

Faith Ellen · Antonina Kolokolova
Jörg-Rüdiger Sack (Eds.)

Algorithms and Data Structures

15th International Symposium, WADS 2017
St. John's, NL, Canada, July 31 – August 2, 2017
Proceedings

Contents

Covering Segments with Unit Squares	1
<i>Ankush Acharyya, Subhas C. Nandy, Supantha Pandit, and Sasanka Roy</i>	
Replica Placement on Bounded Treewidth Graphs.	13
<i>Anshul Aggarwal, Venkatesan T. Chakaravarthy, Neelima Gupta, Yogish Sabharwal, Sachin Sharma, and Sonika Thakral</i>	
Fast Exact Algorithms for Survivable Network Design with Uniform Requirements	25
<i>Akanksha Agrawal, Pranabendu Misra, Fahad Panolan, and Saket Saurabh</i>	
The Complexity of Tree Partitioning	37
<i>Zhao An, Qilong Feng, Iyad Kanj, and Ge Xia</i>	
Effectiveness of Local Search for Art Gallery Problems	49
<i>Sayan Bandyopadhyay and Aniket Basu Roy</i>	
Parameterized Complexity of Geometric Covering Problems Having Conflicts.	61
<i>Aritra Banik, Fahad Panolan, Venkatesh Raman, Vibha Sahlot, and Saket Saurabh</i>	
Obedient Plane Drawings for Disk Intersection Graphs	73
<i>Bahareh Banyassady, Michael Hoffmann, Boris Klemz, Maarten Löffler, and Tillmann Miltzow</i>	
δ -Greedy t -spanner	85
<i>Gali Bar-On and Paz Carmi</i>	
Dynamic Graph Coloring	97
<i>Luis Barba, Jean Cardinal, Matias Korman, Stefan Langerman, André van Renssen, Marcel Roeloffzen, and Sander Verdonschot</i>	
Universal Hinge Patterns for Folding Strips Efficiently into Any Grid Polyhedron	109
<i>Nadia M. Benbernou, Erik D. Demaine, Martin L. Demaine, and Anna Lubiw</i>	
An Optimal XP Algorithm for Hamiltonian Cycle on Graphs of Bounded Clique-width	121
<i>Benjamin Bergougnoux, Mamadou Moustapha Kanté, and O-Joung Kwon</i>	

Improved Algorithms for Computing k -Sink on Dynamic Flow Path Networks	133
<i>Binay Bhattacharya, Mordecai J. Golin, Yuya Higashikawa, Tsunehiko Kameda, and Naoki Katoh</i>	
A 2-Approximation for the Height of Maximal Outerplanar Graph Drawings	145
<i>Therese Biedl and Philippe Demontigny</i>	
Splitting B_2 -VPG Graphs into Outer-string and Co-comparability Graphs	157
<i>Therese Biedl and Martin Derka</i>	
A Deterministic Algorithm for Online Steiner Tree Leasing	169
<i>Marcin Bienkowski, Artur Kraska, and Paweł Schmidt</i>	
The I/O Complexity of Strassen's Matrix Multiplication with Recomputation.	181
<i>Gianfranco Bilardi and Lorenzo De Stefani</i>	
Maximum Plane Trees in Multipartite Geometric Graphs	193
<i>Ahmad Biniaz, Prosenjit Bose, Kimberly Crosbie, Jean-Lou De Carufel, David Eppstein, Anil Maheshwari, and Michiel Smid</i>	
Local Routing in Spanners Based on WSPDs	205
<i>Prosenjit Bose, Jean-Lou De Carufel, Vida Dujmović, and Frédéric Paradis</i>	
Relaxing the Irrevocability Requirement for Online Graph Algorithms.	217
<i>Joan Boyar, Lene M. Favrholdt, Michal Kotrbčik, and Kim S. Larsen</i>	
Approximating Small Balanced Vertex Separators in Almost Linear Time	229
<i>Sebastian Brandt and Roger Wattenhofer</i>	
Balanced Line Separators of Unit Disk Graphs	241
<i>Paz Carmi, Man Kwun Chiu, Matthew J. Katz, Matias Korman, Yoshio Okamoto, André van Renssen, Marcel Roeloffzen, Taichi Shiitada, and Shakhar Smorodinsky</i>	
All-Pairs Shortest Paths in Geometric Intersection Graphs	253
<i>Timothy M. Chan and Dimitrios Skrepetos</i>	
The Complexity of Drawing Graphs on Few Lines and Few Planes.	265
<i>Steven Chaplick, Krzysztof Fleszar, Fabian Lipp, Alexander Ravsky, Oleg Verbitsky, and Alexander Wolff</i>	
Modular Circulation and Applications to Traffic Management.	277
<i>Philip Dasler and David M. Mount</i>	

