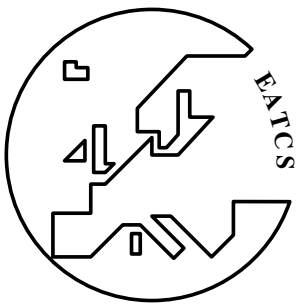
44th International Colloquium on Automata, Languages, and Programming

ICALP 2017, Warsaw, Poland, July 10–14, 2017

Edited by
Ioannis Chatzigiannakis
Piotr Indyk
Fabian Kuhn
Anca Muscholl



Editors

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

Piotr Indyk
Computer Science and Artificial Intelligence Lab
Massachusetts Institute of Technology
USA
indyk@mit.edu

Fabian Kuhn
Institut für Informatik
Albert-Ludwigs-Universität
Germany
kuhn@cs.uni-freiburg.de

Anca Muscholl
LaBRI
Université Bordeaux
France
anca@labri.fr

ACM Classification 1998
F. Theory of Computation

ISBN 978-3-95977-041-5

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/978-3-95977-041-5.

Publication date
July, 2017

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.2017.0

ISBN 978-3-95977-041-5 **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 (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

Contents

Preface
Ioannis Chatzigiannakis, Piotr Indyk, Fabian Kuhn, and Anca Muscholl 0:xv–0:xvi

Invited Talks

Orbit-Finite Sets and Their Algorithms
Mikołaj Bojańczyk 1:1–1:14

Efficient Algorithms for Graph-Related Problems in Computer-Aided Verification
Monika Henzinger 2:1–2:1

Local Computation Algorithms
Ronitt Rubinfeld 3:1–3:1

Fast and Powerful Hashing Using Tabulation
Mikkel Thorup 4:1–4:2

Regular Papers

Optimal Unateness Testers for Real-Valued Functions: Adaptivity Helps
Roksana Baleshzar, Deeparnab Chakrabarty, Ramesh Krishnan S. Pallavoor, Sofya Raskhodnikova, and C. Seshadhri 5:1–5:14

Sublinear Random Access Generators for Preferential Attachment Graphs
Guy Even, Reut Levi, Moti Medina, and Adi Rosén 6:1–6:15

Sublinear Time Estimation of Degree Distribution Moments: The Degeneracy Connection
Talya Eden, Dana Ron, and C. Seshadhri 7:1–7:13

Near-Optimal Closeness Testing of Discrete Histogram Distributions
Ilias Diakonikolas, Daniel M. Kane, and Vladimir Nikishkin 8:1–8:15

Deleting and Testing Forbidden Patterns in Multi-Dimensional Arrays
Omri Ben-Eliezer, Simon Korman, and Daniel Reichman 9:1–9:14

On the Value of Penalties in Time-Inconsistent Planning
Susanne Albers and Dennis Kraft 10:1–10:12

Efficient Approximations for the Online Dispersion Problem
Jing Chen, Bo Li, and Yingkai Li 11:1–11:15

Online Covering with Sum of ℓ_q-Norm Objectives
Viswanath Nagarajan and Xiangkun Shen 12:1–12:12

Dynamic Beats Fixed: On Phase-Based Algorithms for File Migration
Marcin Bienkowski, Jarosław Byrka, and Marcin Mucha 13:1–13:14

The Infinite Server Problem
Christian Coester, Elias Koutsoupias, and Philip Lazos 14:1–14:14

44th International Colloquium on Automata, Languages, and Programming (ICALP 2017).
Editors: Ioannis Chatzigiannakis, Piotr Indyk, Fabian Kuhn, and Anca Muscholl
Leibniz International Proceedings in Informatics
LIPICS Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Quantum Automata Cannot Detect Biased Coins, Even in the Limit
Guy Kindler and Ryan O'Donnell 15:1–15:8

A New Holant Dichotomy Inspired by Quantum Computation
Miriam Backens 16:1–16:14

Efficient Quantum Algorithms for Simulating Lindblad Evolution
Richard Cleve and Chunhao Wang 17:1–17:14

Controlled Quantum Amplification
Cătălin Dohotaru and Peter Høyer 18:1–18:13

Approximating Language Edit Distance Beyond Fast Matrix Multiplication: Ultralinear Grammars Are Where Parsing Becomes Hard!
Rajesh Jayaram and Barna Saha 19:1–19:15

Conditional Lower Bounds for All-Pairs Max-Flow
Robert Krauthgamer and Ohad Trabelsi 20:1–20:13

On the Fine-Grained Complexity of One-Dimensional Dynamic Programming
Marvin Künnemann, Ramamohan Paturi, and Stefan Schneider 21:1–21:15

On Problems Equivalent to (min,+)-Convolution
Marek Cygan, Marcin Mucha, Karol Węgrzycki, and Michał Włodarczyk 22:1–22:15

On Finding the Jaccard Center
Marc Bury and Chris Schwiegelshohn 23:1–23:14

The Polytope-Collision Problem
Shaull Almagor, Joël Ouaknine, and James Worrell 24:1–24:14

Dynamic Time Warping and Geometric Edit Distance: Breaking the Quadratic Barrier
Omer Gold and Micha Sharir 25:1–25:14

Efficient Construction of Probabilistic Tree Embeddings
Guy E. Blelloch, Yan Gu, and Yihan Sun 26:1–26:14

Approximating Partition Functions of Bounded-Degree Boolean Counting Constraint Satisfaction Problems
Andreas Galanis, Leslie Ann Goldberg, and Kuan Yang 27:1–27:14

Inapproximability of the Independent Set Polynomial Below the Shearer Threshold
Andreas Galanis, Leslie Ann Goldberg, and Daniel Štefankovič 28:1–28:13

The Complexity of Holant Problems over Boolean Domain with Non-Negative Weights
Jiabao Lin and Hanpin Wang 29:1–29:14

Polynomial-Time Rademacher Theorem, Porosity and Randomness
Alex Galicki 30:1–30:13

A QPTAS for the General Scheduling Problem with Identical Release Dates
Antonios Antoniadis, Ruben Hoeksma, Julie Meißner, José Verschae, and Andreas Wiese 31:1–31:14

Improved Algorithms for MST and Metric-TSP Interdiction
André Linhares and Chaitanya Swamy 32:1–32:14

Reordering Buffer Management with a Logarithmic Guarantee in General Metric Spaces
Matthias Kohler and Harald Räcke 33:1–33:12

Correlated Rounding of Multiple Uniform Matroids and Multi-Label Classification
Shahar Chen, Dotan Di Castro, Zohar Karnin, Liane Lewin-Eytan, Joseph (Seffi) Naor, and Roy Schwartz 34:1–34:15

When the Optimum is also Blind: a New Perspective on Universal Optimization
Marek Adamczyk, Fabrizio Grandoni, Stefano Leonardi, and Michał Włodarczyk .. 35:1–35:15

Reusable Garbled Deterministic Finite Automata from Learning With Errors
Shweta Agrawal and Ishaan Preet Singh 36:1–36:13

Round-Preserving Parallel Composition of Probabilistic-Termination Cryptographic Protocols
Ran Cohen, Sandro Coretti, Juan Garay, and Vassilis Zikas 37:1–37:15

Cryptanalysis of Indistinguishability Obfuscations of Circuits over GGH13
Daniel Apon, Nico Döttling, Sanjam Garg, and Pratyay Mukherjee 38:1–38:16

Non-Uniform Attacks Against Pseudoentropy
Krzysztof Pietrzak and Maciej Skorski 39:1–39:13

Interactive Oracle Proofs with Constant Rate and Query Complexity
Eli Ben-Sasson, Alessandro Chiesa, Ariel Gabizon, Michael Riabzev, and Nicholas Spooner 40:1–40:15

Dynamic Parameterized Problems and Algorithms
Josh Alman, Matthias Mnich, and Virginia Vassilevska Williams 41:1–41:16

Decremental Data Structures for Connectivity and Dominators in Directed Graphs
Loukas Georgiadis, Thomas Dueholm Hansen, Giuseppe F. Italiano, Sebastian Krinninger, and Nikos Parotsidis 42:1–42:15

General Bounds for Incremental Maximization
Aaron Bernstein, Yann Disser, and Martin Groß 43:1–43:14

Deterministic Partially Dynamic Single Source Shortest Paths in Weighted Graphs
Aaron Bernstein 44:1–44:14

Testing Core Membership in Public Goods Economies
Greg Bodwin 45:1–45:14

Revenue Maximization in Stackelberg Pricing Games: Beyond the Combinatorial Setting
Toni Böhnlein, Stefan Kratsch, and Oliver Schaudt 46:1–46:13

Online Market Intermediation
Yiannis Giannakopoulos, Elias Koutsoupias, and Philip Lazos 47:1–47:14

Tight Lower Bounds for Multiplicative Weights Algorithmic Families
Nick Gravin, Yuval Peres, and Balasubramanian Sivan 48:1–48:14

The Power of Shared Randomness in Uncertain Communication
Badih Ghazi and Madhu Sudan 49:1–49:14

Separation of $AC^0[\oplus]$ Formulas and Circuits
Benjamin Rossman and Srikanth Srinivasan 50:1–50:13

Sensitivity Conjecture and Log-Rank Conjecture for Functions with Small Alternating Numbers
Chengyu Lin and Shengyu Zhang 51:1–51:15

Randomized Communication vs. Partition Number
Mika Göös, T. S. Jayram, Toniann Pitassi, and Thomas Watson 52:1–52:15

Approximate Bounded Indistinguishability
Andrej Bogdanov and Christopher Williamson 53:1–53:11

Finding Detours is Fixed-Parameter Tractable
Ivona Bezáková, Radu Curticapean, Holger Dell, and Fedor V. Fomin 54:1–54:14

Further Approximations for Demand Matching: Matroid Constraints and Minor-Closed Graphs
Sara Ahmadian and Zachary Friggstad 55:1–55:13

Covering Vectors by Spaces: Regular Matroids
Fedor V. Fomin, Petr A. Golovach, Daniel Lokshtanov, and Saket Saurabh 56:1–56:15

Linear Kernels for Edge Deletion Problems to Immersion-Closed Graph Classes
Archontia C. Giannopoulou, Michał Pilipczuk, Jean-Florent Raymond, Dimitrios M. Thilikos, and Marcin Wrochna 57:1–57:15

k-Distinct In- and Out-Branchings in Digraphs
Gregory Gutin, Felix Reidl, and Magnus Wahlström 58:1–58:13

