

31st International Conference on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms

AofA 2020, June 15–19, 2020, Klagenfurt, Austria
(Virtual Conference)

Edited by

Michael Drmota

Clemens Heuberger



Editors

Michael Drmota 

TU Wien, Austria
michael.drmota@tuwien.ac.at

Clemens Heuberger 

Universität Klagenfurt, Austria
clemens.heuberger@aau.at

ACM Classification 2012

Mathematics of computing; Theory of computation; Computing methodologies

ISBN 978-3-95977-147-4

Published online and open access by

Schloss Dagstuhl – Leibniz-Zentrum für Informatik GmbH, Dagstuhl Publishing, Saarbrücken/Wadern, Germany. Online available at <https://www.dagstuhl.de/dagpub/978-3-95977-147-4>.

Publication date

June, 2020

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 <https://portal.dnb.de>.

License

This work is licensed under a Creative Commons Attribution 3.0 Unported license (CC-BY 3.0):
<https://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.AofA.2020.0

ISBN 978-3-95977-147-4

ISSN 1868-8969

<https://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)
- Christel Baier (TU Dresden)
- Mikolaj Bojanczyk (University of Warsaw)
- Roberto Di Cosmo (INRIA and University Paris Diderot)
- Javier Esparza (TU München)
- Meena Mahajan (Institute of Mathematical Sciences)
- Dieter van Melkebeek (University of Wisconsin-Madison)
- Anca Muscholl (University Bordeaux)
- Luke Ong (University of Oxford)
- Catuscia Palamidessi (INRIA)
- Thomas Schwentick (TU Dortmund)
- Raimund Seidel (Saarland University and Schloss Dagstuhl – Leibniz-Zentrum für Informatik)

ISSN 1868-8969

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

■ Contents

Preface	
<i>Michael Drmota and Clemens Heuberger</i>	0:vii
Program Committee	
.....	0:ix
Steering Committee	
.....	0:xi
On Lattice Paths with Marked Patterns: Generating Functions and Multivariate Gaussian Distribution	
<i>Andrei Asinowski and Cyril Banderier</i>	1:1–1:16
Latticepathology and Symmetric Functions (Extended Abstract)	
<i>Cyril Banderier, Marie-Louise Lackner, and Michael Wallner</i>	2:1–2:16
The Complexity of the Approximate Multiple Pattern Matching Problem for Random Strings	
<i>Frédérique Bassino, Tsinjo Rakotoarimalala, and Andrea Sportiello</i>	3:1–3:15
Two Arithmetical Sources and Their Associated Tries	
<i>Valérie Berthé, Eda Cesaratto, Frédéric Paccaut, Pablo Rotondo, Martín D. Safe, and Brigitte Vallée</i>	4:1–4:19
The k -Cut Model in Conditioned Galton-Watson Trees	
<i>Gabriel Berzunza, Xing Shi Cai, and Cecilia Holmgren</i>	5:1–5:10
Largest Clusters for Supercritical Percolation on Split Trees	
<i>Gabriel Berzunza and Cecilia Holmgren</i>	6:1–6:10
Scaling and Local Limits of Baxter Permutations Through Coalescent-Walk Processes	
<i>Jacopo Borga and Mickaël Maazoun</i>	7:1–7:18
More Models of Walks Avoiding a Quadrant	
<i>Mireille Bousquet-Mélou and Michael Wallner</i>	8:1–8:14
Polyharmonic Functions And Random Processes in Cones	
<i>François Chapon, Éric Fusy, and Kilian Raschel</i>	9:1–9:19
Cut Vertices in Random Planar Maps	
<i>Michael Drmota, Marc Noy, and Benedikt Stufler</i>	10:1–10:18
Asymptotics of Minimal Deterministic Finite Automata Recognizing a Finite Binary Language	
<i>Andrew Elvey Price, Wenjie Fang, and Michael Wallner</i>	11:1–11:13
The First Bijective Proof of the Alternating Sign Matrix Theorem	
<i>Ilse Fischer and Matjaž Konvalinka</i>	12:1–12:12
Counting Cubic Maps with Large Genus	
<i>Zhicheng Gao and Mihyun Kang</i>	13:1–13:13