The Homogeneous Broadcast Problem in Narrow and Wide Strips	289
<i>Mark de Berg, Hans L. Bodlaender, and Sándor Kisfaludi-Bak</i>	
Minimizing the Continuous Diameter when Augmenting a Tree with a Shortcut	301
<i>Jean-Lou De Carufel, Carsten Grimm, Stefan Schirra, and Michiel Smid</i>	
Inapproximability of the Standard Pebble Game and Hard to Pebble Graphs	313
<i>Erik D. Demaine and Quanquan C. Liu</i>	
Capacitated Center Problems with Two-Sided Bounds and Outliers	325
<i>Hu Ding, Lunjia Hu, Lingxiao Huang, and Jian Li</i>	
Faster Randomized Worst-Case Update Time for Dynamic Subgraph Connectivity	337
<i>Ran Duan and Le Zhang</i>	
Improved Distance Sensitivity Oracles via Tree Partitioning	349
<i>Ran Duan and Tianyi Zhang</i>	
Delta-Fast Tries: Local Searches in Bounded Universes with Linear Space	361
<i>Marcel Ehrhardt and Wolfgang Mulzer</i>	
Split Packing: Packing Circles into Triangles with Optimal Worst-Case Density	373
<i>Sándor P. Fekete, Sebastian Morr, and Christian Scheffer</i>	
Fast and Compact Planar Embeddings	385
<i>Leo Ferres, José Fuentes, Travis Gagie, Meng He, and Gonzalo Navarro</i>	
When Can Graph Hyperbolicity be Computed in Linear Time?.	397
<i>Till Fluschnik, Christian Komusiewicz, George B. Mertzios, André Nichterlein, Rolf Niedermeier, and Nimrod Talmon</i>	
Optimal Query Time for Encoding Range Majority	409
<i>Paweł Gawrychowski and Patrick K. Nicholson</i>	
Conditional Lower Bounds for Space/Time Tradeoffs	421
<i>Isaac Goldstein, Tsvi Kopelowitz, Moshe Lewenstein, and Ely Porat</i>	
Posimodular Function Optimization	437
<i>Magnús M. Halldórsson, Toshimasa Ishii, Kazuhisa Makino, and Kenjiro Takazawa</i>	

How to Play Hot and Cold on a Line	449
<i>Herman Haverkort, David Kübel, Elmar Langetepe, and Barbara Schwarzwald</i>	
Faster Algorithm for Truth Discovery via Range Cover	461
<i>Ziyun Huang, Hu Ding, and Jinhui Xu</i>	
Searching Edges in the Overlap of Two Plane Graphs	473
<i>John Iacono, Elena Khramtcova, and Stefan Langerman</i>	
Improved Average Complexity for Comparison-Based Sorting	485
<i>Kazuo Iwama and Junichi Teruyama</i>	
An EPTAS for Scheduling on Unrelated Machines of Few Different Types	497
<i>Klaus Jansen and Marten Maack</i>	
A Polynomial Kernel for Distance-Hereditary Vertex Deletion	509
<i>Eun Jung Kim and O-joung Kwon</i>	
Busy Time Scheduling on a Bounded Number of Machines (Extended Abstract).	521
<i>Frederic Koehler and Samir Khuller</i>	
Algorithms for Covering Multiple Barriers	533
<i>Shimin Li and Haitao Wang</i>	
An Improved Algorithm for Diameter-Optimally Augmenting Paths in a Metric Space	545
<i>Haitao Wang</i>	
Covering Uncertain Points in a Tree	557
<i>Haitao Wang and Jingru Zhang</i>	
Stochastic Closest-pair Problem and Most-likely Nearest-neighbor Search in Tree Spaces	569
<i>Jie Xue and Yuan Li</i>	
On the Expected Diameter, Width, and Complexity of a Stochastic Convex-hull	581
<i>Jie Xue, Yuan Li, and Ravi Janardan</i>	
Author Index	593