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COUPLED COINCIDENCE POINT THEOREMS OF MAPPINGS IN PARTIALLY ORDERED METRIC SPACES

E. PRAJISHA †,* AND P. SHAINI †

† Department of Mathematics, Central University of Kerala, Kasaragod, India.

ABSTRACT. In this paper, we introduce a new generalized weakly contractive condition involving expressions of Kannan type contraction and establish coupled coincidence point and coupled common fixed point theorems of a pair of mappings satisfying the new contractive condition.

KEYWORDS: Coupled coincidence point; Coupled common fixed point; Mixed g- monotone property; Partially ordered set.
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1. Introduction

Nowadays, fixed point techniques are widely applied in many branches of mathematics, especially in nonlinear analysis. One of the most important theorems in this regard is the fundamental theorem in metric fixed point theory, known as Banach contraction principle, which guarantees the existence and uniqueness of fixed point of contraction mappings (a mapping $T : X \to X$ is called a contraction if there exists a constant $c \in [0, 1)$ such that $d(T(x), T(y)) \leq c \cdot d(x, y),\ \forall\ x, y \in X$) defined on a complete metric space. There are many generalizations and extensions of this important result in literature (see, for example [8, 9, 11, 12, 18]). One of the notable extensions of this into partially ordered metric space is done by Ran and Reurings [16]. Further, a lot of research work is done in this line, including the results of Nieto and Lopez [14, 15]. By weakening the condition on contraction, Alber et al. [1] introduced weakly contractive maps and generalized the Banach contraction principle in Hilbert spaces. Afterwards Rhodes [18] obtained a fixed point theorem for weakly contractive maps in complete metric spaces. Followed by this, fixed points of weakly contractive maps and generalized weakly contractive maps are studied.
It is very clear that contraction maps are continuous, so the Banach contraction

* *Corresponding author.*
Email address : prajisha1991@gmail.com, shainipv@gmail.com.
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