

A GENERAL SELECTION THEOREM FOR MULTIVALUED FUNCTIONS SATISFYING AN IMPLICIT RELATION

VALERIU POPA

Department of Mathematics, University of Bacău
Strada Spiru Haret Nr. 8, 600114 Bacău Romania
E-mail: vpopa@ub.ro

Abstract. J.R. Jachymski [?] initiated the study of Caristi selection. Some generalizations of J.R. Jachymski result are proved in [?], [?], [?]. In this paper a general selection theorem for multivalued functions satisfying an implicit relation which generalizes the results by [?], [?] and [?] is proved.

Key Words and Phrases: Multivalued function, selection, Caristi mapping, implicit relation.

2000 Mathematics Subject Classification: 47H10, 54H25.

REFERENCES

- [1] J. Caristi, *Fixed point theorems for mappings satisfying inwardness conditions*, Trans. Amer. Math. Soc., **215**(1976), 243-251.
- [2] L. van Hot, *Fixed point theorems for multivalued mappings*, C.M.U.C., **23**(1982), 137-145.
- [3] J.R. Jachymski, *Caristi's fixed points theorem and selection of set-valued contractions*, J. Math. Anal. Appl., **227**(1998), 55-67.
- [4] M. Maschler, B. Pelag, *Stable sets and stable points of set-valued dynamic systems with applications to game theory*, SIAM J. Control Optimizations, **14**(1976), 985-995.
- [5] N. Mizoguchi, W. Takahashi, *Fixed point theorems for multivalued mappings in complete metric spaces*, J. Math. Anal. Appl., **141**(1989), 177-188.
- [6] V. Popa, *Fixed point theorems for implicit contractive mappings*, Stud. Cerc. St. Ser. Matem. Univ. Bacău, **7**(1997), 127-133.
- [7] V. Popa, *Some fixed point theorems for compatible mappings satisfying an implicit relation*, Demonstratio Math., **32**(1999), 157-163.

- [8] A. Petruşel, *Caristi type operators and applications*, Studia Univ. Babeş-Bolyai, Mathematica, **48**(2003), 115-123.
- [9] A. Petruşel, A. Sîntămărian, *Single-valued and multi-valued Caristi type operators*, Publ. Math. Debrecen, **60**(2002), 167-177.
- [10] A. Petruşel, G. Petruşel, *Selection theorems for multivalued generalized contractions*, Math. Moravica, **9**(2005), 43-52.
- [11] A. Sîntămărian, *Selections and common fixed points for some generalized multivalued contractions*, Demonstratio Math., **39**(2006) , 609-617.

Received: January 30, 2007; Accepted: June 30, 2007.