# FIXED POINT THEOREMS FOR CYCLIC $\varphi$-CONTRACTIONS IN ORDERED METRIC SPACES

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**Abstract.** The purpose of this paper is to present some fixed point results for cyclic $\varphi$-contractions in a complete metric space endowed with a partial order.
**Key Words and Phrases**: Fixed point, ordered metric space, cyclic $\varphi$-contraction.
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## REFERENCES

[1] W.A. Kirk, P.S. Srinivasan, P. Veeramani, *Fixed points for mappings satisfying cyclical contractive conditions*, Fixed Point Theory, **4**(2003), 79-89.

[2] I.A. Rus, *Cyclic representations and fixed points*, Ann. T. Popoviciu Seminar Funct. Eq. Approx. Convexity, **3**(2005), 171-178.

[3] M. Pacurar, I.A. Rus, *Fixed point theory for cyclic $\varphi$-contractions*, Nonlinear Anal., **72**(2010), 1181-1187.

[4] V. Berinde, *Approximating fixed points of weak $\varphi$-contractions using the Picard iteration*, Fixed Point Theory, **4**(2003), 131-142.

[5] A.C.M. Ran, M.C.B. Reurings, *A fixed point theorem in partially ordered sets and some applications to matrix equations*, Proc. Amer. Math. Soc., **132**(2004), 1435-1443.

[6] J.J. Nieto, R. Rodríguez-López, *Contractive mapping theorems in partially ordered sets and applications to ordinary differential equations*, Order, **22**(2005), 223-239.

[7] J.J. Nieto, R. Rodríguez-López, *Existence and uniqueness of fixed point in partially ordered sets and applications to ordinary differential equations*, Acta Math. Sinica, **23**(2007), 2205-2212.

[8] D. O'Regan, A. Petruşel, *Fixed point theorems for generalized contractions in ordered metric spaces*, J. Math. Anal. Appl., **341**(2008), 1241-1252.

[9] T. Gnama Bhaskar, V. Lakshmikantham, *Fixed point theorems in partially ordered metric spaces and applications*, Nonlinear Anal., **65**(2006), 1379-1393.

[10] R.P. Agarwal, M.A. Gebeily, D. O'Regan, *Generalized contractions in partially ordered metric spaces*, Appl. Anal., **87**(2008), 109-116.

[11] V. Lakshmikantham, L. Ciric, *Coupled fixed point theorems for nonlinear contractions in partially ordered metric spaces*, Nonlinear Anal., **70**(2009), 4341-4349.

[12] J. Harjani, K. Sadarangani, *Fixed point theorems for weakly contractive mappings in partially ordered sets*, Nonlinear Anal., **71**(2009), 3403-3410.

[13] I. Altun, H. Simsek, *Some fixed point theorems on ordered metric spaces and application*, Fixed Point Theory Appl., (2010) Article ID 621469.

[14] J. Harjani, B. López, K. Sadarangani, *Fixed point theorems for weakly C-contractive mappings in ordered metric spaces*, Comput. Math. Appl., **61**(2011), 790-796.

[15] A. Cabada, J.J. Nieto, *Fixed points and approximate solutions for nonlinear operator equations*, J. Comput. Appl. Math., **113**(2000), 17-25.