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Preface

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Preface

This special issue contains contributions presented at the *11th International Conference on Parametric Optimization and Related Topics (paraoptxi)* that took place at the Charles University in Prague, Czech Republic, 19–22 September 2017 in honour of Jiří Outrata's 70th birthday. We are especially thankful to our distinguished invited plenary speakers at this conference:

- René Henrion (Weierstrass Institute for Applied Analysis and Stochastics, Berlin, Germany),
- Diethard Klatte (University of Zürich, Zürich, Switzerland)
- Michal Kočvara (The University of Birmingham, Birmingham, United Kingdom)
- Alexander Kruger (Federation University, Ballarat, Australia), and
- Boris Mordukhovich (Wayne State University, Detroit, USA).

This international conference series *Parametric Optimization and Related Topics* was founded in 1985 and, since then, took place in different places: the latter seven conferences were held in Enschede (1995), Tokyo (1997), Dubrovnik (1999), Puebla (2002), Cairo (2005), Cienfuegos (2007), and Karlsruhe (2010). We would like to mention the co-founders of this series: Jürgen Guddat (Humboldt University Berlin) and Hubertus Th. Jongen (RWTH Aachen University) who led and organized this series very successfully before their retirements a few years ago. Parametric optimization relates to many other parts of mathematical programming such as stochastic programming, complementarity problems, mixed-integer problems, model-building, numerical methods, multi-objective optimization and optimal control among others.

In the following we briefly characterize the contributions to this particular volume which cover a broad variety of important topics in parametric optimization.

The paper *Two-level value function approach to non-smooth optimistic and pessimistic bilevel programs* by Stephan Dempe, Boris S. Mordukhovich, and Alain B. Zemkoho extends existing results on optimality conditions in bilevel programming to the (more realistic) case with non-smooth data.

In their paper *A note on strict complementarity for the doubly non-negative cone* the authors Bolor Jargalsaikhan and Jan-J. Rückmann consider the closed convex cone obtained as the intersection of two cones. They provide conditions for its strict complementarity and present a corresponding numerical procedure.

M. J. Cánovas, J. A. J. Hall, M. A. López, and J. Parra develop in their contribution *Calmness of partially perturbed linear systems with an application to the central path* a point-based formula for the calmness modulus of the feasible set mapping for partially perturbed linear inequality systems.

The paper *Generalized sensitivity analysis of nonlinear programs using a sequence of quadratic programs* by Peter Stechliniski, Johannes Jäschke, and Paul I. Barton uses the technique of lexicographic directional derivatives in order to generalize known results from non-linear programming sensitivity analysis.

J.-P. Dussault, M. Haddou, and T. Migot propose in *Mathematical programs with vanishing constraints: constraint qualifications, their applications, and a new regularization method* a new family of relaxation schemes for problems with vanishing constraints where also a corresponding convergence result as well as a discussion on constraint qualifications are included.

In the note *On a Frank-Wolfe type theorem in cubic optimization* the author Diethard Klatte provides a stringent (all-gaps-filled) proof for a known extension of a classical result related to Frank and Wolfe. Moreover, related results for particular cases are discussed.

The article *On uniform regularity and strong regularity* by R. Cibulka, J. Preininger, and T. Roubal deals with uniform versions of (strong) metric regularity on compact subsets of Banach spaces. Corresponding applications to two classes of path-following methods (for a differential generalized equation and for feasibility in control) are studied.

Sjur Didrik Flåm presents in *Generalized gradients, bid-ask spreads, and market equilibrium* a discussion on economies where agents value goods by their own generalized gradients. A market equilibrium arises when the corresponding bid-ask spreads are nil. These results may facilitate the modelling of several properties of market micro structure.

The paper *MPCC: On necessary conditions for the strong stability of C-stationary points* by Daniel Hernández Escobar and Jan-J. Rückmann is concerned with a Mangasarian-Fromovitz-type constraint qualification for mathematical problems with complementarity constraints as well as two necessary conditions for the strong stability of a C-stationary point.

Felix Harder and Gerd Wachsmuth study in their contribution *Optimality conditions for a class of inverse optimal control problems with partial differential equations* a particular class of bilevel problems that are formulated as inverse problems. They show necessary optimality conditions as well as C-stationarity of local solutions.

In the paper *Range sets for weak efficiency in multiobjective linear programming and a parametric polytopes intersection problem* by Milan Hladík, Miroslav Rada, Sebastian Sitarz, and Elif Garajová an algorithm for determining the range set for a multiobjective linear problem is proposed; furthermore, corresponding lower and upper bound approximation techniques are investigated.

Milan Hladík proves in his paper *Tolerances, robustness and parametrization of matrix properties related to optimization problems* two classes of maximal allowable perturbations of the matrix data such that certain matrix properties remain fulfilled.


In *Whitney differentiability of optimal-value functions for bound-constrained convex programming problems* the author Kamil A. Khan extends some known results from sensitivity analysis; in particular, he shows that under certain conditions the optimal value function of a class of convex programmes is Whitney differentiable.

Finally, with pleasure we thank Christiane Tammer, Editor-in-Chief of this Journal *Optimization* as well as Elisabeth Anna Sophia Köbis for giving us the possibility to compose this special issue and for all the help we received from them. Our gratitude belongs to all authors and referees for their contributions to this volume.

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