Fast Regression with an ℓ_∞ Guarantee
Eric Price, Zhao Song, and David P. Woodruff 59:1–59:14

Embeddings of Schatten Norms with Applications to Data Streams
Yi Li and David P. Woodruff 60:1–60:14

On Fast Decoding of High-Dimensional Signals from One-Bit Measurements
Vasileios Nakos 61:1–61:14

String Inference from Longest-Common-Prefix Array
Juha Kärkkäinen, Marcin Piątkowski, and Simon J. Puglisi 62:1–62:14

Neighborhood Complexity and Kernelization for Nowhere Dense Classes of Graphs
Kord Eickmeyer, Archontia C. Giannopoulou, Stephan Kreutzer, O-joung Kwon, Michał Pilipczuk, Roman Rabinovich, and Sebastian Siebertz 63:1–63:14

Additive Spanners and Distance Oracles in Quadratic Time
Mathias Bæk Tejs Knudsen 64:1–64:12

Finding, Hitting and Packing Cycles in Subexponential Time on Unit Disk Graphs
Fedor V. Fomin, Daniel Lokshtanov, Fahad Panolan, Saket Saurabh, and Meirav Zehavi 65:1–65:15

A Polynomial-Time Randomized Reduction from Tournament Isomorphism to Tournament Asymmetry
Pascal Schweitzer 66:1–66:14

A $(1+\epsilon)$-Approximation for Unsplittable Flow on a Path in Fixed-Parameter Running Time
Andreas Wiese 67:1–67:13

Linear-Time Kernelization for Feedback Vertex Set
Yoichi Iwata 68:1–68:14

Exact Algorithms via Multivariate Subroutines
Serge Gaspers and Edward J. Lee 69:1–69:13

Exploring the Complexity of Layout Parameters in Tournaments and Semi-Complete Digraphs
Florian Barbero, Christophe Paul, and Michał Pilipczuk 70:1–70:13

Packing Cycles Faster Than Erdős-Pósa
Daniel Lokshtanov, Amer E. Mouawad, Saket Saurabh, and Meirav Zehavi 71:1–71:15

An Efficient Strongly Connected Components Algorithm in the Fault Tolerant Model
Surender Baswana, Keerti Choudhary, and Liam Roditty 72:1–72:15

Preserving Distances in Very Faulty Graphs
Greg Bodwin, Fabrizio Grandoni, Merav Parter, and Virginia Vassilevska Williams 73:1–73:14

All-Pairs 2-Reachability in $\mathcal{O}(n^{\omega}\log n)$ Time
Loukas Georgiadis, Daniel Graf, Giuseppe F. Italiano, Nikos Parotsidis, and Przemysław Uznański 74:1–74:14

Edge-Orders
Lena Schlipf and Jens M. Schmidt 75:1–75:14

Relaxations of Graph Isomorphism
Laura Mančinska, David E. Roberson, Robert Šámal, Simone Severini, and Antonios Varvitsiotis 76:1–76:14

Honest Signaling in Zero-Sum Games Is Hard, and Lying Is Even Harder
Aviad Rubinstein 77:1–77:13

A Birthday Repetition Theorem and Complexity of Approximating Dense CSPs
Pasin Manurangsi and Prasad Raghavendra 78:1–78:15

Inapproximability of Maximum Edge Biclique, Maximum Balanced Biclique and Minimum $\boldsymbol{k}$-Cut from the Small Set Expansion Hypothesis
Pasin Manurangsi 79:1–79:14

On the Bit Complexity of Sum-of-Squares Proofs
Prasad Raghavendra and Benjamin Weitz 80:1–80:13

The Dependent Doors Problem: An Investigation into Sequential Decisions without Feedback
Amos Korman and Yoav Rodeh 81:1–81:13

A Tight Lower Bound for the Capture Time of the Cops and Robbers Game
Sebastian Brandt, Yuval Emek, Jara Uitto, and Roger Wattenhofer 82:1–82:13

Stochastic Control via Entropy Compression
Dimitris Achlioptas, Fotis Iliopoulos, and Nikos Vlassis 83:1–83:13

Approximation Strategies for Generalized Binary Search in Weighted Trees
Dariusz Dereniowski, Adrian Kosowski, Przemysław Uznański, and Mengchuan Zou 84:1–84:14

Tighter Hard Instances for PPSZ
Pavel Pudlák, Dominik Scheder, and Navid Talebanfard 85:1–85:13

Subspace Designs Based on Algebraic Function Fields
Venkatesan Guruswami, Chaoping Xing, and Chen Yuan 86:1–86:10

Bipartite Perfect Matching in Pseudo-Deterministic NC
Shafi Goldwasser and Ofer Grossman 87:1–87:13

A Linear Lower Bound for Incrementing a Space-Optimal Integer Representation in the Bit-Probe Model
Mikhail Raskin 88:1–88:12

Rerouting Flows When Links Fail
Jannik Matuschke, S. Thomas McCormick, and Gianpaolo Oriolo 89:1–89:13

The Parameterized Complexity of Positional Games
Édouard Bonnet, Serge Gaspers, Antonin Lambilliotte, Stefan Rümmele, and Abdallah Saffidine 90:1–90:14

Directed Hamiltonicity and Out-Branchings via Generalized Laplacians
Andreas Björklund, Petteri Kaski, and Ioannis Koutis 91:1–91:14

Improved Hardness for Cut, Interdiction, and Firefighter Problems
Euiwoong Lee 92:1–92:14

Subspace-Invariant AC^0 Formulas
Benjamin Rossman 93:1–93:11

On the Complexity of Quantified Integer Programming
Dmitry Chistikov and Christoph Haase 94:1–94:13

Word Equations in Nondeterministic Linear Space
Artur Jeż 95:1–95:13

Solutions of Twisted Word Equations, EDT0L Languages, and Context-Free Groups
Volker Diekert and Murray Elder 96:1–96:14

Pumping Lemma for Higher-Order Languages
Kazuyuki Asada and Naoki Kobayashi 97:1–97:14

A Strategy for Dynamic Programs: Start over and Muddle Through
Samir Datta, Anish Mukherjee, Thomas Schwentick, Nils Vortmeier, and Thomas Zeume 98:1–98:14

Definability by Horn Formulas and Linear Time on Cellular Automata
Nicolas Bacquey, Etienne Grandjean, and Frédéric Olive 99:1–99:14

Asynchronous Distributed Automata: A Characterization of the Modal Mu-Fragment
Fabian Reiter 100:1–100:14

A Counterexample to Thiagarajan's Conjecture on Regular Event Structures
Jérémie Chalopin and Victor Chepoi 101:1–101:14

$\star$-Liftings for Differential Privacy
Gilles Barthe, Thomas Espitau, Justin Hsu, Tetsuya Sato, and Pierre-Yves Strub 102:1–102:12

Bisimulation Metrics for Weighted Automata
Borja Balle, Pascale Gourdeau, and Prakash Panangaden 103:1–103:14

On the Metric-Based Approximate Minimization of Markov Chains
Giovanni Bacci, Giorgio Bacci, Kim G. Larsen, and Radu Mardare 104:1–104:14

Expressiveness of Probabilistic Modal Logics
Nathanaël Fijalkow, Bartek Klin, and Prakash Panangaden 105:1–105:12

Emptiness of Zero Automata Is Decidable
Mikołaj Bojańczyk, Hugo Gimbert, and Edon Kelmendi 106:1–106:13

Characterizing Definability in Decidable Fixpoint Logics
Michael Benedikt, Pierre Bourhis, and Michael Vanden Boom 107:1–107:14

Conservative Extensions in Guarded and Two-Variable Fragments
Jean Christoph Jung, Carsten Lutz, Mauricio Martel, Thomas Schneider, and Frank Wolter 108:1–108:14

Models and Termination of Proof Reduction in the $\lambda\Pi$-Calculus Modulo Theory
Gilles Dowek 109:1–109:14

Proof Complexity Meets Algebra
Albert Atserias and Joanna Ochremiak 110:1–110:14

A Circuit-Based Approach to Efficient Enumeration
Antoine Amarilli, Pierre Bourhis, Louis Jachiet, and Stefan Mengel 111:1–111:15

Automata-Based Stream Processing
Rajeev Alur, Konstantinos Mamouras, and Caleb Stanford 112:1–112:15

On Reversible Transducers
Luc Dartois, Paulin Fournier, Ismaël Jecker, and Nathan Lhote 113:1–113:12

Which Classes of Origin Graphs Are Generated by Transducers?
Mikołaj Bojańczyk, Laure Daviaud, Bruno Guillon, and Vincent Penelle 114:1–114:13

Continuity and Rational Functions
Michaël Cadilhac, Olivier Carton, and Charles Paperman 115:1–115:14

A Universal Ordinary Differential Equation
Olivier Bournez and Amaury Pouly 116:1–116:14

Regular Separability of Parikh Automata
Lorenzo Clemente, Wojciech Czerwiński, Sławomir Lasota, and Charles Paperman 117:1–117:13

An Efficient Algorithm to Decide Periodicity of b-Recognisable Sets Using MSDF Convention
Bernard Boigelot, Isabelle Mainz, Victor Marsault, and Michel Rigo 118:1–118:14

Polynomial-Space Completeness of Reachability for Succinct Branching VASS in Dimension One
Diego Figueira, Ranko Lazić, Jérôme Leroux, Filip Mazowiecki, and Grégoire Sutre 119:1–119:14

Satisfiability and Model Checking for the Logic of Sub-Intervals under the Homogeneity Assumption
Laura Bozzelli, Alberto Molinari, Angelo Montanari, Adriano Peron, and Pietro Sala 120:1–120:14

Threshold Constraints with Guarantees for Parity Objectives in Markov Decision Processes
Raphaël Berthon, Mickael Randour, and Jean-François Raskin 121:1–121:15

Synchronizability of Communicating Finite State Machines is not Decidable
Alain Finkel and Etienne Lozes 122:1–122:14

Admissibility in Concurrent Games
Nicolas Basset, Gilles Geeraerts, Jean-François Raskin, and Ocan Sankur 123:1–123:14

Improved Algorithms for Computing the Cycle of Minimum Cost-to-Time Ratio in Directed Graphs
Karl Bringmann, Thomas Dueholm Hansen, and Sebastian Krinninger 124:1–124:16

