



# Preface to the Special Issue on Parameterized and Exact Computation

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This special issue comprises seven papers selected from presentations at the 15th International Symposium on Parameterized and Exact Computation (IPEC 2020). Among the 26 presentations at IPEC 2020, the Program Committee selected nine outstanding papers for a special issue in *Algorithmica*. We receive eight submissions, of which seven are accepted after the regular peer-review process of the journal.

In the paper entitled “*Finding optimal triangulations parameterized by edge clique cover*,” Tuukka Korhonen presents algorithms for computing, among others, treewidth and minimum fill-in, parameterized by the edge clique cover number. The algorithms do not require an edge clique cover of the input graph.

The main result of the paper “*Vertex deletion into bipartite permutation graphs*” by Łukasz Bożyk, Jan Derbisz, Tomasz Krawczyk, Jana Novotná, and Karolina Okrasa is an  $O(9^k \cdot n^9)$ -time algorithm for the bipartite permutation vertex deletion problem.

These two papers were co-winners of both the Best Paper Award and the Best Student Paper Award.

In “*Parameterized complexity of directed spanner problems*,” Fedor V. Fomin, Petr A. Golovach, William Lochet, Pranabendu Misra, Saket Saurabh, and Roohani Sharma investigate parameterized complexity of minimum  $t$ -spanner problems on digraphs, parameterized by  $t$  and the number of removed edges. They give parameterized algorithms for multiplicative spanners and show  $W[1]$ -hardness for additive spanners, even on directed acyclic graphs.

In “*On the fine-grained parameterized complexity of partial scheduling to minimize the makespan*,” Jesper Nederlof and Céline M. F. Swennenhuis conduct a comprehensive study of the parameterized complexity of the partial scheduling problem, where one seeks an optimal schedule to process  $k$  out of all the given jobs.

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In “*Structural parameterizations with modulator oblivion*,” Ashwin Jacob, Fahad Panolan, Venkatesh Raman, and Vibha Sahlot consider the structural parameterization of the vertex-deletion distance to chordal graphs. They present parameterized algorithms for solving Vertex Cover, Feedback Vertex Set, and Odd Cycle Transversal, among other problems, and their algorithms do not assume a given modulator.

In “*A polynomial kernel for funnel arc deletion set*,” Marcelo Garlet Milani design an  $O(k^6)$ -vertex kernel for the Funnel Arc Deletion problem.

In “*Parameterized complexity of graph burning*,” Yasuaki Kobayashi and Yota Otachi prove that the Graph Burning problem is W[2]-complete under standard parameterization. They also explore parameterized complexity of the problem with respect to other structural parameters.

One of the invited papers remains in review at this writing. If accepted, it will appear in a later issue of the journal, and it will be added to the online collection.

We would like to express our gratitude to all reviewers for their hard work and the authors for their contribution. We would also like to thank Professor Ming-Yang Kao, Editor-in-Chief, and the editorial staff of the Journal Algorithmica, for the great support and help in preparing this special issue.

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