

SELECTIONS AND COMMON FIXED POINTS FOR SOME MULTIVALUED MAPPINGS

ALINA ȘÎNTĂMĂRIAN

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. We prove that a multivalued operator which satisfies a contraction type condition of Latif-Beg type has a selection which is a Caristi type operator. Another purpose of this paper is to give a common fixed point theorem for two multivalued mappings defined on a closed ball of a complete metric space with values in the set of all nonempty and closed subsets of this space, mappings which satisfy a contraction type condition of Latif-Beg type.

Key Words and Phrases: Multivalued mapping, selection, fixed point, common fixed point.

2000 Mathematics Subject Classification: 47H04, 47H10, 54H25.

REFERENCES

- [1] R. P. Agarwal, D. O'Regan, *Fixed point theory for acyclic maps between topological vector spaces having sufficiently many linear functionals, and generalized contractive maps with closed values between complete metric spaces*, R. P. Agarwal (ed.) et al., Set valued mappings with applications in nonlinear analysis, Taylor & Francis, London, Ser. Math. Anal. Appl., **4**(2002), 17-26.
- [2] J. Caristi, *Fixed point theorems for mappings satisfying inwardness conditions*, Trans. Am. Math. Soc., **215**(1976), 241-251.
- [3] Lj. B. Ćirić, *Some Recent Results in Metrical Fixed Point Theory*, C-Print, Belgrade, 2003.
- [4] J. Dugundji, A. Granas, *Fixed Point Theory*, Polish Scientific Publishers, Warszawa, 1982.
- [5] M. Frigon, A. Granas, *Résultats du type de Leray-Schauder pour des contractions multivoques*, Topol. Methods Nonlinear Anal., **4**(1994), 197-208.

- [6] J. R. Jachymski, *Caristi's fixed point theorem and selections of set-valued contractions*, J. Math. Anal. Appl., **227**(1998), 55-67.
- [7] A. Latif, I. Beg, *Geometric fixed points for single and multivalued mappings*, Demonstratio Math., **30**(1997), 791-800.
- [8] A. Petruşel, *Operatorial Inclusions*, House of the Book of Science, Cluj-Napoca, 2002.
- [9] A. Petruşel, *On Frigon-Granas type multifunctions*, Nonlinear Anal. Forum, **7**(2002), 113-121.
- [10] A. Petruşel, *Multivalued weakly Picard operators and applications*, Sci. Math. Jpn., **59**(2004), 169-202.
- [11] A. Petruşel, A. Sîntămărian, *On Caristi-type operators*, Proceedings of the "Tiberiu Popoviciu" Itinerant Seminar of Functional Equations, Approximation and Convexity, Cluj-Napoca, Romania, 22-26 May 2001, Editura Srima, Cluj-Napoca, 2001, 181-190.
- [12] A. Petruşel, A. Sîntămărian, *Single-valued and multi-valued Caristi type operators*, Publ. Math. Debrecen, **60**(2002), 167-177.
- [13] I. A. Rus, *Generalized Contractions and Applications*, Cluj University Press, Cluj-Napoca, 2001.
- [14] I. A. Rus, A. Petruşel, A. Sîntămărian, *Data dependence of the fixed point set of some multivalued weakly Picard operators*, Nonlinear Anal., Theory Meth. Appl., **52**(2003), 1947-1959.
- [15] A. Sîntămărian, *Common fixed point theorems for multivalued mappings*, Semin. Fixed Point Theory Cluj-Napoca, **1**(2000), 93-102.
- [16] A. Sîntămărian, *Selections and common fixed points for some generalized multivalued contractions*, Demonstratio Math., **30**(2006), 609-617.

Received 14.02.2006; Revised 23.03.2006.