

A CARISTI FIXED POINT THEOREM FOR COMPLETE QUASI-METRIC SPACES BY USING mw -DISTANCES

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Abstract. In this paper we give a quasi-metric version of Caristi's fixed point theorem by using mw -distances. Our theorem generalizes a recent result obtained by Karapinar and Romaguera in [7].

Key Words and Phrases: fixed point, w -distance, mw -distance, quasi-metric, complete quasi-metric space, Caristi's fixed point theorem.

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REFERENCES

- [1] C. Alegre, J. Marín, *Modified w -distances on quasi-metric spaces and a fixed point theorem on complete quasi-metric spaces*, Topology and its Appl., **203**(2016), 32-41.
- [2] C. Alegre, J. Marín, S. Romaguera, *A fixed point theorem for generalized contractions involving to w -distances on complete quasi-metric spaces*, Fixed Point Theory Appl., **40**(2014), 1-8.
- [3] J. Caristi, *Fixed point theorems for mappings satisfying inwardness conditions*, Trans. Amer. Math. Soc., **215**(1976), 241-251.
- [4] S. Cobzas, *Functional Analysis in Asymmetric Normed Spaces*, Birkhäuser, Springer Basel, 2013.
- [5] I. Ekeland, *On the variational principle*, J. Math. Soc., **1**(1979), 443-474.
- [6] O. Kada, T. Suzuki, W. Takahashi, *Nonconvex minimization theorems and fixed point theorems in complete metric spaces*, Math. Japonica, **44**(1996), 381-391.
- [7] E. Karapinar, S. Romaguera, *On the weak form of Ekeland's Variational Principle in quasi-metric spaces*, Topology and its Appl., **184**(2015), 54-60.
- [8] J. Marín, S. Romaguera, P. Tirado, *Weakly contractive multivalued maps and w -distances on complete quasi-metric spaces*, Fixed Point Theory Appl., **2**(2011), 1-9.
- [9] J. Marín, S. Romaguera, P. Tirado, *Generalized contractive set-valued maps on complete pre-ordered quasi-metric spaces*, J. Functions Spaces Appl., 2013, Article ID 269246 (2013), 6 pages.
- [10] S. Park, *On generalizations of the Ekeland-type variational principles*, Nonlinear Anal., **39**(2000), 881-889.

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