ICRAMCS 2026

THE EIGHTH EDITION OF THE INTERNATIONAL CONFERENCE ON RESEARCH IN APPLIED MATHEMATICS AND COMPUTER SCIENCE
April 23-24-25, 2026 | Marrakech, Morocco

Quasi-Relative ϕ-Sharp Minima in Set-Valued Optimization: Existence Results and Applications

Communication Info

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Keywords:
(1) Set-valued optimization;
(2) Quasi-relative interior;
(3) Quasi-relative sharp minimizers;
(4) Existence theorems

Abstract

This talk develops a new approach to sharp minima in set-valued optimization (see [4]). We introduce a class of minimizers—called *quasi-relative φ-sharp minimizers*—defined via the nonempty quasi-relative interior of a convex ordering cone. Within this framework, we establish several existence results guaranteeing the presence of such minimizers.

Our contributions substantially extend both classical and recent results. In particular, we broaden Zălinescu's [5] existence-and-uniqueness theorem for uniformly convex real-valued functions to the setting of vector-valued and set-valued mappings. Moreover, we generalize earlier results of [1] to cases where the ordering cone may have an empty pseudo-relative interior and where the set-valued objective mapping is not necessarily cone-uniformly convex. We also provide verifiable existence criteria for relative Pareto minimizers in the sense of Bao and Mordukhovich [2]. Finally, we present several examples to illustrate the applicability of our results and to highlight the improvements over related work.

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