A convex valued selection theorem with a non separable Banach space

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In the spirit of Michael selection theorem (Theorem 3.1‴, [**?**]), we consider a nonempty convex valued lower semicontinuous correspondence $\varphi : X \to 2^Y$. We prove that if φ has either closed or finite dimensional images, then there admits a continuous single valued selection, where X is a metric space and Y is a Banach space. We provide a geometric and constructive proof of our main result based on the concept of peeling introduced in this paper.

Références

[1] Bourbaki. N, *Eléments de Mathématiques: Topologie générale*, Springer Science & Business Media, 2007.

[2] Florenzano.M and Le Van. C, *Finite Dimensional convexity and optimization*, Springer, Heidelberg 2001.

[3] Florenzano. M, *General Equilibrium Analysis*, Springer, 2003.

[4] J. Dugundji and A. Granas, Fixed point Theory, Monogor. Math., vol. 61, PWN, Warsaw, 1982.

[5] Michael.E, *Continuous selections I*, Ann. of Math. (2) 63 (1956), 361-382.

[6] Michael.E, *Continuous selections II*, Ann. of Math. (2) 64 (1956), 562-580.

[7] Michael.E, *Continuous selections III*, Ann. of Math. (2) 65 (1957), 375-390.

[8] Repovs. D and Semenov. P.V, *Continuous selections of multivalued mappings*, Recent Progress in General Topology II (M. Husek and J. van Mill, Editors), Elsevier, Amsterdam, 2002, pp. 423-461.

[9] Repovs. D and Semenov.P.V, *Ernest Michael and theory of continuous selections.* Topology Appl. 155 (2008) 755-763.

[10] N. Makala, Normality-like Properties, Paraconvexity and Selections, 2102, manuscript.

[11] K.Tan and X.Yuan, *Lower semicontinuity of multivalued mappings and equilibrium points*, Proceedings of the first world congress on World congress of nonlinear analysts 1992, volume II