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Smooth Selections of Convex-Valued Multifunctions

We establish a class of multifunctions having smooth (C^∞) selections and formulate assumptions on a multifunction F under which for any continuous selection f of F there is a sequence of smooth selections of F converging uniformly to f. Moreover, we obtain a Castaing type representation of multifunctions by a sequence of smooth selections, i.e. we construct a sequence $\{f_k\}$ of smooth selections of F satisfying the condition $F(x) = \overline{\cup_{k \geq 1} f_k(x)}$ for all $x \in X$.

Keywords: Lower semicontinuous multifunction, smooth selection, uniform convergence, approximation, convolution, Castaing representation.

MSC: 26E25, 54C60, 54C65

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