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PREFACE

Special issue of *Mathematical Programming, Series B,* dedicated to the international symposium on mathematical programming, Pittsburgh, July 2015

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This special issue of *Mathematical Programming, Series B,* is related to the 22nd International Symposium on Mathematical Programming (ISMP) which will take place in Pittsburgh from July 12 to July 17, 2015. As in previous symposia, ISMP 2015 will cover a broad range of topics in mathematical optimization. Fifteen keynote speakers will present plenary and semi-plenary lectures. This special issue of *Mathematical Programming, Series B,* offers a compilation of papers motivated by these lectures. The areas covered range from integer, nonlinear and stochastic programming to applications in machine learning, engineering, economics, routing, and the restoration of a transmission system after a natural disaster.

Several of the papers in this special issue are motivated by the new challenges that occur when working with large data sets. In nonlinear optimization, this is addressed by papers on coordinate descent algorithms, trust region algorithms, and an incremental Newton method. Non-convexities pose a special challenge. This difficulty is addressed in papers on copositive optimization, Boolean relaxations for learning problems, and symmetric tensor decomposition. Convexification is often an answer. This occurs in integer programming as well. Two contributions in this area discuss cut-generating functions and mathematical optimization with indicator constraints. How to deal with uncertainty is another enormous challenge. Contributions in this area go from a distributionally robust perspective and quasi-Monte Carlo methods in stochastic programming, to equilibrium routing under uncertainty.

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