

The role of nonlinear scalarization functions in characterizing generalized convex vector functions

Christian Günther *

Abstract

The aim of this talk is to present characterizations of cone-convex and explicitly cone-quasiconvex vector functions with respect to a proper closed solid convex cone of a real linear topological space. These characterizations are given in terms of classical convexity and explicit quasiconvexity of certain real-valued functions, defined by composing the vector-valued function with the nonlinear scalarization function introduced by Gerstewitz (Tammer) in 1983.

This talk is based on joint works with Nicolae Popovici.

References

- [1] BAGDASAR O. & POPOVICI N., Unifying local-global type properties in vector optimization, *J. Global Optim.* **72**: 155 – 179, 2018.
- [2] GERSTEWITZ C. Nichtkonvexe Dualität in der Vektoroptimierung, *Wiss. Zeitschrift Tech. Hochsch. Leuna-Merseburg* **25**: 357 – 364, 1983.
- [3] GÜNTHER C. & POPOVICI N., Characterizations of explicitly quasiconvex vector functions w.r.t. polyhedral cones, *J. Nonlinear Convex Anal.* **20**: 2653 – 2665, 2019.
- [4] GÜNTHER C. & POPOVICI N., The role of nonlinear scalarization functions in characterizing generalized convex vector functions, *J. Appl. Numer. Optim.* **1** (3): 325 – 333, 2019.
- [5] POPOVICI N., Explicitly quasiconvex set-valued optimization, *J. Global Optim.* **38**: 103 – 118, 2007.

*Martin-Luther-University Halle-Wittenberg, Institute of Mathematics & Institute of Informatics, D-06099 Halle (Saale), Germany, christian.guenther@mathematik.uni-halle.de