Simple Greedy Algorithms for Fundamental Multidimensional Graph Problems
Vittorio Bilò, Ioannis Caragiannis, Angelo Fanelli, Michele Flammini, and Gianpiero Monaco 125:1–125:13

Stochastic k-Server: How Should Uber Work?
Sina Dehghani, Soheil Ehsani, Mohammad Hajiaghayi, Vahid Liaghat, and Saeed Seddighin 126:1–126:14

Multiple Source Dual Fault Tolerant BFS Trees
Manoj Gupta and Shahbaz Khan 127:1–127:15

Near-Optimal Induced Universal Graphs for Bounded Degree Graphs
Mikkel Abrahamsen, Stephen Alstrup, Jacob Holm, Mathias Bæk Tejs Knudsen, and Morten Stöckel 128:1–128:14

Universal Framework for Wireless Scheduling Problems
Eyjólfur I. Ásgeirsson, Magnús M. Halldórsson, and Tigran Tonoyan 129:1–129:15

Streaming Communication Protocols
Lucas Boczkowski, Iordanis Kerenidis, and Frédéric Magniez 130:1–130:14

Testable Bounded Degree Graph Properties Are Random Order Streamable
Morteza Monemizadeh, S. Muthukrishnan, Pan Peng, and Christian Sohler 131:1–131:14

Deterministic Graph Exploration with Advice
Barun Gorain and Andrzej Pelc 132:1–132:14

Combinatorial Secretary Problems with Ordinal Information
Martin Hoefer and Bojana Kodric 133:1–133:14

Selling Complementary Goods: Dynamics, Efficiency and Revenue
Moshe Babaioff, Liad Blumrosen, and Noam Nisan 134:1–134:14

Saving Critical Nodes with Firefighters is FPT
Jayesh Choudhari, Anirban Dasgupta, Neeldhara Misra, and M. S. Ramanujan ... 135:1–135:13

On the Transformation Capability of Feasible Mechanisms for Programmable Matter
Othon Michail, George Skretas, and Paul G. Spirakis 136:1–136:15

Distributed Monitoring of Network Properties: The Power of Hybrid Networks
Robert Gmyr, Kristian Hinnenthal, Christian Scheideler, and Christian Sohler ... 137:1–137:15

Randomized Rumor Spreading Revisited
Benjamin Doerr and Anatolii Kostrygin 138:1–138:14

Randomized Load Balancing on Networks with Stochastic Inputs
Leran Cai and Thomas Sauerwald 139:1–139:14

Opinion Dynamics in Networks: Convergence, Stability and Lack of Explosion
Tung Mai, Ioannis Panageas, and Vijay V. Vazirani 140:1–140:14

Hardness of Computing and Approximating Predicates and Functions with Leaderless Population Protocols
Amanda Belleville, David Doty, and David Soloveichik 141:1–141:14

Preface

This volume contains the papers presented at ICALP 2017, the 44th edition of the International Colloquium on Automata, Languages and Programming, held in Warsaw, Poland during July 10–14, 2017. ICALP is a series of annual conferences of the European Association for Theoretical Computer Science (EATCS), which first took place in 1972. This year, the ICALP program consisted of three tracks:

- Track A: Algorithms, Complexity, and Games,
- Track B: Logic, Semantics, Automata and Theory of Programming,
- Track C: Foundations of Networked Computation: Models, Algorithms, and Information Management.

In response to the call for papers, a total 459 submissions were received: 296 for track A, 108 for track B, and 55 for track C. Each submission was reviewed by at least three Program Committee members, aided by many subreviewers. Out of these, the committee decided to accept 137 papers for inclusion in the scientific program: 88 papers for Track A, 32 for Track B, and 17 for Track C. The selection was made by the Program Committees based on originality, quality, and relevance to theoretical computer science. The quality of the manuscripts was very high, and many deserving papers could not be selected.

The EATCS sponsored awards for both a best paper and a best student paper for each of the three tracks, selected by the Program Committees.

The best paper awards were given to the following papers:

- Track A: Andreas Björklund, Petteri Kaski and Ioannis Koutis. "Directed Hamiltonicity and Out-Branchings via Generalized Laplacians".
- Track B: Michael Benedikt, Pierre Bourhis and Michael Vanden Boom. "Characterizing Definability in Decidable Fixpoint Logics".
- Track C: Eyjólfur Ingi Ásgeirsson, Magnus M. Halldorsson and Tigran Tonoyan. "Universal Framework for Wireless Scheduling Problems".

The best student paper awards, for papers that are solely authored by students, were given to the following papers:

- Track A: Euiwoong Lee. "Improved Hardness for Cut, Interdiction, and Firefighter Problems".
- Track B: Fabian Reiter. "Asynchronous Distributed Automata: A Characterization of the Modal Mu-Fragment".

Apart from the contributed talks, ICALP 2017 included invited presentations by Mikołaj Bojańczyk, Monika Henzinger, Ronitt Rubinfeld and Mikkel Thorup. This volume of the proceedings contains all contributed papers presented at the conference together with the papers and abstracts of the invited speakers.

The program of ICALP 2017 also included presentation of the EATCS Award 2017 to Eva Tardos, the Presburger Award 2017 to Alexandra Silva and the EATCS Distinguished Dissertation Award to Vincent Cohen-Addad, Mika Göös and Steen Vester.

Three satellite events of ICALP were held on 14 July, 2017:

- SSG: Algorithms and Structure for Sparse Graphs
- AVeRTS: Algorithmic Verification of Real-Time Systems
- SP: Separability Problems

44th International Colloquium on Automata, Languages, and Programming (ICALP 2017).
Editors: Ioannis Chatzigiannakis, Piotr Indyk, Fabian Kuhn, and Anca Muscholl
Leibniz International Proceedings in Informatics
LIPICS Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

The Lipa Summer School was organized on topics connected to logic in computer science during 3–6 July, 2017.

We wish to thank all authors who submitted extended abstracts for consideration, the Program Committees for their scholarly effort, and all referees who assisted the Program Committees in the evaluation process. We are also grateful to Mikołaj Bojańczyk, Piotr Sankowski, Bartek Klin and Filip Murlak for organizing ICALP 2017 and all the support staff of the Organizing Committee, especially Hanna Bargieł and Alicja Kosińska from Global Congress.

We would like to thank Paul Spirakis, the president of EATCS, for his generous advice on the organization of the conference.

July 2017

Ioannis Chatzigiannakis
Piotr Indyk
Fabian Kuhn
Anca Muscholl

Organization

Program Committee

Track A

Indyk Piotr	MIT, USA, Chair
Afshani Peyman	Aarhus University, Denmark
Agarwal Pankaj	Duke University, USA
Bringmann Karl	Max Planck Institute for Informatics, Germany
Chattopadhyay Arkadev	Tata Institute of Fundamental Research, India
Chechik Shiri	Tel-Aviv University, Israel
Ene Alina	Boston University, USA
Filmus Yuval	Technion – Israel Institute of Technology, Israel
Gopalan Parikshit	VMware Research, USA
Grossi Roberto	Universita' di Pisa, Italy
Gupta Anupam	Carnegie Mellon University, USA
Ishai Yuval	Technion, Israel
Kapralov Michael	EPFL, Switzerland
Kleinberg Robert	Cornell University, USA
Lu Pinyan	Shanghai University of Finance and Economics, China
Magniez Frederic	CNRS, Univ. Paris Diderot, France
Mahdian Mohammad	Google, USA
Marx Daniel	Computer and Automation Research Institute, Hungarian Academy of Sciences, Hungary
Nanongkai Danupon	KTH Royal Institute of Technology, Sweden, Sweden
Nelson Jelani	Harvard, USA
Pilipczuk Marcin	Institute of Informatics, University of Warsaw, Poland
Sankowski Piotr	University of Warsaw, Poland
Sauerwald Thomas	University of Cambridge, United Kingdom
Scheideler Christian	University of Paderborn, Germany
Sohler Christian	TU Dortmund, Germany
Telikepalli Kavitha	Tata Institute of Fundamental Research, Mumbai, India
Vaikuntanathan Vinod	University of Toronto, Canada
Vegh Laszlo A.	London School of Economics, United Kingdom
Venkatasubramanian Suresh	University of Utah, USA
Vidick Thomas	Caltech, USA
Wee Hoeteck	ENS, France
Weimann Oren	University of Haifa, Israel
Weinberg Seth	MIT, USA

44th International Colloquium on Automata, Languages, and Programming (ICALP 2017).
Editors: Ioannis Chatzigiannakis, Piotr Indyk, Fabian Kuhn, and Anca Muscholl
Leibniz International Proceedings in Informatics
LIPICS Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Track B

Muscholl Anca	LaBRI, Universite Bordeaux, France, Chair
Barcelo Pablo	Universidad de Chile, Chile
Blumensath Achim	Masaryk University, Brno, Czech Republic
Brihaye Thomas	Université de Mons, Belgium
Chatterjee Krishnendu	Institute of Science and Technology (IST), Austria
Coquand Thierry	Chalmers University, Sweden
Dawar Anuj	University of Cambridge, United Kingdom
Endrullis Jörg	Vrije Universiteit Amsterdam, Netherlands
Fisman Dana	University of Pennsylvania, USA
Hofmann Martin	LMU Munich, Germany
Jagadeesan Radha	DePaul University, USA
Kiefer Stefan	University of Oxford, United Kingdom
Kieronski Emanuel	University of Wroclaw, Poland
Kreutzer Stephan	Technical University Berlin, Germany
La Torre Salvatore	Dipartimento di Informatica, Università degli studi di Salerno, Italy
Lin Anthony Widjaja	Department of Computer Science, University of Oxford, United Kingdom
Martens Wim	University of Bayreuth, Germany
Mellies Paul-André	CNRS, Université Paris Diderot, France
Padovani Luca	Università di Torino, Italy
Palamidessi Catuscia	INRIA, France
Pighizzini Giovanni	Dipartimento di Informatica, Università degli Studi di Milano, Italy
Pin Jean-Éric	LIAFA, CNRS and University Paris 7, France
Silva Alexandra	University College London, United Kingdom
Talbot Jean-Marc	LIF, Universite d'Aix-Marseille, France
Viswanathan Mahesh	University of Illinois, Urbana-Champaign, USA
Wilke Thomas	University of Kiel, Germany
Worell James	Oxford University, United Kingdom

