

论文

向量极值问题的本质弱有效解

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摘要 向量极值问题(多目标最优化问题)的稳定性研究,几年来已有一些工作。本文从不同的角度来讨论此类问题。我们视满足一定条件的向量极值问题全体为一距离空间,将每个向量极值问题与其全体弱有效解的集合之间的对应关系视为集合值映象(多值映...

关键词

分类号

ESSENTIAL WEAK EFFICIENT SOLUTIONS FOR VECTOR MAXIMIZATION PROBLEMS

CHEN GUANGYA

Abstract This paper deals with a problem about the stability of the vector maximization. A topological structure is introduced to make the family of vector maximization problems a complete metric space. Then the essential weak efficient solution is defined and the vector maximization problems with all their weak efficient solutions being essential are proved to be everywhere dense in the space. Let (X, d) be a totally bounded complete metric space, R^m an m -dimensional Euclidean space, and S an open convex cone. We denote by C a complete metric space of all nonempty compact subsets of X with Hausdorff's metric function h . We denote by P a vector maximization problem where f is a bounded continuous function from X into R^m , $R \in S$. We denote by $M(p)$ all weak efficient solutions of $p \in P$. Definition. $x \in M(p)$ is an essential weak efficient solution of p , if corresponding to $\varepsilon > 0$ there exists $\delta > 0$ such that $x \in V(\varepsilon, M(g))$ whenever $g \in P$ and $h(p, g) < \delta$. The main results: Lemma 3. The multivalued mapping M is upper semicontinuous on P . Theorem 1. All weak efficient solutions of $p \in P$ are essential weak efficient solutions if and only if p is a point of continuity of M . Theorem 2. For every $p \in P$ and an arbitrary $\varepsilon > 0$, there exists $g \in P$ such that $h(p, g) < \varepsilon$ and that every weak efficient solution of g is an essential weak efficient solution. In other words, the set of all points of continuity of the mapping M is everywhere dense in P . Theorem 3. If the vector maximization problem p has a single weak efficient solution, then this solution is an essential weak efficient solution.

Key words

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