© 2004 Heldermann Verlag

Journal of Convex Analysis 11 (2004) 081–094

A. L. Dontchev:

A Local Selection Theorem for Metrically Regular Mappings

We prove the following extension of a classical theorem due to Bartle and Graves. Let a set-valued mapping $F : X \rightrightarrows Y$, where X and Y are Banach spaces, be metrically regular at $\bar{x}$ for $\bar{y}$ and with the property that the mapping whose graph is the restriction of the graph of the inverse F^{-1} to a neighborhood of $(\bar{y}, \bar{x})$ is convex and closed valued. Then for any function $G : X \to Y$ with $\operatorname{lip} G(\bar{x}) \cdot \operatorname{reg} F(\bar{x} \,|\, \bar{y})) < 1$, the mapping $(F+G)^{-1}$ has a continuous local selection $x(\cdot)$ around $(\bar{y} + G(\bar{x}), \bar{x})$ which is also calm.

Keywords: set-valued mapping, metric regularity, continuous selection, Bartle-Graves theorem.

MSC 2000: 49J53, 47H04, 54C65.