Track C

Kuhn Fabian	University of Freiburg, Germany, Chair
Abraham Ittai	VMware Research, USA
Anta Antonio Fernandez	IMDEA Networks Institute, Spain
Aspnes James	Yale, USA
Censor-Hillel Keren	Technion, Israel
Emek Yuval	Technion, Israel
Ghaffari Mohsen	ETH Zurich, Switzerland
Giakkoupis George	INRIA Rennes, France
Gilbert Seth	N/A, Singapore
Haeupler Bernhard	CMU, USA
Korman Amos	CNRS and Université Paris Diderot - Paris 7, France
Kosowski Adrian	IRIF (LIAFA) / Inria Paris, France
Lenzen Christoph	MPI for Informatics, Germany
Masuzawa Toshimitsu	Osaka University, Japan
Panagiotou Konstantinos	University of Munich (LMU), Germany
Panconesi Alessandro	Sapienza University of Rome, Italy
Parter Merav	MIT, CSAIL, USA
Patt-Shamir Boaz	Tel Aviv University, Israel
Pigonlet Yvonne-Anne	ABB Corporate Research, Switzerland
Rajsbaum Sergio	Instituto de Matematicas, UNAM, Mexico
Richa Andrea	Arizona State University, USA
Su Hsin-Hao	MIT, USA
Suomela Jukka	Aalto University, Finland
Woelfel Philipp	University of Calgary, Canada

Organizing Committee

Mikołaj Bojańczyk	University of Warsaw, Poland
Piotr Sankowski	University of Warsaw, Poland
Bartek Klin	University of Warsaw, Poland
Filip Murlak	University of Warsaw, Poland

Financial Sponsors

Microsoft
Microsoft Research
AICA
Facebook
Department of Informatics, Sapienza University of Rome
Austrian

Additional Reviewers

Abboud Amir	Abdollahi Azgomi Mohammad	Abdullah Amirali
Aceto Luca	Acharya Jayadev	Adjiashvili David
Agrawal Akanksha	Akhavi Ali	Alaei Saeed
Allender Eric	Ambainis Andris	Amir Amihood
Andoni Alexandr	Angelidakis Haris	Angelopoulos Spyros
Anshu Anurag	Antonopoulos Timos	Arroyuelo Diego
Assadi Sepehr	Atig Mohamed Faouzi	Atkey Robert
Backurs Arturs	Baillot Patrick	Balbiani Philippe
Ball Marshall	Bampas Evangelos	Bannai Hideo
Barman Siddharth	Barmpalias Georgios	Barrington David Mix
Barth Stephan	Basu Samik	Bauer Matthew
Behnezhad Soheil	Bei Xiaohui	Belovs Aleksandrs
Ben-Amram Amir	Bérczi Kristóf	Berkholz Christoph
Berman Itay	Beyersdorff Olaf	Bhaskar Umang
Bhaskara Aditya	Bienkowski Marcin	Bille Philip
Björklund Andreas	Blondin Michael	Bodini Olivier
Bodlaender Hans L.	Bodwin Greg	Bonchi Filippo
Bonnet Edouard	Boreale Michele	Borradaile Glencora
Bouland Adam	Briggs Keith	Brody Joshua
Brunet Paul	Byrka Jaroslaw	Cannon Sarah
Canonne Clément	Cao Yixin	Carayol Arnaud
Carlier Pierre	Caskurlu Bugra	Chakraborty Sourav
Chalermsook Parinya	Chang Hsien-Chih	Chang Yi-Jun
Chaplick Steven	Charron-Bost Bernadette	Chen Hubie
Chen Sitan	Chen Yi-Hsiu	Chen Yijia
Chen Yilei	Chen Yu-Fang	Chestnut Stephen
Chiplunkar Ashish	Chistikov Dmitry	Chitnis Rajesh
Chlamtac Eden	Choffrut Christian	Choudhary Keerti
Cicalese Ferdinando	Clemente Lorenzo	Cohen Alon
Cohen Ilan	Coja-Oghlan Amin	Colella Feliciano

Collet Simon
Cormode Graham
Couteau Geoffroy
Crespi Reghizzi Stefano
Cui Shawn
Curticapean Radu
Cygan Marek
Czerwiński Wojciech
Czyzowicz Jurek
Dahlgaard Søren
Dantchev Stefan
Dartois Luc
Daruki Samira
Das Bireswar
Das Shantanu
Das Syamantak
Daviaud Laure
de Brecht Matthew
de Laat David
De Nivelle Hans
De Rougemont Michel
Degwekar Akshay
Dehghani Sina
Dell Holger
Della Monica Dario
Deshpande Amit
Dieudonne Yoann
Dima Catalin
Dinitz Michael
Dondi Riccardo
Doty David
Doyen Laurent
Duchon Philippe
Duetting Paul
Dürr Christoph
Dvorak Zdenek
Eisner Cindy
Eldar Lior
Elias Marek
Elkind Edith
Elmasry Amr
Emamjomeh-Zadeh Ehsan
Epping Michael
Epstein Leah
Esfandiari Hossein
Függer Matthias
Gaboardi Marco
Ganian Robert
Faella Marco
Fakcharooenphol Jittat
Fates Nazim
Fearnley John
Fekete Sándor
Feldman Moran
Feldmann Michael
Felmdan Dan
Fernau Henning
Fiat Amos
Fichtenberger Hendrik
Fijalkow Nathanaël
Filiot Emmanuel
Finkbeiner Bernd
Fiore Dario
Fiorini Samuel
Fischer Johannes
Forbes Michael A.
Fotakis Dimitris
Fox Kyle
Franceschini Gianni
Freedman Ofer
Friedrichs Stephan
Fuchsbauer Georg
Garg Ankit
Gasieniec Leszek
Gauwin Olivier
Gawrychowski Pawel
Geeraerts Gilles
Gelashvili Rati
Gentilini Raffaella
Giannopoulou Archontia
Gimbert Hugo
Gkatzelis Vasilis
Glasser Christian
Gmyr Robert
Goldner Kira
Goldwurm Massimiliano
Göller Stefan
Golovach Petr
Golub Benjamin
Gopi Sivakanth
Goranci Gramoz
Gordon Spencer
Gouleakis Themistoklis
Grandoni Fabrizio
Gravin Nikolai
Gribling Sander
Grier Daniel
Grohe Martin
Grønlund Allan
Guha Shibashis
Guillon Bruno
Guillon Pierre
Guinard Breuc
Guo Heng
Guo Siyao
Gupta Manoj
Gurjar Rohit
Guruganesh Guru
Gutin Gregory
Haase Christoph
Haghpanah Nima
Høyer Peter
Hsu Justin
Huang Chien-Chung
Hallgren Sean
Han Xin
Hansen Kristoffer Arnsfelt
Hansen Thomas Dueholm
Haramaty Elad
Harsha Prahladh
Harvey Nick
Harwath Frederik
Hassin Refael
He Meng
Hermelin Danny
Hinnenthal Kristian
Hlineny Petr
Ho Hsi-Ming
Hodkinson Ian
Hoefer Martin
Hoffmann Jan
Hofman Piotr
Holmgren Justin
Hoshino Naohiko
Houshmand Mahboobeh
Huang Dawei
Huang Sangxia
Huang Shang-En
Huang Zengfeng
Huang Zhiyi
Hubacek Pavel
I Tomohiro
Iacono John
Ikenmeyer Christian

Immerman Neil
Inenaga Shunsuke
Iwata Yoichi
Jain Rahul
Jancar Petr
Jansen Bart M. P.
Jansen Klaus
Jeffery Stacey
Jeż Artur
Ji Zhengfeng
Jiamjitrak Wanchote
Johnson Matthew P.
Jones Mark
Jost Steffen
Jowhari Hossein
Kalaitzis Christos
Kamath Gautam
Kamath Pritish
Kammar Ohad
Kanazawa Makoto
Kannan Ravindran
Kapralov Michael
Karczmarz Adam
Kärkkäinen Juha
Katsumata Shin-Ya
Kazda Alexandr
Keiren Jeroen J.A.
Kempe David
Kesselheim Thomas
Khan Arindam
Kim Anthony
Kimelfeld Benny
King Valerie
Kini Dileep
Kiraly Tamas
Klasing Ralf
Klavzar Sandi
Kling Peter
Knudsen Mathias Bæk Tejs
Kociumaka Tomasz
Koebler Johannes
Koiran Pascal
Kolb Christina
Kolev Pavel
Komusiewicz Christian
Konrad Christian
Konur Savas
Kothari Robin
Kotrbcik Michal
Kowalik Lukasz
Kranakis Evangelos
Krasnopolsky Nadav
Kratsch Stefan
Krinninger Sebastian
Krishnaswamy Ravishankar
Krivosija Amer
Kufleitner Manfred
Kulikov Alexander
Kulkarni Janardhan
Kumar Amit
Kumar Mrinal
Kumaresan Ranjit
Künnemann Marvin
Kuusisto Antti
Kwon O-Joung
Kyng Rasmus
Löding Christof
Loff Bruno
Lohrey Markus
Laber Eduardo
Łącki Jakub
Laekhanukit Bundit
Laird James
Lang Harry
Lange Julien
Lapinskas John
Lasota SŁawomir
Laurenti Luca
Lauriere Mathieu
Le Gall Francois
Lecroq Thierry
Lee Euiwoong
Leroux Jérôme
Leverrier Anthony
Levin Asaf
Li Shi
Li Yi
Liaghat Vahid
Liao Chao
Libkin Leonid
Lin Bingkai
Lingas Andrzej
Lingxiao Huang
Liu Jingcheng
Liu Tianren
Lodaya Kamal
Lokshtanov Daniel
Longley John
Lotker Zvi
Luttik Bas
M. S. Ramanujan
Madan Vivek
Makarychev Konstantin
Mamouras Konstantinos
Mande Nikhil
Manea Florin
Manthey Bodo
Manurangsi Pasin
Mao Jieming
Mardare Radu
Marino Andrea
Markatou Evangelia Anna
Markey Nicolas
Markham Damian
Martin Barnaby
Mathieu Claire
Mathur Umang
Matuschke Jannik
Maus Yannic
McCusker Guy
McGregor Andrew
Medina Moti
Mehraban Saeed
Mehta Aranyak
Mendler Michael
Mengel Stefan
Meunier Pierre-étienne
Mezlaf David
Michaliszyn Jakub
Milius Stefan
Mimram Samuel
Misra Neeldhara
Mittal Rajat
Mnich Matthias
Mogavero Fabio
Monaco Gianpiero
Monemizadeh Morteza
Monmege Benjamin
Montanaro Ashley
Moseley Benjamin
Mozes Shay
Mucha Marcin
Mukherjee Pratyay
Munro Ian

