PREFACE

It is a great pleasure for the guest editors to dedicate a special issue in the journal *Applied Set-Valued Analysis and Optimization* to recent developments in vector and set optimization as well as in variational analysis. The results presented in the papers of this special issue are derived by researchers from the Martin-Luther-University Halle-Wittenberg, Technical University Ilmenau, University Jena, University Erlangen-Nürnberg, and University Trondheim. The objective of this special issue is to present advances in different areas of optimization theory, recent results in variational analysis, and corresponding applications.

The aim of the paper *A Dai-Liao like residual algorithm for solving convex constrained nonlinear monotone equations and minimizing the ℓ_1 regularized problem* by Abubakar Bakoji Muhammad, Christiane Tammer, Aliyu Muhammed Awwal and Rosalind Elster is to propose a three-term derivative-free method for solving a nonlinear system of equations with convex constraints. By reformulating a ℓ_1 regularized problem into a nonlinear system of equations, the proposed method is applied to solve signal recovery and image deblurring problems.

In the paper *On Clarke's subdifferential of marginal functions* by Gemayqzel Bouza, Ernest Quintana and Christiane Tammer, an upper estimate of Clarke's subdifferential of marginal functions in Banach spaces is derived. The novelty of the results lies on the fact that the assertions are shown in general Banach spaces, and the use of the Asplund assumption is avoided.

Tobias Gerlach and Stefan Rocktäschel study different classes of convex and quasiconvex set-valued maps defined by means of the ℓ-less relation and the u-less relation and formulate necessary and especially sufficient conditions for the convexity/quasiconvexity of extremal value functions in their paper *On convexity and quasiconvexity of extremal value functions in set optimization*.

Stefan Hamann shows necessary and sufficient conditions for weak sharp minima of convex composite functions, where the latter requires neither the (lower semi-)continuity of the convex function nor the restriction on Banach spaces in his paper *Minimality conditions for convex composite functions and an application in vector optimization*. An application to vector optimization in connection with the notion of super efficiency is given.

In the paper *Continuity of maximal value functionals in normed spaces* by Johannes Jahn, special maximal value functionals are studied, which are extended support functionals where the objective is linear but the constraint set is nonconvex.

The paper *Characterizing the upper set relation by general functionals* by Elisabeth Köbis and Markus A. Köbis is devoted to the investigation of a general scalarization concept for solving set-valued optimization problems where the pre-order is induced by the upper set-less relation as introduced by Kuroiwa. The scalarization functionals are not given explicitly, but are rather general functions that satisfy certain properties such as monotonicity, separation, transitivity, translation invariance, and transfer of inclusion.

In the paper *On the approximation error for approximating convex bodies using multiobjective optimization* by Andreas Löhne, Fangyuan Zhao and Lizhen Shao, a polyhedral approximation of a convex body is calculated by solving approximately an associated multiobjective convex program by Benson type algorithms.

Marcel Marohn and Christiane Tammer discuss properties of certain risk measures associated with acceptance sets in their paper *A new view on risk measures associated with acceptance sets*. Especially, they study properties of the sublevel sets, strict sublevel sets and level lines of a risk measure defined on a linear space. Furthermore, the finiteness of the risk measure is discussed and the closedness assumptions are relaxed.

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Christian Günther

Martin Luther University Halle-Wittenberg, Halle, Germany

E-mail address: christian.guenther@mathematik.uni-halle.de

Rosalind Elster

Halle (Saale), Germany

E-mail address: r.elster@t-online.de

Christiane Tammer

Martin Luther University Halle-Wittenberg, Halle, Germany

E-mail address: christiane.tammer@mathematik.uni-halle.de