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# Feature Cluster: Recent Advances in Exact Methods for Multi-Objective Optimisation

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## 1. Editorial

The development of exact methods for multi-objective optimisation is experiencing increasing interest in the OR community as witnessed by the growing body of research emerging from that domain. Recent advances in the development of nonlinear, linear and mixed integer optimisation solvers push the boundaries towards more challenging areas. Hence solving to optimality larger, more difficult (real-world) problems involving several conflicting objectives, has been put within reach. Also, researchers previously working in single objective optimisation are increasingly contributing to the fast progress of the development of exact multi-objective optimisation algorithms. As guest editors we hope that this feature cluster increases the visibility of research concerning exact methods for multi-objective optimisation and to motivate a broader group of researchers to contribute to the field. It presents a collection of the latest research results on exact algorithms for multi-objective optimisation as well as heuristics derived from exact methods.

The call for contributions to the feature cluster solicited 34 submissions, eleven of which were accepted for publication following the stringent review procedures of the European Journal of Operational Research. These papers cover a wide spectrum of topics, from approximation algorithms and complexity theory to representation algorithms, branch and bound, and constraint propagation methods. The authors consider a wide range of problems with multiple objectives: linear, integer and combinatorial optimisation, continuous and (mixed) integer nonlinear optimisation problems all make their appearance, showcasing the breadth and depth of current research in multi-objective optimisation. We briefly summarise the contents of the feature cluster in this editorial.

Andreas Löhne and Benjamin Weißing describe the theoretical background of their open source

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