Munteanu Alexander
Murlak Filip
Musco Cameron
Musco Christopher
Nagarajan Viswanath
Narayanan Hariharan
Natarajan Ramamoorthy Sivaramakrishnan
Nekrich Yakov
Nenadov Rajko
Newman Ilan
Nguyen Huy
Niazadeh Rad
Nicholson Patrick K.
Nichterlein André
Nielsen Jesper Sindahl
Nies Andre
Niewerth Matthias
Nigam Vivek
Norouzi Fard Ashkan
Novotný Petr
Ochremiak Joanna
Oertel Timm
Okhotin Alexander
Onak Krzysztof
Oren Sigal
Otop Jan
Otto Martin
Paes Leme Renato
Pajak Dominik
Pakusa Wied
Panangaden Prakash
Panigrahi Debmalya
Panolan Fahad
Parotsidis Nikos
Paz Ami
Peng Pan
Peng Richard
Perakis Georgia
Perifel Sylvain
Perkins Will
Perry Mor
Persiano Giuseppe
Petri Gustavo
Petrisan Daniela
Phillips Jeff
Pilipczuk MichaŁ
Plandowski Wojciech
Polonsky Andrew
Porter Timothy
Pountourakis Emmanouil
Pous Damien
Prigioniero Luca
Psomas Christos-Alexandros
Puglisi Simon
Quaas Karin
Quanrud Kent
Rabani Yuval
Rabinovich Roman
Räcke Harald
Radoszewski Jakub
Raghavan Manish
Raghothaman Mukund
Raman Rajiv
Randour Mickael
Rao Anup
Rapaport Ivan
Raskin Jean-Francois
Reidl Felix
Ren Ling
Renault Marc
Rey Anja
Reynier Pierre-Alain
Richerby David
Rika Inbal
Riveros Cristian
Rizzi Romeo
Roditty Liam
Rolínek Michal
Romashchenko Andrei
Romero Orth Miguel
Roohi Nima
Rosén Adi
Rosenbaum Will
Rothenberger Ralf
Rubinstein Aviad
Rutten Jan
Saarela Aleksi
Sadakane Kunihiko
Salcedo-Sanz Sancho
Sangnier Arnaud
Santhanam Rahul
Santocanale Luigi
Saranurak Thatchaphol
Satti Srinivasa Rao
Sau Ignasi
Saurabh Saket
Sawa Zdenek
Scagnetto Ivan
Scarlett Jonathan
Schaeffer Luke
Schmid Andreas
Schmidt Jens M.
Schmidt Ludwig
Schmidt Melanie
Schmitz Sylvain
Schöpp Ulrich
Schwartz Roy
Schweitzer Pascal
Schwiegelshohn Chris
Seddighin Saeed
Segala Roberto
Sen Pranab
Setzer Alexander
Shirmohammadi Mahsa
Siebertz Sebastian
Silva Pedro V.
Singer Yaron
Singla Sahil
Sinha Makrand
Skiena Steven
SocaŁa Arkadiusz
Sokol Dina
Sokolova Ana
Song Zhao
Sorge Manuel
Spoerhase Joachim
Srivastava Piyush
Staals Frank
Stachowiak Grzegorz
Starikovskaya Tatiana
Stefankovic Daniel
Stehle Damien
Stepanovs Igors
Stephens-Davidowitz Noah
Strothmann Thim
Sun He
Sun Nike
Svensson Ola
Talwar Kunal
Tamaki Suguru
Tan Li-Yang

Tang Bo
Tang Qiyi
Tendera Lidia
Terwijn Sebastiaan
Tirodkar Sumedh
Tiu Alwen
Tonoyan Tigran
Torán Jacobo
Toruńczyk Szymon
Totzke Patrick
Tsur Dekel
Tulsiani Madhur
Tzamos Christos
Uniyal Sumedha
Valencia Frank
van Leeuwen Erik Jan
van Stee Rob
Vardi Adi
Varma Nithin Mahendra
Vassilevska Williams Virginia
Vasudev Yadu
Vasudevan Prashant
Vaz Daniel
Velingker Ameya
Venema Yde
Venturini Rossano
Vergnaud Damien
Versari Luca
Vialette Stéphane
Vickers Steve
Viglietta Giovanni
Vinyals Marc
Vladu Adrian
Vondrak Jan
Wahlström Magnus
Wajc David
Wang Zhengyu
Wang Zihe
Ward Justin
Wellnitz Philip
Westermann Matthias
Whistler William
Widder Josef
Wieder Udi
Wiese Andreas
Wijs Anton
Will Sebastian
Winter Joost
Wlodarczyk Michal
Woeginger Gerhard J.
Wötzel Maximilian
Wrochna Marcin
Wrona MichaŁ
Wu Zhiwei Steven
Wulff-Nilsen Christian
Xia Mingji
Xu Haifeng
Xu Jiaming
Xu Shen Chen
Yakovlev Alex
Yang Dejun
Yang Kuan
Yang Lin
Yaroslavtsev Grigory
Yazdanbod Sadra
Yin Xiang
Yogev Eylon
Yoshida Yuichi
Young Neal
Yu Fang-Yi
Yu Huacheng
Yuster Raphael
Zanasi Fabio
Zandieh Amir
Zanetti Luca
Zehavi Meirav
Zeitoun Marc
Zetzsche Georg
Zeume Thomas
Zhandry Mark
Zhang Chihao
Zhang Jialin
Zhang Qin
Zhang Yumeng
Zhou Hang
Zhou Yuan
Ziegler Martin

List of Authors

Aarthi Sundaram
Centre for Quantum Technologies
Singapore
aarthims@gmail.com

Abrahamsen Mikkel
University of Copenhagen
Denmark
mikkel.abrahamsen@gmail.com

Achlioptas Dimitris
University of California Santa Cruz
USA
optas@soe.ucsc.edu

Adamczyk Marek
University of Bremen
Germany
adamczyk@dis.uniroma1.it

Agrawal Shweta
IIT Madras
India
shweta.a@gmail.com

Ahmadian Sara
University of Waterloo
Canada
sahmadian@uwaterloo.ca

Albers Susanne
TU Muenchen
Germany
albers@in.tum.de

Almagor Shaull
Department of Computer Science, Oxford University, UK
Israel
shaull.almagor@cs.ox.ac.uk

Alman Josh
MIT CSAIL
USA
jalman@mit.edu

Alstrup Stephen
University of Copenhagen
Denmark
stephen.alstrup.private@gmail.com

Alur Rajeev
University of Pennsylvania
USA
alur@cis.upenn.edu

Amarilli Antoine
LTCI, CNRS, Télécom ParisTech, Université Paris-Saclay
France
antoine.amarilli@telecom-paristech.fr

Antoniadis Antonios
Bonn University
Germany
antonios.antoniadis@mpi-inf.mpg.de

Apon Daniel
University of Maryland, College Park
USA
dapon@cs.umd.edu

Asada Kazuyuki
University of Tokyo
Japan
kzykasd+easychair@gmail.com

Ásgeirsson Eyjólfur Ingi
Reykjavik University
Iceland
eyjo@ru.is

Atserias Albert
Universitat Politecnica de Catalunya
Spain
atserias@cs.upc.edu

Babaioff Moshe
Microsoft Research
Israel
moshe@microsoft.com

Bacci Giorgio
Dept. of Computer Science, Aalborg University
Denmark
grbacci@cs.aau.dk

44th International Colloquium on Automata, Languages, and Programming (ICALP 2017).
Editors: Ioannis Chatzigiannakis, Piotr Indyk, Fabian Kuhn, and Anca Muscholl
Leibniz International Proceedings in Informatics
LIPICS Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany

Bacci Giovanni
Dept. of Computer Science, Aalborg University
Denmark
giovbacci@cs.aau.dk

Backens Miriam
University of Bristol
United Kingdom
m.backens@bristol.ac.uk

Bacquey Nicolas
INRIA Lille - CRIStAL - University of Lille
France
nicolas.bacquey@inria.fr

Baleshzar Roksana
Pennsylvania State University
USA
rxb5410@cse.psu.edu

Balle Borja
Lancaster University
United Kingdom
bballe@cs.mcgill.ca

Barbero Florian
LIRMM
France
Florian.Barbero@lirmm.fr

Barthe Gilles
IMDEA Software Institute
Spain
gjbarthe@gmail.com

Basset Nicolas
Université Libre de Bruxelles
Belgium
nicolas.basset@ulb.ac.be

Baswana Surender
I.I.T. Kanpur
India
sbaswana@cse.iitk.ac.in

Belleville Amanda
UC Davis
USA
acbelleville@ucdavis.edu

Ben Eliezer Omri
Tel Aviv University
Israel
omribene@gmail.com

Ben-Sasson Eli
Technion
Israel
eli@cs.technion.ac.il

Benedikt Michael
Oxford University
United Kingdom
Michael.Benedikt@cs.ox.ac.uk

Bernstein Aaron
TU Berlin
Germany
bernstei@gmail.com

Berthon Raphaël
ENS Rennes
France
raphael.berthon@ens-rennes.fr

Bezakova Ivona
Rochester Institute of Technology
USA
ib@cs.rit.edu

Bienkowski Marcin
Institute of Computer Science, University of Wroclaw
Poland
marcin.bienkowski@cs.uni.wroc.pl

Bilò Vittorio
University of Salento
Italy
vittorio.bilo@unisalento.it

Björklund Andreas
Lund University
Sweden
andreas.bjorklund@yahoo.se

Blelloch Guy
Computer Science Department, Carnegie Mellon University
USA
guyb@cs.cmu.edu

Blumrosen Liad
School of Business, The Hebrew University
Israel
blumrosen@gmail.com

Boczkowski Lucas
CNRS, IRIF, University Paris 7
France
lucasboczko@gmail.com

Bodwin Greg
CSAIL, MIT
USA
gbodwin@mit.edu

Bogdanov Andrej
Chinese University of Hong Kong
Hong Kong
andrejb@cse.cuhk.edu.hk

