

On the existence of Pareto solutions for vector optimization problems

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Abstract:

In this talk, we present some new results on the existence of Pareto solutions of the following vector optimization problem

$$\text{Min}_{\mathbb{R}_+^m} \{f(x) \mid x \in \Omega\}, \quad (\text{VP})$$

where

$$\Omega := \{x \in \mathbb{R}^n \mid g_1(x) \leq 0, \dots, g_p(x) \leq 0\},$$

$f := (f_1, \dots, f_m): \mathbb{R}^n \rightarrow \mathbb{R}^m$ and $g := (g_1, \dots, g_p): \mathbb{R}^n \rightarrow \mathbb{R}^p$ are two continuous differentiable vector-valued functions. We first establish connections between the Palais–Smale conditions, M -tameness, and properness for the map f . Based on these results, we provide some sufficient conditions for the existence of Pareto solutions of the problem.

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