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FIXED POINT FOR COMPATIBLE MAPPINGS OF TYPE (γ) IN COMPLETE FUZZY METRIC SPACES

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Abstract

In this work, we prove common fixed point theorems satisfying some conditions in fuzzy metric spaces in the sense of Sedghi, Turkoglu and Shobe [16]. Our main theorems extend, generalize and improvement some known results in fuzzy metric spaces, in particular produce a general style for prove common fixed point theorems.

Keywords: Compatible map of type (γ) , Complete fuzzy metric space, .
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1 Introduction and Preliminaries

The concept of fuzzy sets was introduced initially by Zadeh [10] in 1965. Since then, to use this concept in topology and analysis many authors have expansively developed the theory of fuzzy sets and application. George and Veeramani [3] and Kramosil and Michalek [5] have introduced the concept of fuzzy topological spaces induced by fuzzy metric which have very important applications in quantum particle physics particularly in connections with both string and ε^{∞} theory which were given and studied by El Naschie [2]. Many authors have proved fixed point theorem in fuzzy (probabilistic) metric spaces.

Definition 1.1. A binary operation $* : [0,1] \times [0,1] \longrightarrow [0,1]$ is a continuous t-norm if it satisfies the following conditions

1. $*$ is associative and commutative,
2. $*$ is continuous,
3. $a * 1 = a$ for all $a \in [0,1]$,
4. $a * b \leq c * d$ whenever $a \leq c$ and $b \leq d$ for each $a, b, c, d \in [0,1]$.

Definition 1.2. A 3-tuple $(X, M, *)$ is called a fuzzy metric space if X $(non - empty)$ set, $*$ is a continuous t-norm and M is a fuzzy set on $X^2 \times (0, \infty)$ satisfying the following conditions: for all $x, y, z \in X$ and $t, s > 0$,

1. $M(x, y, t) > 0$,

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