Böhnlein Toni
Universität zu Köln
Germany
boehnlein@zpr.uni-koeln.de

Boigelot Bernard
Montefiore Institute, Université de Liège
Belgium
bernard.boigelot@ulg.ac.be

Bojańczyk Mikołaj
University of Warsaw
Poland
bojan@mimuw.edu.pl

Bonnet Édouard
Middlesex University
United Kingdom
edouard.bonnet@dauphine.fr

Bourhis Pierre
CNRS CRIStAL
France
pierre.bourhis@univ-lille1.fr

Bournez Olivier
LIX & Ecole Polytechnique
France
bournez@lix.polytechnique.fr

Bozzelli Laura
University of Napoli
Italy
lr.bozzelli@gmail.com

Brandt Sebastian
ETH Zurich
Switzerland
brandts@ethz.ch

Bringmann Karl
Max Planck Institute for Informatics
Germany
kbringma@mpi-inf.mpg.de

Bury Marc
Thyssenkrupp Industrial Solutions AG
Germany
marc.bury@thyssenkrupp.com

Byrka Jaroslaw
Institute of Computer Science, University of Wroclaw
Poland
jby@cs.uni.wroc.pl

Cadilhac Michaël
WSI, Universität Tübingen
Germany
michael@cadilhac.name

Cai Leran
University of Cambridge
United Kingdom
leran.cai@cl.cam.ac.uk

Caragiannis Ioannis
University of Patras
Greece
caragian@ceid.upatras.gr

Carton Olivier
IRIF, Université Paris-Diderot
France
olivier.carton@irif.fr

Chakrabarty Deeparnab
Microsoft Research, Bangalore
India
deeparnab@gmail.com

Chalopin Jérémie
LIF, CNRS & Aix Marseille Université
France
jeremie.chalopin@lif.univ-mrs.fr

Chen Jing
Stony Brook University
USA
jingchen@cs.stonybrook.edu

Chen Shahar
Technion
Israel
shahar.chen11@gmail.com

Chepoi Victor
LIF, Aix Marseille Université & CNRS
France
chepoi@lif.univ-mrs.fr

Chiesa Alessandro
UC Berkeley
USA
alexch@berkeley.edu

Chistikov Dmitry
University of Oxford
United Kingdom
dch@mpi-sws.org

Choudhari Jayesh
IIT Gandhinagar
India
choudhari.jayesh@iitgn.ac.in

Choudhary Keerti
I.I.T. Kanpur
India
keerti@cse.iitk.ac.in

Clemente Lorenzo
University of Warsaw
Poland
clementelorenzo@gmail.com

Cleve Richard
University of Waterloo
Canada
cleve@uwaterloo.ca

Coester Christian
University of Oxford
United Kingdom
christian.coester@cs.ox.ac.uk

Cohen Ran
Tel-Aviv University
Israel
cohenran@yahoo.com

Coretti Sandro
New York University
USA
corettis@gmail.com

Curticapean Radu
Institute for Computer Science and Control of the Hungarian Academy of Sciences (MTA SZTAKI)
Hungary
radu.curticapean@gmail.com

Cygan Marek
Institute of Informatics, University of Warsaw, Poland
Poland
cygan@mimuw.edu.pl

Czerwiński Wojciech
University of Warsaw
Poland
wczerwin@mimuw.edu.pl

Dartois Luc
Université Libre de Bruxelles
Belgium
ldartois@ulb.ac.be

Dasgupta Anirban
IIT Gandhinagar
India
anirbandg@iitgn.ac.in

Datta Samir
Chennai Mathematical Institute
India
sdatta@cmi.ac.in

Daviaud Laure
University of Warsaw
Poland
ldaviaud@mimuw.edu.pl

Dehghani Sina
University of Maryland
USA
dehghani@umd.edu

Dell Holger
Saarland University and Cluster of Excellence, MMCI
Germany
holger.dell@gmail.com

Dereniowski Dariusz
Gdansk University of Technology
Poland
deren@eti.pg.gda.pl

Di Castro Dotan
Technion
Israel
dotan.dicastro@gmail.com

Diakonikolas Ilias
University of Southern California
USA
ilias.diakonikolas@gmail.com

Diekert Volker
University Stuttgart
Germany
diekert@fmi.uni-stuttgart.de

Disser Yann
TU Darmstadt
Germany
yanndisser@gmail.com

Doerr Benjamin
Max-Planck Institute for Informatics
Germany
doerr@mpi-inf.mpg.de

Dohotaru Cătălin
University of Calgary
Canada
cdohotaru@gmail.com

Döttling Nico
UC Berkeley
USA
nico.doettling@gmail.com

Doty David
UC Davis
USA
doty@ucdavis.edu

Dowek Gilles
INRIA and ENS Paris-Saclay
France
gilles.dowek@inria.fr

Eden Talya
Tel Aviv University
Israel
talyaa01@gmail.com

Ehsani Soheil
UMD
USA
soheilehsani@gmail.com

Eickmeyer Kord
TU Darmstadt
Germany
eickmeyer@mathematik.tu-darmstadt.de

Elder Murray
The University of Newcastle, Australia
Australia
murrayelder@gmail.com

Emek Yuval
Technion
Israel
yemek@ie.technion.ac.il

Espitau Thomas
Université Paris 6
France
t.espitau@gmail.com

Even Guy
Tel-Aviv University
Israel
guy@eng.tau.ac.il

Fanelli Angelo
CNRS
France
angelo.fanelli@gmail.com

Figueira Diego
LaBRI, CNRS
France
dfigueir@labri.fr

Fijalkow Nathanaël
University of Oxford
United Kingdom
nathanael.fijalkow@gmail.com

Finkel Alain
LSV, ENS Cachan, CNRS
France
finkel@lsv.fr

Flammini Michele
University of L'Aquila
Italy
michele.flammini@univaq.it

Fomin Fedor
Department of Informatics, University of Bergen
Norway
fomin@ii.uib.no

Fournier Paulin
Université de Bordeaux
France
paulin.fournier@labri.fr

Friggstad Zachary
University of Alberta
Canada
zacharyf@ualberta.ca

Gabizon Ariel
Technion
Israel
arielga@cs.technion.ac.il

Galanis Andreas
University of Oxford
United Kingdom
andreas.galanis@cs.ox.ac.uk

Galicki Alex
The University of Auckland
New Zealand
agal629@aucklanduni.ac.nz

Garay Juan
Yahoo Research
USA
garay@yahoo-inc.com

Garg Sanjam
UC Berkeley
USA
sanjamg@berkeley.edu

Gaspers Serge
University of New South Wales
Australia
sergeg@cse.unsw.edu.au

Geeraerts Gilles
Université Libre de Bruxelles
Belgium
gigeerae@ulb.ac.be

Georgiadis Loukas
University of Ioannina
Greece
loukas@gmail.com

Ghazi Badih
MIT
USA
badih@mit.edu

Giannakopoulos Yiannis
TU Munich
Germany
giannako@in.tum.de

Giannopoulou Archontia
Technische Universität Berlin
Germany
archontia.giannopoulou@gmail.com

Gimbert Hugo
CNRS, LABRI
France
hugo.gimbert@labri.fr

Gmyr Robert
Paderborn University
Germany
gmyr@mail.upb.de

Gold Omer
Tel Aviv University
Israel
omergolden@gmail.com

Goldberg Leslie Ann
University of Oxford
United Kingdom
leslie.goldberg@cs.ox.ac.uk

Goldwasser Shafi
MIT
USA
shafi@theory.csail.mit.edu

Golovach Petr
Department of Informatics, Bergen University
Norway
pgo041@uib.no

Göös Mika
Harvard
USA
mika@seas.harvard.edu

Gorain Barun
Université du Québec en Outaouais
Canada
baruniitg123@gmail.com

Gourdeau Pascale
McGill University
Canada
pascale.gourdeau@mail.mcgill.ca

Graf Daniel
ETH Zürich
Switzerland
grafdan@ethz.ch

Grandjean Etienne
GREYC, University of Caen
France
etienne.grandjean@unicaen.fr

Grandoni Fabrizio
IDSIA, USI-SUPSI, Lugano
Switzerland
fabrizio@idsia.ch

Gravin Nick
MIT
USA
ngravin@mit.edu

Groß Martin
University of Waterloo
Canada
gross@math.TU-Berlin.DE

Grossman Ofer
MIT
USA
ofer.grossman@gmail.com

Gu Yan
Carnegie Mellon University
USA
yan.gu@cs.cmu.edu

Guillon Bruno
University of Warsaw
Poland
guillon.bruno+cs@gmail.com

Guldstrand Larsen Kim
Dept. of Computer Science, Aalborg University
Denmark
kgl@cs.aau.dk

Gupta Manoj
Indian Institute of Technology, Gandhinagar
India
gmanoj@iitgn.ac.in

Guruswami Venkatesan
Carnegie Mellon University
USA
guruswami@cmu.edu

Gutin Gregory
Royal Holloway
United Kingdom
g.gutin@rhul.ac.uk

Haase Christoph
University of Oxford
United Kingdom
Christoph.Haase@cs.ox.ac.uk

Hajiaghayi Mohammadtaghi
University of Maryland, College Park
USA
hajiagha@cs.umd.edu

Halldorsson Magnus M.
Reykjavik University
Iceland
magnusmh@gmail.com

Hansen Thomas Dueholm
Aarhus University
Denmark
tdh@cs.au.dk

Henzinger Monika
Faculty of Computer Science, Universität Wien
Austria
monika.henzinger@univie.ac.at

Hinnenthal Kristian
Paderborn University
Germany
krijan@mail.upb.de

Hoefer Martin
Goethe University Frankfurt/Main
Germany
mhoefer@mpi-inf.mpg.de

Hoeksma Ruben
Universidad de Chile
Netherlands
rphoeksma@gmail.com

Holm Jacob
Department of Computer Science, University of Copenhagen
Denmark
jaho@di.ku.dk

Høyer Peter
University of Calgary
Canada
hoyer@ucalgary.ca

Hsu Justin
University of Pennsylvania
USA
email@justinh.su

Iliopoulos Fotis
University of California Berkeley
USA
fotis.iliopoulos@berkeley.edu

Italiano Giuseppe F.
University of Rome Tor Vergata
Italy
pino.italiano@gmail.com

