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# COMMON FIXED POINTS OF SUZUKI TYPE $Z-$CONTRACTION OF TWO PAIRS OF SELFMAPS WITH A RATIONAL EXPRESSION VIA $\Psi-$SIMULATION FUNCTION

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**Abstract:** In this paper, we define Suzuki type $Z-$contraction with a rational expression via $\Psi-$simulation function and prove the existence and uniqueness of common fixed points of two pairs of selfmaps by using reciprocal continuity and weakly compatible property. An example is provided in support of our result.

**Keywords and Phrases:** Common fixed points, simulation function, compatible maps, weakly compatible maps, reciprocal continuity.

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## 1. Introduction

In 2015, Khojasteh, Shukla and Radenović [11] introduced the concept of simulation function $\zeta$, and the notion of $Z$-contraction with respect to $\zeta$, which generalizes the Banach contraction principle and unifies several known types of contractions in complete metric spaces. The technique of using a simulation function in establishing the existence of fixed points became famous by the works of Karapınar [9], Olgun, Bicer and Alyildiz [13], Dolićanin-Dekić [6], Karapınar and Agarwal [10], Alqahtani and Karapınar [1], Aydi, Karapınar and Rakočević [3], Roldán López de Hierro, Karapınar, Roldán López de Hierro and Martínez-Moreno [16].

In this paper, we denote $\mathbb{R}^+ = [0, +\infty)$ and $N=$ the set of all natural numbers. $\Psi = \{\psi \mid \psi : \mathbb{R}^+ \to \mathbb{R}^+$ is continuous, monotonically increasing and $\psi(t) = 0$ if