Negahbani</i>	30:1–30:14
Orthogonal Point Location and Rectangle Stabbing Queries in 3-d <i>Timothy M. Chan, Yakov Nekrich, Saladi Rahul, and Konstantinos Tsakalidis</i>	31:1–31:14
Spanning Tree Congestion and Computation of Generalized Györi-Lovász Partition <i>L. Sunil Chandran, Yun Kuen Cheung, and Davis Issac</i>	32:1–32:14
Fully Dynamic Almost-Maximal Matching: Breaking the Polynomial Worst-Case Time Barrier <i>Moses Charikar and Shay Solomon</i>	33:1–33:14
On Estimating Edit Distance: Alignment, Dimension Reduction, and Embeddings <i>Moses Charikar, Ofir Geri, Michael P. Kim, and William Kuszmaul</i>	34:1–34:14
How Hard Is It to Satisfy (Almost) All Roommates? <i>Jiehua Chen, Danny Hermelin, Manuel Sorge, and Harel Yedidsion</i>	35:1–35:15
A Quadratic Size-Hierarchy Theorem for Small-Depth Multilinear Formulas <i>Suryajith Chillara, Nutan Limaye, and Srikanth Srinivasan</i>	36:1–36:13
Restricted Max-Min Fair Allocation <i>Siu-Wing Cheng and Yuchen Mao</i>	37:1–37:13
Improved Approximation for Node-Disjoint Paths in Grids with Sources on the Boundary <i>Julia Chuzhoy, David H. K. Kim, and Rachit Nimavat</i>	38:1–38:14
Optimal Hashing in External Memory <i>Alex Conway, Martín Farach-Colton, and Philip Shilane</i>	39:1–39:14
Lovász Meets Weisfeiler and Leman <i>Holger Dell, Martin Grohe, and Gaurav Rattan</i>	40:1–40:14
Sample-Optimal Identity Testing with High Probability <i>Ilias Diakonikolas, Themis Gouleakis, John Peebles, and Eric Price</i>	41:1–41:14
Approximating All-Pair Bounded-Leg Shortest Path and APSP-AF in Truly-Subcubic Time <i>Ran Duan and Hanlin Ren</i>	42:1–42:12
Single-Source Bottleneck Path Algorithm Faster than Sorting for Sparse Graphs <i>Ran Duan, Kaifeng Lyu, and Yuanhang Xie</i>	43:1–43:14
Improved Time Bounds for All Pairs Non-decreasing Paths in General Digraphs <i>Ran Duan, Yong Gu, and Le Zhang</i>	44:1–44:14
Edit Distance between Unrooted Trees in Cubic Time <i>Bartłomiej Dudek and Paweł Gawrychowski</i>	45:1–45:14

A Note on Two-Colorability of Nonuniform Hypergraphs <i>Lech Duraj, Grzegorz Gutowski, and Jakub Kozik</i>	46:1–46:13
Additive Non-Approximability of Chromatic Number in Proper Minor-Closed Classes <i>Zdeněk Dvořák and Ken-ichi Kawarabayashi</i>	47:1–47:12
How to Navigate Through Obstacles? <i>Eduard Eiben and Iyad Kanj</i>	48:1–48:13
Faster Algorithms for Integer Programs with Block Structure <i>Friedrich Eisenbrand, Christoph Hunkenschroder, and Kim-Manuel Klein</i>	49:1–49:13
On the Probe Complexity of Local Computation Algorithms <i>Uriel Feige, Boaz Patt-Shamir, and Shai Vardi</i>	50:1–50:14
Fully-Dynamic Bin Packing with Little Repacking <i>Björn Feldkord, Matthias Feldotto, Anupam Gupta, Guru Guruganesh, Amit Kumar, Sören Riechers, and David Wajc</i>	51:1–51:24
A Sublinear Tester for Outerplanarity (and Other Forbidden Minors) With One-Sided Error <i>Hendrik Fichtenberger, Reut Levi, Yadu Vasudev, and Maximilian Wötzel</i>	52:1–52:14
Parameterized Low-Rank Binary Matrix Approximation <i>Fedor V. Fomin, Petr A. Golovach, and Fahad Panolan</i>	53:1–53:16
Towards Blackbox Identity Testing of Log-Variate Circuits <i>Michael A. Forbes, Sumanta Ghosh, and Nitin Saxena</i>	54:1–54:16
Finding Cliques in Social Networks: A New Distribution-Free Model <i>Jacob Fox, Tim Roughgarden, C. Seshadhri, Fan Wei, and Nicole Wein</i>	55:1–55:15
A PTAS for a Class of Stochastic Dynamic Programs <i>Hao Fu, Jian Li, and Pan Xu</i>	56:1–56:14
Semi-Supervised Algorithms for Approximately Optimal and Accurate Clustering <i>Buddhima Gamlath, Sangxia Huang, and Ola Svensson</i>	57:1–57:14
High Probability Frequency Moment Sketches <i>Sumit Ganguly and David P. Woodruff</i>	58:1–58:15
Quasi-PTAS for Scheduling with Precedences using LP Hierarchies <i>Shashwat Garg</i>	59:1–59:13
ARRIVAL: Next Stop in CLS <i>Bernd Gärtner, Thomas Dueholm Hansen, Pavel Hubáček, Karel Král, Hagar Mosaad, and Veronika Slívová</i>	60:1–60:13
Improved Bounds for Shortest Paths in Dense Distance Graphs <i>Paweł Gawrychowski and Adam Karczmarz</i>	61:1–61:15
Towards Unified Approximate Pattern Matching for Hamming and L_1 Distance <i>Paweł Gawrychowski and Przemysław Uznański</i>	62:1–62:13
A Faster Construction of Greedy Consensus Trees <i>Paweł Gawrychowski, Gad M. Landau, Wing-Kin Sung, and Oren Weimann</i>	63:1–63:14