Iwata Yoichi
National Institute of Informatics
Japan
yiwata@nii.ac.jp

Jayaram Rajesh
Brown University
USA
rajesh_jayaram@brown.edu

Jayram T.S.
IBM Almaden
USA
jayram@us.ibm.com

Jecker Ismaël
Université libre de Bruxelles
Belgium
ismael.jecker@gmail.com

Jeż Artur
University of Wroclaw, Institute of Computer Science
Poland
aje@cs.uni.wroc.pl

Jung Jean Christoph
Universität Bremen
Germany
jeanjung@informatik.uni-bremen.de

Kane Daniel
University of California, San Diego
USA
aladkeenin@gmail.com

Kärkkäinen Juha
University of Helsinki
Finland
juha.karkkainen@cs.helsinki.fi

Karnin Zohar
Yahoo Labs
USA
zkarnin@gmail.com

Kaski Petteri
Department of Computer Science, Aalto University, Helsinki, Finland
Finland
petteri.kaski@aalto.fi

Kelmendi Edon
LaBRI
France
edon.kelmendi@labri.Fr

Kerenidis Iordanis
CNRS, IRIF, University Paris 7
France
iordanis.kerenidis@irif.fr

Khan Shahbaz
Indian Institute of Technology, Kanpur
India
amus_hawk@yahoo.co.in

Kindler Guy
The Weizmann Institute of Science
Israel
guy.kindler@weizmann.ac.il

Klin Bartek
University of Warsaw
Poland
klin@mimuw.edu.pl

Knudsen Mathias Bæk Tejs
University of Copenhagen
Denmark
mathias@tejs.dk

Kobayashi Naoki
University of Tokyo
Japan
koba@is.s.u-tokyo.ac.jp

Kodric Bojana
Max-Planck-Institut für Informatik
Germany
bojana@mpi-inf.mpg.de

Kohler Matthias
Technical University of Munich
Germany
kohler@in.tum.de

Korman Amos
CNRS and Université Paris Diderot - Paris 7
France
amos.korman@gmail.com

Korman Simon
Weizmann Institute of Science
Israel
simon.korman@gmail.com

Kosowski Adrian
Inria and IRIF, Paris
France
adrian.kosowski@inria.fr

Kostrygin Anatolii
Ecole Polytechnique
France
anatolii.kostrygin@gmail.com

Koutis Ioannis
Department of Computer Science, University of Puerto Rico – Rio Piedras
Puerto Rico
i.koutis@gmail.com

Koutsoupias Elias
University of Oxford
United Kingdom
elias@cs.ox.ac.uk

Kraft Dennis
TU Muenchen
Germany
dennis.kraft@in.tum.de

Kratsch Stefan
University of Bonn
Germany
kratsch@cs.uni-bonn.de

Krauthgamer Robert
Weizmann Institute of Science, Israel
Israel
robert.krauthgamer@weizmann.ac.il

Kreutzer Stephan
TU Berlin
Germany
stephan.kreutzer@tu-berlin.de

Krinninger Sebastian
University of Vienna
Austria
sebastian.krinninger@univie.ac.at

Künnemann Marvin
University of California, San Diego
USA
mkuennemann@eng.ucsd.edu

Kwon O-Joung
TU Berlin
Germany
o.kwon@tu-berlin.de

Lambilliotte Antonin
École Normale Supérieure de Lyon
France
antonin.lambilliotte@ens-lyon.fr

Lasota Sławomir
Warsaw University
Poland
sl@mimuw.edu.pl

Lazic Ranko
University of Warwick
United Kingdom
R.S.Lazic@warwick.ac.uk

Lazos Philip
University of Oxford
United Kingdom
filzos@cs.ox.ac.uk

Lee Edward J.
UNSW / Data61
Australia
edward.jay.lee@gmail.com

Lee Euiwoong
Carnegie Mellon University
USA
euiwoonl@cs.cmu.edu

Leonardi Stefano
Sapienza University of Rome
Italy
leonardi@dis.uniroma1.it

Leroux Jerome
LaBRI, CNRS
France
jerome.leroux@labri.fr

Levi Reut
MPI
Germany
reuti.levi@googlemail.com

Lewin-Eytan Liane
Yahoo Labs
Israel
liane@yahoo-inc.com

Lhote Nathan
Université de Bordeaux
France
nlhote@labri.fr

Li Bo
Stony Brook University
USA
boli2@cs.stonybrook.edu

Li Yi
Nanyang Technological University
Singapore
leeyi@umich.edu

Li Yingkai
Stony Brook University
USA
yingkli@cs.stonybrook.edu

Lin Chengyu
Columbia University
USA
chengyu@cs.columbia.edu

Lin Jiabao
Peking University
China
joblin@pku.edu.cn

Linhares Andre
University of Waterloo
Canada
andre.linhares@gmail.com

Lokshtanov Daniel
UiB
Norway
daniello@ii.uib.no

Louis Jachiet
Université Grenoble Alpes
France
louis.jachiet@inria.fr

Lozes Etienne
LSV, ENS Cachan, CNRS
France
lozes@lsv.ens-cachan.fr

Lutz Carsten
Universität Bremen
Germany
clu@informatik.uni-bremen.de

M. S. Ramanujan
TU Wien
India
msramanujan@gmail.com

Magniez Frédéric
CNRS, IRIF, University Paris 7
France
magniez@cnrs.fr

Mai Tung
Georgia Institute of Technology
USA
Maithanhtung89@gmail.com

Mainz Isabelle
Montefiore Institute, Université de Liège
Belgium
isabelle.mainz@ulg.ac.be

Mamouras Konstantinos
University of Pennsylvania
USA
kmamouras@gmail.com

Mancinska Laura
University of Bristol
United Kingdom
laura.mancinska@gmail.com

Manurangsi Pasin
University of California, Berkeley
USA
pasin@berkeley.edu

Mardare Radu
Dept. of Computer Science, Aalborg University
Denmark
mardare@cs.aau.dk

Marsault Victor
Department of Mathematics, Université de Liège
Belgium
victor.marsault@ulg.ac.be

Martel Mauricio
Universität Bremen
Germany
mauricio.martel@gmail.com

Matuschke Jannik
TU Berlin
Germany
matuschke@math.tu-berlin.de

Mazowiecki Filip
University of Warwick
United Kingdom
F.Mazowiecki@warwick.ac.uk

Mccormick Tom
Sauder School of Business, UBC
Canada
tom.mccormick@sauder.ubc.ca

Medina Moti
MPI
Germany
moti.medina@gmail.com

Meissner Julie
TU Berlin MA Sek. 5-2
Germany
jmeiss@math.tu-berlin.de

Michail Othon
Department of Computer Science, University of Liverpool, UK
United Kingdom
Othon.Michail@liverpool.ac.uk

Misra Neeldhara
Indian Institute of Science
India
mail@neeldhara.com

Mnich Matthias
Universität Bonn
Germany
mmnich@uni-bonn.de

Molinari Alberto
University of Udine
Italy
molinari.alberto@gmail.com

Monaco Gianpiero
DISIM. University of L'Aquila
Italy
gianpiero.monaco@di.univaq.it

Monemizadeh Morteza
Rutgers University
USA
mortezam@dimacs.rutgers.edu

Montanari Angelo
University of Udine
Italy
angelo.montanari@uniud.it

Mouawad Amer
University of Bergen
Norway
amer.mouawad@gmail.com

Mucha Marcin
Institute of Informatics, University of Warsaw, Poland
Poland
mucha@mimuw.edu.pl

Mukherjee Anish
Chennai Mathematical Institute
India
anish@cmi.ac.in

Mukherjee Pratyay
UC Berkeley
USA
pratyay85@gmail.com

Muthukrishnan S.
Rutgers University
USA
muthu@cs.rutgers.edu

Nagarajan Viswanath
University of Michigan
USA
viswa@umich.edu

Nakos Vasileios
Harvard University
USA
vasileiosnakos@g.harvard.edu

Naor Seffi
Computer Science Dept., Technion, Haifa, Israel
Israel
naor@cs.technion.ac.il

Nikishkin Vladimir
University of Edinburgh
United Kingdom
v.nikishkin@sms.ed.ac.uk

Nisan Noam
Microsoft Reserach and Hebrew University
Israel
noam@cs.huji.ac.il

O'Donnell Ryan
Carnegie Mellon University
USA
odonnell@cs.cmu.edu

Ochremiak Joanna
Universite de Paris VII
France
ochremiak@mimuw.edu.pl

Olive Frédéric
LIF, Aix-Marseille Université
France
Frederic.Olive@lif.univ-mrs.fr

Oriolo Gianpaolo
Universita di Roma "Tor Vergata"
Italy
oriolo@disp.uniroma2.it

Ouaknine Joel
Department of Computer Science, Oxford University, UK
United Kingdom
joel@cs.ox.ac.uk

Pallavoor Ramesh Krishnan S.
Pennsylvania State University
USA
ramesh@psu.edu

Panageas Ioannis
MIT and SUTD
USA
panageasj@gmail.com

Panangaden Prakash
McGill University
Canada
prakash@cs.mcgill.ca

Panolan Fahad
Department of Informatics, University of Bergen, Norway
Norway
fahad.panolan@ii.uib.no

Paperman Charles
WSI, Universität Tübingen
Germany
charles.paperman@gmail.com

Parotsidis Nikos
University of Rome Tor Vergata
Italy
nickparo1@gmail.com

Parter Merav
CSAIL, MIT
USA
parter@mit.edu

Paturi Ramamohan
University of California, San Diego
USA
paturi@cs.ucsd.edu

Paul Christophe
CNRS - LIRMM
France
paul@lirmm.fr

Pelc Andrzej
Université du Québec en Outaouais
Canada
Andrzej.Pelc@uqo.ca

Penelle Vincent
University of Warsaw
Poland
penelle@univ-mlv.fr

Peng Pan
Faculty of Computer Science, University of Vienna
Austria
pan.peng@univie.ac.at

Peres Yuval
Microsoft Research
USA
peres@microsoft.com

Peron Adriano
University of Napoli
Italy
adrperon@unina.it

Piątkowski Marcin
Nicolaus Copernicus University, Toruń,
Poland
Poland
martinp@mat.uni.torun.pl

