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COMMON FIXED POINT THEOREMS IN CONE BANACH SPACES

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Abstract

Recently, E. Karapınar (*Fixed Point Theorems in Cone Banach Spaces*, Fixed Point Theory Applications, Article ID 609281, 9 pages, 2009) presented some fixed point theorems for self-mappings satisfying certain contraction principles on a cone Banach space. Here we will give some generalizations of this theorem.

Keywords: Cone normed spaces, Fixed point theory.

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1. Introduction and Preliminaries

It is quite natural to consider generalization of the notion of metric $d : X \times X \to [0, \infty)$. The question was, what must $[0, \infty)$ be replaced by. In 1980 Bogdan Rzepecki [17], in 1987 Shy-Der Lin [14] and in 2007 Huang and Zhang [5] gave the same answer: Replace the real numbers with a Banach space ordered by a cone, resulting in the so called cone metric. In this setting, Bogdan Rzepecki [17] generalized the fixed point theorems of Maia type [15] and Shy-Der Lin [14] considered some results of Khan and Imdad [13]. Also, Huang and Zhang [5] discussed some properties of convergence of sequences and proved a fixed point theorem of contractive mapping for cone metric spaces: Any mapping T of a complete cone metric space X into itself that satisfies, for some $0 \leq k < 1$, the inequality $d(Tx, Ty) \leq kd(x, y)$ for all $x, y \in X$, has a unique fixed point.

Following Huang and Zhang [5], many results on fixed point theorems have been extended from metric spaces to cone metric spaces (see e.g. [1, 2, 3, 5, 7, 8, 9, 10, 11, 12, 16, 18, 19, 20]).

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