



## Generalized $n$ -Tupled Common Fixed Point Theorems for Contractive Rational Type Condition

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### Abstract

**Aims/ objectives:** In this paper, we prove results on  $n$ -tupled coincidence point (for even  $n$ ) for a pair of mappings without mixed monotone property satisfying a contractive condition of rational type in partially ordered metric spaces. Our main theorem improves the corresponding results of Chandok *et al.* (Int. Jour. of Math. Anal., Vol. 7, 2013, No. 9, 433-440).

**Keywords:** Partially ordered set; compatible mapping; mixed monotone property;  $n$ -tupled coincidence point;  $n$ -tupled fixed point.

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### 1 Introduction

In recent years, an extension of Banach's contraction principle has been considered by many authors in different metric spaces. It has fruitful applications within as well as outside mathematics. Generalizations of this principle continues to be an active area of research. Many authors have extended this theorem employing relatively more general contractive conditions ensuring the existence of a fixed point. The investigation of fixed points in ordered metric spaces is a relatively new development which appears to have its origin (in 2004) in the paper of Ran and Reurings [1] which was well complimented by the paper of Nieto and Lopez [2]. For similar other results in ordered metric spaces, one can be referred to ([1]-[23]).

In [3], Bhaskar and Lakshmikantham introduced the concept of a coupled fixed point of a mapping  $F : X \times X \rightarrow X$  wherein  $(X, \leq, d)$  be a partial metric space and also proved some coupled fixed point theorems in partially ordered complete metric spaces. In 2009, Bhaskar and Ćirić [4] proved coupled coincidence and coupled fixed point theorems for nonlinear contractive mappings in

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