Pietrzak Krzysztof
IST Austria
Austria
krzpie@gmail.com

Pilipczuk Michał
University of Warsaw
Poland
michal.pilipczuk@mimuw.edu.pl

Pitassi Toniann
University of Toronto
Canada
toni@cs.toronto.edu

Pouly Amaury
LIX & FCT
France
amaury.pouly@gmail.com

Preet Singh Ishaan
IIT Delhi
India
ishaanps92@gmail.com

Price Eric
The University of Texas at Austin
USA
ecprice@cs.utexas.edu

Pudlák Pavel
The Czech Academy of Sciences
Czech Republic
pudlak@math.cas.cz

Puglisi Simon
University of Helsinki
Finland
simon.j.puglisi@gmail.com

Rabinovich Roman
TU Berlin
Germany
roman.rabinovich@tu-berlin.de

Räcke Harald
Technical University of Munich
Germany
raecke@in.tum.de

Raghavendra Prasad
UC Berkeley
USA
raghavendra@berkeley.edu

Randour Mickael
ULB - Université libre de Bruxelles
Belgium
mickael.randour@gmail.com

Raskhodnikova Sofya
Pennsylvania State University
USA
sofya@cse.psu.edu

Raskin Jean-Francois
Université Libre de Bruxelles (U.L.B.)
Belgium
jraskin@ulb.ac.be

Raskin Mikhail
Aarhus University
Denmark
raskin@mccme.ru

Raymond Jean-Florent
MIMUW, University of Warsaw and
LIRMM, University Montpellier
France
jean-florent.raymond@mimuw.edu.pl

Reichman Daniel
University of California, Berkeley
Israel
daniel.reichman@gmail.com

Reidl Felix
NC State
USA
felix.reidl@gmail.com

Reiter Fabian
IRIF, Université Paris Diderot
France
fabian.reiter@gmail.com

Riabzev Michael
Technion
Israel
mriabzev@cs.technion.ac.il

Rigo Michel
Department of Mathematics, Université de Liège
Belgium
m.rigo@ulg.ac.be

Roberson David
University College London
United Kingdom
davideroberson@gmail.com

Rodeh Yoav
Weizmann Institute
Israel
yoav.rodeh@gmail.com

Roditty Liam
Bar-Ilan University
Israel
liam.roditty@gmail.com

Ron Dana
Tel Aviv University
Israel
danaron@tau.ac.il

Rosén Adi
CNRS and Université Paris Diderot
France
adiro@liafa.univ-paris-diderot.fr

Rossman Benjamin
University of Toronto
Canada
rossman@cs.toronto.edu

Ronitt Rubinfeld
MIT and Tel Aviv University
USA and Israel
ronitt@csail.mit.edu

Rubinstein Aviad
UC Berkeley
USA
aviad@eecs.berkeley.edu

Rümmele Stefan
University of Sydney
Australia
stefan.rummele@sydney.edu.au

Saffidine Abdallah
University of New South Wales
Australia
abdallah.saffidine@gmail.com

Saha Barna
University of Massachussets, Amherst
USA
Barna@cs.umass.edu

Sala Pietro
University of Verona
Italy
pietro.sala@univr.it

Samal Robert
Charles University
Czech Republic
samal@iuuk.mff.cuni.cz

Sankur Ocan
CNRS
France
ocan.sankur@irisa.fr

Sato Tetsuya
Research Institute for Mathematical Sciences, Kyoto University
Japan
satoutet@kurims.kyoto-u.ac.jp

Sauerwald Thomas
University of Cambridge
United Kingdom
thomas.sauerwald@cl.cam.ac.uk

Saurabh Saket
The Institute of Mathematical Sciences, Chennai
India
saket@imsc.res.in

Schaudt Oliver
University of Cologne
Germany
schaudto@uni-koeln.de

Scheder Dominik
Shanghai Jiaotong University
China
dominik@cs.sjtu.edu.cn

Scheideler Christian
Paderborn University
Germany
scheideler@mail.upb.de

Schlipf Lena
FernUniversität in Hagen
Germany
lena.schlipf@fernuni-hagen.de

Schmidt Jens M.
TU Ilmenau
Germany
jens.schmidt@tu-ilmenau.de

Schneider Stefan
University of California, San Diego
USA
stschnei@cs.ucsd.edu

Schneider Thomas
University of Bremen
Germany
tschneider@informatik.uni-bremen.de

Schwartz Roy
Technion
Israel
schwartz.roi@gmail.com

Schweitzer Pascal
RWTH Aachen University
Germany
schweitzer@informatik.rwth-aachen.de

Schwentick Thomas
TU Dortmund University
Germany
thomas.schwentick@udo.edu

Schwiegelshohn Chris
TU Dortmund
Germany
chris.schwiegelshohn@tu-dortmund.de

Seddighin Saeed
University of Maryland
USA
saeedreza.seddighin@gmail.com

Seshadhri C.
University of California, Santa Cruz
USA
sesh@ucsc.edu

Severini Simone
University College London
United Kingdom
simoseve@gmail.com

Sharir Micha
Tel-Aviv University, School of Computer Science, and Courant Institute of Mathematical Science, New York University
Israel
michas@post.tau.ac.il

Shen Xiangkun
University of Michigan
USA
xkshen@umich.edu

Siebertz Sebastian
University of Warsaw
Poland
siebertz@mimuw.edu.pl

Sivan Balasubramanian
Google Research, New York
USA
balusivan@google.com

Skorski Maciej
IST Austria
Poland
maciej.skorski@gmail.com

Skretas George
Computer Engineering and Informatics Department (CEID), University of Patras, Greece
Greece
skretasg8@gmail.com

Sohler Christian
TU Dortmund
Germany
christian.sohler@tu-dortmund.de

Soloveichik David
University of Texas at Austin
USA
david.soloveichik@utexas.edu

Song Zhao
The University of Texas at Austin
USA
zhaos@utexas.edu

Spirakis Paul
University of Liverpool, Computer Technology Institute, and University of Patras
UK and Greece
P.Spirakis@liverpool.ac.uk

Spooner Nicholas
University of Toronto
Canada
spooner@cs.toronto.edu

Srinivasan Srikanth
IIT Bombay
India
srinivasan.srikanth@gmail.com

Stanford Caleb
University of Pennsylvania
USA
castan@cis.upenn.edu

Stefan Mengel
CNRS, CRIL UMR 8188; France
France
mengel@cril.fr

Stefankovic Daniel
University of Rochester
USA
stefanko@cs.rochester.edu

Stöckel Morten
University of Copenhagen
Denmark
morten.stockel@gmail.com

Strub Pierre-Yves
École Polytechnique - Paris Saclay
Spain
pierre-yves@strub.nu

Sudan Madhu
Harvard University
USA
madhu@cs.harvard.edu

Sun Yihan
Carnegie Mellon University
USA
yihans@cs.cmu.edu

Sutre Gregoire
LaBRI, CNRS
France
sutre@labri.fr

Swamy Chaitanya
University of Waterloo
Canada
cswamy@uwaterloo.ca

Talebanfard Navid
The Czech Academy of Sciences
Czech Republic
talebanfard@math.cas.cz

Thilikos Dimitrios
Department of Mathematics, National and Kapodistrian University of Athens
Greece
sedthilk@thilikos.info

Thorup Mikkel
Department of Computer Science, University of Copenhagen
Denmark
mikkel2thorup@gmail.com

Tonoyan Tigran
Reykjavik University
Iceland
ttonoyan@gmail.com

Trabelsi Ohad
Weizmann Institute of Science, Israel
Israel
ohad_trabelsi@yahoo.com

Uitto Jara
University of Freiburg
Germany
jara.uitto@gmail.com

Uznański Przemysław
ETH Zürich
Switzerland
izulin@gmail.com

Vanden Boom Michael
Department of Computer Science, University of Oxford
United Kingdom
michael.vandenboom@cs.ox.ac.uk

Varvitsiotis Antonios
Centre for Quantum Technologies and Nanyang Technological University
Singapore
avarvits@gmail.com

Vassilevska Williams Virginia
CSAIL, MIT
USA
virgi@mit.edu

Vazirani Vijay
Georgia Tech
USA
vazirani@cc.gatech.edu

Verschae José
Pontifical Catholic University of Chile
Chile
jverscha@gmail.com

Vlassis Nikos
Adobe Inc
USA
vlassis@adobe.com

Vortmeier Nils
TU Dortmund University
Germany
nils.vortmeier@uni-dortmund.de

Wahlström Magnus
Royal Holloway
United Kingdom
Magnus.Wahlstrom@rhul.ac.uk

Wang Chunhao
University of Waterloo
Canada
c265wang@uwaterloo.ca

Wang Hanpin
Peking University
China
whpxhy@pku.edu.cn

Watson Thomas
University of Memphis
USA
Thomas.Watson@memphis.edu

Wattenhofer Roger
ETH Zurich
Switzerland
wattenhofer@ethz.ch

Węgrzycki Karol
Institute of Informatics, University of Warsaw, Poland
Poland
k.wegrzycki@mimuw.edu.pl

Weitz Benjamin
UC Berkeley
USA
bsweitz123@gmail.com

Wiese Andreas
Max Planck Institute for Informatics
Germany
awiese@mpi-inf.mpg.de

Williamson Christopher
Chinese University of Hong Kong
Hong Kong
chris@cse.cuhk.edu.hk

Włodarczyk Michał
University of Warsaw
Poland
m.wlodarczyk@mimuw.edu.pl

Wolter Frank
University of Liverpool
United Kingdom
wolter@liverpool.ac.uk

Woodruff David P.
IBM Almaden
USA
dpwoodru@us.ibm.com

Worrell James
Department of Computer Science, Oxford University, UK
United Kingdom
jbw@cs.ox.ac.uk

Wrochna Marcin
University of Warsaw
Poland
m.wrochna@mimuw.edu.pl

Xing Chaoping
Nanyang Technological Univeristy
Singapore
xingcp@ntu.edu.sg

Yang Kuan
University of Oxford
United Kingdom
kuan.yang.6@gmail.com

Yuan Chen
Nanyang Technological Univeristy
Singapore
yuan0064@e.ntu.edu.sg

Zehavi Meirav
University of Bergen
Norway
zehavimeirav@gmail.com

Zeume Thomas
TU Dortmund University
Germany
thomas.zeume@cs.tu-dortmund.de

Zhang Shengyu
Chinese University of Hong Kong
Hong Kong
syzhang@cse.cuhk.edu.hk

Zikas Vassilis
RPI
USA
vzikas@cs.rpi.edu

Zou Mengchuan
Inria and IRIF, Paris
France
mengchuan.zou@inria.fr