

35th Symposium on Theoretical Aspects of Computer Science

STACS 2018, February 28–March 3, 2018, Caen, France

Edited by

Rolf Niedermeier

Brigitte Vallée



Editors

Rolf Niedermeier	Brigitte Vallée
Fakultät IV, AKT	GREYC, UMR CNRS 6072
Technische Universität Berlin	Université de Caen Normandie
rolf.niedermeier@tu-berlin.de	Brigitte.Vallee@unicaen.fr

ACM Classification 2012

Mathematics of computing, Theory of computation

ISBN 978-3-95977-062-0

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/978-3-95977-062-0>.

Publication date

February, 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.STACS.2018.0

ISBN 978-3-95977-062-0

ISSN 1868-8969

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

■ Contents

Foreword	
<i>Rolf Niedermeier and Brigitte Vallée</i>	0:ix-0:x

Tutorial

Recursive Combinatorial Structures: Enumeration, Probabilistic Analysis and Random Generation	
<i>Bruno Salvy</i>	1:1–1:5

Invited Talks

Lower Bound Techniques for QBF Proof Systems	
<i>Meena Mahajan</i>	2:1–2:8
On the Positive Calculus of Relations with Transitive Closure	
<i>Damien Pous</i>	3:1–3:16
The Open Shop Scheduling Problem	
<i>Gerhard J. Woeginger</i>	4:1–4:12

Regular Contributions

Approximating Airports and Railways	
<i>Anna Adamaszek, Antonios Antoniadis, Amit Kumar, and Tobias Mömke</i>	5:1–5:13
Property Testing for Bounded Degree Databases	
<i>Isolde Adler and Frederik Harwath</i>	6:1–6:14
Erdős-Pósa Property of Obstructions to Interval Graphs	
<i>Akanksha Agrawal, Daniel Lokshantov, Pranabendu Misra, Saket Saurabh, and Meirav Zehavi</i>	7:1–7:15
All Classical Adversary Methods are Equivalent for Total Functions	
<i>Andris Ambainis, Martins Kokainis, Krišjānis Prūsis, and Jevgēnijs Vihrovs</i>	8:1–8:14
Computing Hitting Set Kernels by AC^0 -Circuits	
<i>Max Bannach and Till Tantau</i>	9:1–9:14
Parameterized (Approximate) Defective Coloring	
<i>Rémy Belmonte, Michael Lampis, and Valia Mitsou</i>	10:1–10:15
The Relation between Polynomial Calculus, Sherali-Adams, and Sum-of-Squares Proofs	
<i>Christoph Berkholz</i>	11:1–11:14
Genuine Lower Bounds for QBF Expansion	
<i>Olaf Beyersdorff and Joshua Blinkhorn</i>	12:1–12:15

Efficient Oracles and Routing Schemes for Replacement Paths <i>Davide Bilò, Keerti Choudhary, Luciano Gualà, Stefano Leucci, Merav Parter, and Guido Proietti</i>	13:1–13:15
On the Tree Conjecture for the Network Creation Game <i>Davide Bilò and Pascal Lenzner</i>	14:1–14:15
On Low for Speed Oracles <i>Laurent Bienvenu and Rodney Downey</i>	15:1–15:13
Large Flocks of Small Birds: on the Minimal Size of Population Protocols <i>Michael Blondin, Javier Esparza, and Stefan Jaax</i>	16:1–16:14
Communicating Finite-State Machines and Two-Variable Logic <i>Benedikt Bollig, Marie Fortin, and Paul Gastin</i>	17:1–17:14
On Approximating the Stationary Distribution of Time-reversible Markov Chains <i>Marco Bressan, Enoch Peserico, and Luca Pretto</i>	18:1–18:14
On Singleton Arc Consistency for CSPs Defined by Monotone Patterns <i>Clément Carbonnel, David A. Cohen, Martin C. Cooper, and Stanislav Živný</i>	19:1–19:15
The Firing Squad Problem Revisited <i>Bernadette Charron-Bost and Shlomo Moran</i>	20:1–20:14
Small-depth Multilinear Formula Lower Bounds for Iterated Matrix Multiplication, with Applications <i>Suryajith Chillara, Nutan Limaye, and Srikanth Srinivasan</i>	21:1–21:15
Upper and Lower Bounds for Dynamic Data Structures on Strings <i>Raphael Clifford, Allan Grønlund, Kasper Green Larsen, and Tatiana Starikovskaya</i>	22:1–22:14
Lower Bounds for Combinatorial Algorithms for Boolean Matrix Multiplication <i>Debarati Das, Michal Koucký, and Michael Saks</i>	23:1–23:14
Solving the Rubik’s Cube Optimally is NP-complete <i>Erik D. Demaine, Sarah Eisenstat, and Mikhail Rudoy</i>	24:1–24:13
Approximation Algorithms for Scheduling with Resource and Precedence Constraints <i>Gökalp Demirci, Henry Hoffmann, and David H. K. Kim</i>	25:1–25:14
Parameterized Approximation Schemes for Steiner Trees with Small Number of Steiner Vertices <i>Pavel Dvořák, Andreas Emil Feldmann, Dušan Knop, Tomáš Masařík, Tomáš Toufar, and Pavel Veselý</i>	26:1–26:15
Finding List Homomorphisms from Bounded-treewidth Graphs to Reflexive Graphs: a Complete Complexity Characterization <i>László Egri, Dániel Marx, and Paweł Rzażewski</i>	27:1–27:15
Small Resolution Proofs for QBF using Dependency Treewidth <i>Eduard Eiben, Robert Ganian, and Sebastian Ordyniak</i>	28:1–28:15
Lossy Kernels for Connected Dominating Set on Sparse Graphs <i>Eduard Eiben, Mithilesh Kumar, Amer E. Mouawad, Fahad Panolan, and Sebastian Siebertz</i>	29:1–29:15

