BEST PROXIMITY AND FIXED POINT OUTCOMES IN METRIC SPACES FOR THE PROXIMAL CONTRACTION OF $\alpha_0 - (\psi_0, g_0)$

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Abstract: In this paper, we introduce new notions of $\alpha_0 - (\psi_0, g_0)$ - proximal contraction of Type-I and Type-II and modified $\alpha_0 - (\psi_0, g_0)$ - proximal contraction. In the setting of these notions, we prove certain fixed point theorems in metric space. Additionally, a few applications are provided to show how the results can be used.

1. Introduction

A broad range of issues appearing in various branches of pure and applied mathematics, including discrete and continuous dynamic systems, differential equations, and variational analysis. Fixed point theory is essential for solving equations of the mentioned type, the solutions to which are the fixed points of the mapping $F : \mathfrak{X} \to \mathfrak{X}$, where $\mathfrak{X}$ is a non-empty set. Potential applications of this theory include the study of equilibrium points in physics, economics, and engineering. However, if F is a non self-mapping, the above fixed point equation might not have