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Existence of Solutions to Generalized Vector Quasi-Equilibrium Problems with Discontinuous Mappings

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摘要   Let X,Y be two finite-dimensional topological vector spaces, Z a Hausdorff topological vector space, $K\subset X$ and $D\subset Z$ be two nonempty sets, C be a pointed, closed, and convex cone in Y with ${\rm int}\, C\ne \emptyset$. Let $S:K\to 2^K$ and $T:K\to 2^D$ be two multivalued mappings, and $\varphi:K\times D\times K\to Y$ be a trifunction. In this paper, we consider the generalized vector quasi-equilibrium problem, which is formulated by finding $\hat x\in K$ and $\hat y\in T(\hat x)$ such that $\hat x\in S(\hat x)$ and $\varphi(\hat x,\hat y, u)\notin -{\rm int}\, C$ for all $u\in S(\hat x)$. We establish an existence result in which T is not supposed to have any continuity property. Our results extend and improve the corresponding results of Cubiotti, Yao and Guo.

关键词   Generalized vector quasi-equilibrium problem   Upper semi-continuity   Lower semi-contin-uity   Fixed point   Existence

分类号   49J40

Existence of Solutions to Generalized Vector Quasi-Equilibrium Problems with Discontinuous Mappings

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Abstract Let X,Y be two finite-dimensional topological vector spaces, Z a Hausdorff topological vector space, $K\subset X$ and $D\subset Z$ be two nonempty sets, C be a pointed, closed, and convex cone in Y with ${\rm int}\, C\ne \emptyset$. Let $S:K\to 2^K$ and $T:K\to 2^D$ be two multivalued mappings, and $\varphi:K\times D\times K\to Y$ be a trifunction. In this paper, we consider the generalized vector quasi-equilibrium problem, which is formulated by finding $\hat x\in K$ and $\hat y\in T(\hat x)$ such that $\hat x\in S(\hat x)$ and $\varphi(\hat x,\hat y, u)\notin -{\rm int}\, C$ for all $u\in S(\hat x)$. We establish an existence result in which T is not supposed to have any continuity property. Our results extend and improve the corresponding results of Cubiotti, Yao and Guo.

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