Diffusion Limits in the Online Subsequence Selection Problems <i>Alexander Gnedin and Amirlan Seksenbayev</i>	14:1–14:15
Analysis of Lempel-Ziv'78 for Markov Sources <i>Philippe Jacquet and Wojciech Szpankowski</i>	15:1–15:19
Power-Law Degree Distribution in the Connected Component of a Duplication Graph <i>Philippe Jacquet, Krzysztof Turowski, and Wojciech Szpankowski</i>	16:1–16:14
Hidden Words Statistics for Large Patterns <i>Svante Janson and Wojciech Szpankowski</i>	17:1–17:15
The Giant Component and 2-Core in Sparse Random Outerplanar Graphs <i>Mihyun Kang and Michael Misethan</i>	18:1–18:16
Probabilistic Analysis of Optimization Problems on Sparse Random Shortest Path Metrics <i>Stefan Klotz and Bodo Manthey</i>	19:1–19:16
Greedy Maximal Independent Sets via Local Limits <i>Michael Krivelevich, Tamás Mészáros, Peleg Michaeli, and Clara Shikhelman</i>	20:1–20:19
The Disordered Chinese Restaurant and Other Competing Growth Processes <i>Cécile Mailler, Peter Mörters, and Anna Senkevich</i>	21:1–21:13
Convergence Rates in the Probabilistic Analysis of Algorithms <i>Ralph Neininger and Jasmin Straub</i>	22:1–22:13
Hidden Independence in Unstructured Probabilistic Models <i>Antony Pearson and Manuel E. Lladser</i>	23:1–23:13
Block Statistics in Subcritical Graph Classes <i>Dimbinaina Ralaivaosaona, Clément Requilé, and Stephan Wagner</i>	24:1–24:14
On the Probability That a Random Digraph Is Acyclic <i>Dimbinaina Ralaivaosaona, Vonjy Rasendrasina, and Stephan Wagner</i>	25:1–25:18

■ Preface

The 31st International Conference on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms (AofA 2020) was planned to be held in Klagenfurt, Austria, June 15–19, 2020. Due to the Coronavirus outbreak the conference had to be shifted to an online conference.

Analysis of algorithms is a scientific basis for computation, providing a link between abstract algorithms and the performance characteristics of their implementations in the real world. The general effort to predict precisely the performance of algorithms has come to involve research in analytic combinatorics, the analysis of random discrete structures, asymptotic analysis, exact and limiting distributions, and other fields of inquiry in computer science, probability theory, and enumerative combinatorics. See <http://aofa.cs.purdue.edu/>.

The Call for Papers invited papers in

- analytic algorithmics and combinatorics,
- probabilistic analysis of algorithms, and
- randomized algorithms.

We also welcomed papers addressing problems such as: combinatorial algorithms, string searching and pattern matching, sublinear algorithms on massive data sets, network algorithms, graph algorithms, caching and memory hierarchies, indexing, data mining, data compression, coding and information theory, and computational finance. Papers were also welcomed that address bridges to research in related fields such as statistical physics, computational biology, computational geometry, and simulation.

The present issue collects 25 contributions to the AofA 2020 conference that have been refereed and selected by the Program Committee.

The planned invited speakers were

- Wojciech Szpankowski (Flajolet Lecturer), Purdue University, USA,
- Mireille Bousquet-Mélou, Université de Bordeaux, France,
- James A. Fill, The Johns Hopkins University, Baltimore, USA,
- Malwina Luczak, University of Melbourne, Australia,
- Andrew Rechnitzer, University of British Columbia, Canada.

We acknowledge the financial support by the University of Klagenfurt.

Michael Drmota and Clemens Heuberger,
on behalf of the Program Committee

■ Program Committee

- Michael Drmota (**co-chair**), TU Wien, Austria
- Clemens Heuberger (**co-chair**), Universität Klagenfurt, Austria

- Olivier Bodini, Université Paris-Nord, France
- Michael Fuchs, National Chengchi University, Taiwan
- Cecilia Holmgren, Uppsala Universitet, Sweden
- Mihyun Kang, Technische Universität Graz, Austria
- Jérémie Lumbroso, Princeton University, USA
- Cécile Mailler, The University of Bath, United Kingdom
- Marni Mishna, Simon Fraser University, Canada
- Markus E. Nebel, Universität Bielefeld, Germany
- Daniel Panario, Carleton University, Canada
- Bruno Salvy, École normale supérieure de Lyon, France
- Henning Sulzbach, University of Birmingham, United Kingdom
- Stephan G. Wagner, Uppsala Universitet, Sweden
- Mark Daniel Ward, Purdue University, USA



■ Steering Committee

- Conrado Martínez (**chair**), Universitat Politècnica de Catalunya, Barcelona, Spain
- James A. Fill, The Johns Hopkins University, Baltimore, USA
- Hsien-Kuei Hwang, Academia Sinica, Taiwan
- Ralph Neininger, Goethe-Universität Frankfurt, Germany
- Bruno Salvy, École normale supérieure de Lyon, France
- Michèle Soria, Sorbonne Universités—Université Paris 6 (Pierre et Marie Curie), France