A Faster FPTAS for #Knapsack <i>Paweł Gawrychowski, Liran Markin, and Oren Weimann</i>	64:1–64:13
Towards Optimal Approximate Streaming Pattern Matching by Matching Multiple Patterns in Multiple Streams <i>Shay Golan, Tsvi Kopelowitz, and Ely Porat</i>	65:1–65:16
Gray Codes and Symmetric Chains <i>Petr Gregor, Sven Jäger, Torsten Mütze, Joe Sawada, and Kaja Wille</i>	66:1–66:14
An Improved Isomorphism Test for Bounded-Tree-Width Graphs <i>Martin Grohe, Daniel Neuen, Pascal Schweitzer, and Daniel Wiebking</i>	67:1–67:14
A Polynomial-Time Approximation Algorithm for All-Terminal Network Reliability <i>Heng Guo and Mark Jerrum</i>	68:1–68:12
Perfect Simulation of the Hard Disks Model by Partial Rejection Sampling <i>Heng Guo and Mark Jerrum</i>	69:1–69:10
Non-Preemptive Flow-Time Minimization via Rejections <i>Anupam Gupta, Amit Kumar, and Jason Li</i>	70:1–70:13
Maximizing Profit with Convex Costs in the Random-order Model <i>Anupam Gupta, Ruta Mehta, and Marco Molinaro</i>	71:1–71:14
Generic Single Edge Fault Tolerant Exact Distance Oracle <i>Manoj Gupta and Aditi Singh</i>	72:1–72:15
An Exponential Separation Between MA and AM Proofs of Proximity <i>Tom Gur, Yang P. Liu, and Ron D. Rothblum</i>	73:1–73:15
Isolating a Vertex via Lattices: Polytopes with Totally Unimodular Faces <i>Rohit Gurjar, Thomas Thierauf, and Nisheeth K. Vishnoi</i>	74:1–74:14
Synchronization Strings: Channel Simulations and Interactive Coding for Insertions and Deletions <i>Bernhard Haeupler, Amirbehshad Shahrashbi, and Ellen Vitercik</i>	75:1–75:14
Synchronization Strings: List Decoding for Insertions and Deletions <i>Bernhard Haeupler, Amirbehshad Shahrashbi, and Madhu Sudan</i>	76:1–76:14
Approximate Sparse Linear Regression <i>Sariel Har-Peled, Piotr Indyk, and Sepideh Mahabadi</i>	77:1–77:14
A Polynomial Time Algorithm to Compute Geodesics in CAT(0) Cubical Complexes <i>Koyo Hayashi</i>	78:1–78:14
Online Vertex-Weighted Bipartite Matching: Beating $1 - \frac{1}{e}$ with Random Arrivals <i>Zhiyi Huang, Zhihao Gavin Tang, Xiaowei Wu, and Yuhao Zhang</i>	79:1–79:14
Finding Branch-Decompositions of Matroids, Hypergraphs, and More <i>Jisu Jeong, Eun Jung Kim, and Sang-il Oum</i>	80:1–80:14
Optimally Sorting Evolving Data <i>Juan Jose Besa, William E. Devanny, David Eppstein, Michael T. Goodrich, and Timothy Johnson</i>	81:1–81:13