The Intersection Problem for Finite Monoids <i>Lukas Fleischer and Manfred Kufleitner</i>	30:1–30:14
Automata Theory on Sliding Windows <i>Moses Ganardi, Danny HucKe, Daniel König, Markus Lohrey, and Konstantinos Mamouras</i>	31:1–31:14
Knapsack Problems for Wreath Products <i>Moses Ganardi, Daniel König, Markus Lohrey, and Georg Zetsche</i>	32:1–32:13
On Structural Parameterizations of the Bounded-Degree Vertex Deletion Problem <i>Robert Ganian, Fabian Klute, and Sebastian Ordyniak</i>	33:1–33:14
Dependences in Strategy Logic <i>Patrick Gardy, Patricia Bowyer, and Nicolas Markey</i>	34:1–34:15
Colouring Square-Free Graphs without Long Induced Paths <i>Serge Gaspers, Shenwei Huang, and Daniël Paulusma</i>	35:1–35:15
Optimal Dislocation with Persistent Errors in Subquadratic Time <i>Barbara Geissmann, Stefano Leucci, Chih-Hung Liu, and Paolo Penna</i>	36:1–36:13
An Improved Bound for Random Binary Search Trees with Concurrent Insertions <i>George Giakkoupis and Philipp Woelfel</i>	37:1–37:13
String Periods in the Order-Preserving Model <i>Garance Gourdel, Tomasz Kociumaka, Jakub Radoszewski, Wojciech Rytter, Arseny Shur, and Tomasz Waleń</i>	38:1–38:16
Beyond JWP: A Tractable Class of Binary VCSPs via M-Convex Intersection <i>Hiroshi Hirai, Yuni Iwamasa, Kazuo Murota, and Stanislav Živný</i>	39:1–39:14
Nonuniform Reductions and NP-Completeness <i>John M. Hitchcock and Hadi Shafei</i>	40:1–40:13
On the Power of Tree-Depth for Fully Polynomial FPT Algorithms <i>Yoichi Iwata, Tomoaki Ogasawara, and Naoto Ohsaka</i>	41:1–41:14
A Unified Polynomial-Time Algorithm for Feedback Vertex Set on Graphs of Bounded Mim-Width <i>Lars Jaffke, O-joung Kwon, and Jan Arne Telle</i>	42:1–42:14
Generalizing the Kawaguchi-Kyan Bound to Stochastic Parallel Machine Scheduling <i>Sven Jäger and Martin Skutella</i>	43:1–43:14
Space-Efficient Algorithms for Longest Increasing Subsequence <i>Masashi Kiyomi, Hirotaka Ono, Yota Otachi, Pascal Schweitzer, and Jun Tarui</i> ..	44:1–44:15
Rational, Recognizable, and Aperiodic Sets in the Partially Lossy Queue Monoid <i>Chris Köcher</i>	45:1–45:14
Relations Between Greedy and Bit-Optimal LZ77 Encodings <i>Dmitry Kosolobov</i>	46:1–46:14
Width of Non-Deterministic Automata <i>Denis Kuperberg and Anirban Majumdar</i>	47:1–47:14

Computing the Longest Common Prefix of a Context-free Language in Polynomial Time <i>Michael Luttonberger, Raphaela Palenta, and Helmut Seidl</i>	48:1–48:13
Surjective H-Colouring over Reflexive Digraphs <i>Benoît Larose, Barnaby Martin, and Daniël Paulusma</i>	49:1–49:14
Pumping Lemmas for Weighted Automata <i>Filip Mazowiecki and Cristian Riveros</i>	50:1–50:14
Closure of Resource-Bounded Randomness Notions Under Polynomial-Time Permutations <i>André Nies and Frank Stephan</i>	51:1–51:10
Succinct Oblivious RAM <i>Taku Onodera and Tetsuo Shibuya</i>	52:1–52:16
Recursion Schemes and the WMSO+U Logic <i>Paweł Parys</i>	53:1–53:16
Sums of Palindromes: an Approach via Automata <i>Aayush Rajasekaran, Jeffrey Shallit, and Tim Smith</i>	54:1–54:12
On the Containment Problem for Linear Sets <i>Hans U. Simon</i>	55:1–55:12
Improving the Upper Bound on the Length of the Shortest Reset Words <i>Marek Szykula</i>	56:1–56:13
Power of Uninitialized Qubits in Shallow Quantum Circuits <i>Yasuhiro Takahashi and Seiichiro Tani</i>	57:1–57:13
Lower Bounds on Black-Box Reductions of Hitting to Density Estimation <i>Roei Tell</i>	58:1–58:13