CARISTI'S TYPE MAPPINGS ON COMPLETE PARTIAL METRIC SPACES

ÖZLEM ACAR*, ISHAK ALTUN** AND SALVADOR ROMAGUERA***

*Department of Mathematics, Faculty of Science and Arts, Kirikkale University, 71450 Yahsihan, Kirikkale, Turkey
E-mail: acarozlem@ymail.com

**Department of Mathematics, Faculty of Science and Arts, Kirikkale University, 71450 Yahsihan, Kirikkale, Turkey
E-mail: ishakaltun@yahoo.com

***Instituto Universitario de Matemática Pura y Aplicada, Universitat Politècnica de València, Camino de Vera s/n, 46022 Valencia, Spain
E-mail: sromague@mat.upv.es

Abstract. We introduce a new type of Caristi's mapping on partial metric spaces and show that a partial metric space is complete if and only if every Caristi mapping has a fixed point. From this result we deduce a characterization of bicomplete weightable quasi-metric spaces. Several illustrative examples are given.
Key Words and Phrases: Fixed point, complete partial metric space, Caristi's type mapping.
2010 Mathematics Subject Classification: 54H25, 54E55, 47H10.

REFERENCES

[1] M. Ali-Akbari, B. Honari, M. Pourmahdian, M.M. Rezaii, *The space of formal balls and models of quasi-metric spaces*, Mathematical Structures in Computer Science, **19**(2009), 337-355.

[2] I. Altun, A. Erduran, *Fixed point theorems for monotone mappings on partial metric spaces*, Fixed Point Theory Appl., **2011** (2011), Article ID 508730, 10 pp.

[3] I. Altun, F. Sola, H. Simsek, *Generalized contractions on partial metric spaces*, Topology Appl., **157**(2010), 2778-2785.

[4] J. Caristi, *Fixed point theorems for mapping satisfying inwardness conditions*, Trans. Amer. Math. Soc., **215**(1976), 241-251.

[5] L. Ćirić, *Periodic and fixed point theorems in a quasi-metric space*, J. Austral. Math. Soc. Ser. A, **54**(1993), 8085.

[6] S. Cobzaş, *Completeness in quasi-metric spaces and Ekeland variational principle*, Topology Appl., **158**(2011), 1073-1084.

[7] M.H. Escardo, *PCF extended with real numbers*, Theoretical Computer Sciences, **162**(1996), 79-115.

[8] R. Heckmann, *Approximation of metric spaces by partial metric spaces*, Appl. Categ. Structures, **7**(1999), 71-83.

[9] T.L. Hicks, *Fixed point theorems for quasi-metric spaces*, Math. Japon., **33**(1988), 231-236.

[10] D. Ilic, V. Pavlovic, V. Rakocevic, *Some new extensions of Banach's contraction principle to partial metric space*, Appl. Math. Lett., **24**(2011), 1326-1330.

[11] E. Karapinar, *Generalizations of Caristi Kirk's theorem on partial metric spaces*, Fixed Point Theory Appl., 2011, 2011:4.

[12] W.A. Kirk, *Caristi's fixed point theorem and metric convexity*, Colloquium Math., **36**(1976), 81-86.

[13] S.G. Matthews, *Partial metric topology*, Proc. 8th Summer Conference on General Topology and Applications, Ann. New York Acad. Sci., **728**(1994), 183-197.

[14] S. Oltra, S. Romaguera, E.A. Sánchez-Pérez, *Bicompleting weightable quasi-metric spaces and partial metric spaces*, Rend. Circolo Mat. Palermo, **51**(2002), 151-162.

[15] S. Oltra, O. Valero, *Banach's fixed point theorem for partial metric spaces*, Rend. Istid. Math. Univ. Trieste, **36**(2004), 17-26.

[16] S. Romaguera, *A Kirk type characterization of completeness for partial metric spaces*, Fixed Point Theory Appl., **2010**(2010), Article ID 493298, 6 pp.

[17] S. Romaguera, O. Valero, *A quantitative computational model for complete partial metric spaces via formal balls*, Mathematical Structures in Computer Science, **19**(2009), 541-563.

[18] M.P. Schellekens, *A characterization of partial metrizability. Domains are quantifiable*, Theoretical Computer Science, **305**(2003), 409-432.

[19] O. Valero, *On Banach fixed point theorems for partial metric spaces*, Appl. General Topology, **6**(2005), 229-240.

[20] P. Waszkiewicz, *Partial metrisability of continuous posets*, Mathematical Structures in Computer Science, **16**(2006), 359-372.