Generalized Comparison Trees for Point-Location Problems <i>Daniel M. Kane, Shachar Lovett, and Shay Moran</i>	82:1–82:13
Stabilizing Weighted Graphs <i>Zhuan Khye Koh and Laura Sanità</i>	83:1–83:13
Spectrally Robust Graph Isomorphism <i>Alexandra Kolla, Ioannis Koutis, Vivek Madan, and Ali Kemal Sinop</i>	84:1–84:13
A Parameterized Strongly Polynomial Algorithm for Block Structured Integer Programs <i>Martin Koutecký, Asaf Levin, and Shmuel Onn</i>	85:1–85:14
Finer Tight Bounds for Coloring on Clique-Width <i>Michael Lampis</i>	86:1–86:14
A Centralized Local Algorithm for the Sparse Spanning Graph Problem <i>Christoph Lenzen and Reut Levi</i>	87:1–87:14
Chain, Generalization of Covering Code, and Deterministic Algorithm for k-SAT <i>Sixue Liu</i>	88:1–88:13
Stable-Matching Voronoi Diagrams: Combinatorial Complexity and Algorithms <i>Gill Barequet, David Eppstein, Michael T. Goodrich, and Nil Mamano</i>	89:1–89:14
Improved Algorithms for Adaptive Compressed Sensing <i>Vasileios Nakos, Xiaofei Shi, David P. Woodruff, and Hongyang Zhang</i>	90:1–90:14
Approximate Low-Weight Check Codes and Circuit Lower Bounds for Noisy Ground States <i>Chinmay Nirkhe, Umesh Vazirani, and Henry Yuen</i>	91:1–91:11
Fully Dynamic MIS in Uniformly Sparse Graphs <i>Krzysztof Onak, Baruch Schieber, Shay Solomon, and Nicole Wein</i>	92:1–92:14
Strictly Balancing Matrices in Polynomial Time Using Osborne’s Iteration <i>Rafail Ostrovsky, Yuval Rabani, and Arman Yousefi</i>	93:1–93:11
Parameterized Algorithms for Zero Extension and Metric Labelling Problems <i>Felix Reidl and Magnus Wahlström</i>	94:1–94:14
An Operational Characterization of Mutual Information in Algorithmic Information Theory <i>Andrei Romashchenko and Marius Zimand</i>	95:1–95:14
Privacy Preserving Clustering with Constraints <i>Clemens Rösner and Melanie Schmidt</i>	96:1–96:14
NC Algorithms for Weighted Planar Perfect Matching and Related Problems <i>Piotr Sankowski</i>	97:1–97:16
Computing Tutte Paths <i>Andreas Schmid and Jens M. Schmidt</i>	98:1–98:14
A New Approximation Guarantee for Monotone Submodular Function Maximization via Discrete Convexity <i>Tasuku Soma and Yuichi Yoshida</i>	99:1–99:14

Ring Packing and Amortized FHEW Bootstrapping <i>Daniele Miccianco and Jessica Sorrell</i>	100:1–100:14
Semi-random Graphs with Planted Sparse Vertex Cuts: Algorithms for Exact and Approximate Recovery <i>Anand Louis and Rakesh Venkat</i>	101:1–101:15
Load Thresholds for Cuckoo Hashing with Overlapping Blocks <i>Stefan Walzer</i>	102:1–102:10
Brief Announcement: On Secure m -Party Computation, Commuting Permutation Systems and Unassisted Non-Interactive MPC <i>Navneet Agarwal, Sanat Anand, and Manoj Prabhakaran</i>	103:1–103:4
Brief Announcement: Characterizing Demand Graphs for (Fixed-Parameter) Shallow-Light Steiner Network <i>Amy Babay, Michael Dinitz, and Zeyu Zhang</i>	104:1–104:4
Brief Announcement: Zero-Knowledge Protocols for Search Problems <i>Ben Berger and Zvika Brakerski</i>	105:1–105:5
Brief Announcement: Relaxed Locally Correctable Codes in Computationally Bounded Channels <i>Jeremiah Blocki, Venkata Gandikota, Elena Grigorescu, and Samson Zhou</i>	106:1–106:4
Brief Announcement: Approximation Schemes for Geometric Coverage Problems <i>Steven Chaplick, Minati De, Alexander Ravsky, and Joachim Spoerhase</i>	107:1–107:4
Brief Announcement: Bayesian Auctions with Efficient Queries <i>Jing Chen, Bo Li, Yingkai Li, and Pinyan Lu</i>	108:1–108:4
Brief Announcement: Hamming Distance Completeness and Sparse Matrix Multiplication <i>Daniel Graf, Karim Labib, and Przemysław Uznański</i>	109:1–109:4
Brief Announcement: Treewidth Modulator: Emergency Exit for DFVS <i>Daniel Lokshantov, M. S. Ramanujan, Saket Saurabh, Roohani Sharma, and Meirav Zehavi</i>	110:1–110:4
Brief Announcement: Erasure-Resilience Versus Tolerance to Errors <i>Sofya Raskhodnikova and Nithin Varma</i>	111:1–111:3
Brief Announcement: Bounded-Degree Cut is Fixed-Parameter Tractable <i>Mingyu Xiao and Hiroshi Nagamochi</i>	112:1–112:6

