

A TOPOLOGICAL PROPERTY OF THE COMMON FIXED POINTS SET OF TWO MULTIVALUED OPERATORS SATISFYING A LATIF-BEG TYPE CONDITION

ALINA SÎNTĂMĂRIAN

Department of Mathematics, Technical University of Cluj-Napoca,

Str. C. Daicoviciu Nr. 15, 400020 Cluj-Napoca, Romania

E-mail: Alina.Sintamarian@math.utcluj.ro

Abstract. Let X be a nonempty, closed and convex subset of a Banach space. We prove that the common fixed points set of two lower semicontinuous multivalued operators defined on X with values in the set of all nonempty, closed and convex subsets of X , which satisfy a contraction type condition of Latif-Beg type, is an absolute retract for paracompact spaces. We also present a result regarding the common fixed points set for two multivalued operators satisfying a Latif-Beg type condition, using the notion of selection property.

Key Words and Phrases: multivalued operator, fixed point, common fixed point, absolute retract, selection property.

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REFERENCES

- [1] M.-C. Alicu, O. Mark, *Some properties of the fixed points set for multifunctions*, Studia Univ. Babeş-Bolyai, Mathematica, **25** (4) (1980), 77-79.
- [2] J.-P. Aubin, A. Cellina, *Differential Inclusions. Set-Valued Maps and Viability Theory*, Springer-Verlag, Berlin, 1984.
- [3] K. Borsuk, *Theory of Retracts*, PWN - Polish Scientific Publishers, Warsaw, 1967.
- [4] A. Bressan, A. Cellina, A. Fryszkowski, *A class of absolute retracts in spaces of integrable functions*, Proc. Am. Math. Soc., **112** (2) (1991), 413-418.
- [5] L. Górniewicz, S. A. Marano, M. Ślosarski, *Fixed points of contractive multivalued maps*, Proc. Am. Math. Soc., **124** (9) (1996), 2675-2683.
- [6] A. Latif, I. Beg, *Geometric fixed points for single and multivalued mappings*, Demonstratio Math., **30** (4) (1997), 791-800.
- [7] E. Michael, *Continuous selections I*, Ann. Math., **63** (2) (1956), 361-382.
- [8] A. Petruşel, *Operatorial Inclusions*, House of the Book of Science, Cluj-Napoca, 2002.

- [9] B. Ricceri, *Une propriété topologique de l'ensemble des points fixes d'une contraction multivoque à valeurs convexes*, Atti Acc. Lincei Rend., **81** (8) (1987), 283-286.
- [10] H. Schirmer, *Properties of the fixed point set of contractive multi-functions*, Canad. Math. Bull., **13** (2) (1970), 169-173.
- [11] A. Sîntămărian, *Common fixed point theorems for multivalued mappings*, Seminar on Fixed Point Theory Cluj-Napoca, **1** (2000), 93-102.
- [12] A. Sîntămărian, *Fixed points and common fixed points for some multivalued operators*, Fixed Point Theory, **5** (1) (2004), 137-145.
- [13] A. Sîntămărian, *A topological property of the common fixed points set of two multivalued operators*, Nonlinear Analysis - Theory, Methods & Applications (accepted).

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