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SOLUTION OF INTEGRAL EQUATION VIA COMMON FIXED POINT RESULTS FOR (ψ, β)-GERAGHTY CONTRACTION TYPE MAPPING IN $b-$METRIC SPACES

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Abstract: The scope of this paper encompasses novel and extended results regarding a few common fixed points in complete $b-$metric spaces, with a particular focus on $(\psi, \beta)-$ Geraghty type contractive mapping. The study looks at real-world uses, discussing common fixed point results linked to integral type contractions and checking if solutions to integral equations exist.

Keywords and Phrases: Common fixed point, Geraghty contraction, $b-$metric spaces, $b-$Cauchy sequence, Integral equations.

2020 Mathematics Subject Classification: 47H10, 54H25.

1. Introduction and Preliminaries

Over the last five decades, the study of fixed point(FP) theory has played a key role in addressing issues related to nonlinear phenomena. The evolution of FP theorems and the development of diverse techniques have significantly contributed to advancing both pure and applied analysis, as well as to the fields of topology and geometry.

In the year 1973, Geraghty [11] introduced a set of functions that extends the Banach contraction principle. This significant contribution aimed to provide a more versatile and comprehensive exploration, allowing researchers and mathematicians