Track B: Logic, Semantics, Automata and Theory of Programming

Almost Sure Productivity <i>Alejandro Aguirre, Gilles Barthe, Justin Hsu, and Alexandra Silva</i>	113:1–113:15
O-Minimal Invariants for Linear Loops <i>Shaull Almagor, Dmitry Chistikov, Joël Ouaknine, and James Worrell</i>	114:1–114:14
Topological Sorting with Regular Constraints <i>Antoine Amarilli and Charles Paperman</i>	115:1–115:14

On Zero-One and Convergence Laws for Graphs Embeddable on a Fixed Surface <i>Albert Atserias, Stephan Kreutzer, and Marc Noy</i>	116:1–116:14
Bisimulation Invariant Monadic-Second Order Logic in the Finite <i>Achim Blumensath and Felix Wolf</i>	117:1–117:13
Binary Reachability of Timed Pushdown Automata via Quantifier Elimination and Cyclic Order Atoms <i>Lorenzo Clemente and Sławomir Lasota</i>	118:1–118:14
Unboundedness Problems for Languages of Vector Addition Systems <i>Wojciech Czerwiński, Piotr Hofman, and Georg Zetsche</i>	119:1–119:15
Reachability and Distances under Multiple Changes <i>Samir Datta, Anish Mukherjee, Nils Vortmeier, and Thomas Zeume</i>	120:1–120:14
When is Containment Decidable for Probabilistic Automata? <i>Laure Daviaud, Marcin Jurdziński, Ranko Lazić, Filip Mazowiecki, Guillermo A. Pérez, and James Worrell</i>	121:1–121:14
On the Complexity of Infinite Advice Strings <i>Gaëtan Douéneau-Tabot</i>	122:1–122:13
Resynchronizing Classes of Word Relations <i>María Emilia Descotte, Diego Figueira, and Gabriele Puppis</i>	123:1–123:13
Reachability Switching Games <i>John Fearnley, Martin Gairing, Matthias Mnich, and Rahul Savani</i>	124:1–124:14
Costs and Rewards in Priced Timed Automata <i>Martin Fränzle, Mahsa Shirmohammadi, Mani Swaminathan, and James Worrell</i>	125:1–125:14
First-Order Interpretations of Bounded Expansion Classes <i>Jakub Gajarský, Stephan Kreutzer, Jaroslav Nešetřil, Patrice Ossona de Mendez, Michał Pilipczuk, Sebastian Siebertz, and Szymon Toruńczyk</i>	126:1–126:14
Randomized Sliding Window Algorithms for Regular Languages <i>Moses Ganardi, Danny Hucce, and Markus Lohrey</i>	127:1–127:13
Aperiodic points in \mathbb{Z}^2 -subshifts <i>Anael Grandjean, Benjamin Hellouin de Menibus, and Pascal Vanier</i>	128:1–128:13
Semicomputable Geometry <i>Mathieu Hoyrup, Diego Nava Saucedo, and Don M. Stull</i>	129:1–129:13
On Computing the Total Variation Distance of Hidden Markov Models <i>Stefan Kiefer</i>	130:1–130:13
To Infinity and Beyond <i>Ines Klimann</i>	131:1–131:12
On the Identity Problem for the Special Linear Group and the Heisenberg Group <i>Sang-Ki Ko, Reino Niskanen, and Igor Potapov</i>	132:1–132:15
Gaifman Normal Forms for Counting Extensions of First-Order Logic <i>Dietrich Kuske and Nicole Schweikardt</i>	133:1–133:14

Polynomial Vector Addition Systems With States
Jérôme Leroux134:1–134:13

Reducing CMSO Model Checking to Highly Connected Graphs
Daniel Lokshтанov, M. S. Ramanujan, Saket Saurabh, and Meirav Zehavi 135:1–135:14

An Optimal Bound on the Solution Sets of One-Variable Word Equations and its Consequences
Dirk Nowotka and Aleksi Saarela 136:1–136:13

Separating Without Any Ambiguity
Thomas Place and Marc Zeitoun137:1–137:14

A Superpolynomial Lower Bound for the Size of Non-Deterministic Complement of an Unambiguous Automaton
Mikhail Raskin 138:1–138:11

