

Continuity and Lipschitz properties of convex vector functions

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Abstract

Let Y be a normed space with closed unit ball $B(Y)$. Suppose that Y is ordered by a cone C . A subset Z of Y is called C -bounded from above (below) if Z is contained in $bB(Y) - C$ (resp. in $bB(Y) + C$) for some $b > 0$.

These notions were considered in a paper by Tuan, Tammer and Zălinescu, *Top*, vol. 24 (2016), 273–299, where, supposing the cone C normal, continuity and Lipschitz properties for locally C -bounded from above C -convex functions $f : X \rightarrow Y$, X being another normed space, were proved.

In the present paper one extends these results to the locally convex case. The approach is different, the key tools being the Minkowski functional of an absorbing absolutely convex and order-convex subset of Y and an inequality it satisfies.