The Isomorphism Problem for Finite Extensions of Free Groups Is In PSPACE
Géraud Sénizergues and Armin Weiß 139:1–139:14

Unambiguous Languages Exhaust the Index Hierarchy
Michał Skrzypczak 140:1–140:14

The Beta-Bernoulli process and algebraic effects
Sam Staton, Dario Stein, Hongseok Yang, Nathanael L. Ackerman, Cameron E. Freer, and Daniel M. Roy141:1–141:15

Uniformization Problems for Synchronizations of Automatic Relations on Words
Sarah Winter142:1–142:13

Track C: Foundations of Networked Computation: Models, Algorithms, and Information Management

Congestion-Free Rerouting of Flows on DAGs
Saeed Akhondian Amiri, Szymon Dudycz, Stefan Schmid, and Sebastian Wiederrecht 143:1–143:13

Practical and Provably Secure Onion Routing
Megumi Ando, Anna Lysyanskaya, and Eli Upfal144:1–144:14

Resolving SINR Queries in a Dynamic Setting
Boris Aronov, Gali Bar-On, and Matthew J. Katz 145:1–145:13

Uniform Mixed Equilibria in Network Congestion Games with Link Failures
Vittorio Bilò, Luca Moscardelli, and Cosimo Vinci 146:1–146:14

Byzantine Gathering in Polynomial Time
Sébastien Bouchard, Yoann Dieudonné, and Anissa Lamani147:1–147:15

Temporal Vertex Cover with a Sliding Time Window
Eleni C. Akrida, George B. Mertzios, Paul G. Spirakis, and Viktor Zamaraev 148:1–148:14

On the Complexity of Sampling Vertices Uniformly from a Graph
Flavio Chierichetti and Shahrzad Haddadan149:1–149:13

The Price of Stability of Weighted Congestion Games <i>George Christodoulou, Martin Gairing, Yiannis Giannakopoulos, and Paul G. Spirakis</i>	150:1–150:16
Demand-Independent Optimal Tolls <i>Riccardo Colini-Baldeschi, Max Klimm, and Marco Scarsini</i>	151:1–151:14
Greedy Algorithms for Online Survivable Network Design <i>Sina Dehghani, Soheil Ehsani, MohammadTaghi Hajiaghayi, Vahid Liaghat, and Saeed Seddighin</i>	152:1–152:14
Algorithms for Noisy Broadcast with Erasures <i>Ofer Grossman, Bernhard Haeupler, and Sidhanth Mohanty</i>	153:1–153:12
Efficient Black-Box Reductions for Separable Cost Sharing <i>Tobias Harks, Martin Hoefer, Anja Huber, and Manuel Surek</i>	154:1–154:15
Price of Anarchy for Mechanisms with Risk-Averse Agents <i>Thomas Kesselheim and Bojana Kodric</i>	155:1–155:14
Polynomial Counting in Anonymous Dynamic Networks with Applications to Anonymous Dynamic Algebraic Computations <i>Dariusz R. Kowalski and Miguel A. Mosteiro</i>	156:1–156:14
The Unfortunate-Flow Problem <i>Orna Kupferman and Gal Vardi</i>	157:1–157:14
Spanning Trees With Edge Conflicts and Wireless Connectivity <i>Magnús M. Halldórsson, Guy Kortsarz, Pradipta Mitra, and Tigran Tonoyan</i>	158:1–158:15
Eigenvector Computation and Community Detection in Asynchronous Gossip Models <i>Frederik Mallmann-Trenn, Cameron Musco, and Christopher Musco</i>	159:1–159:14
$(\Delta + 1)$ Coloring in the Congested Clique Model <i>Merav Parter</i>	160:1–160:14
CacheShuffle: A Family of Oblivious Shuffles <i>Sarvar Patel, Giuseppe Persiano, and Kevin Yeo</i>	161:1–161:13
Brief Announcement: MapReduce Algorithms for Massive Trees <i>MohammadHossein Bateni, Soheil Behnezhad, Mahsa Derakhshan, MohammadTaghi Hajiaghayi, and Vahab Mirrokni</i>	162:1–162:4
Brief Announcement: Give Me Some Slack: Efficient Network Measurements <i>Ran Ben Basat, Gil Einziger, and Roy Friedman</i>	163:1–163:5
Brief Announcement: Towards an Abstract Model of User Retention Dynamics <i>Eli Ben-Sasson and Eden Saig</i>	164:1–164:4
Brief Announcement: Energy Constrained Depth First Search <i>Shantanu Das, Dariusz Dereniowski, and Przemysław Uznański</i>	165:1–165:5