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FUZZY METRIC APPROACH TO (κ, α, β)-INTERPOLATIVE KANNAN CONTRACTIONS AND NONLINEAR INTEGRAL EQUATIONS

Jaynendra Shrivas and Rohit Kumar Verma*

Department of Mathematics,
Shahid Durwasha Nishad Govt. College,
Arjunda, Balod, 491225, Chhattisgarh, INDIA

E-mail : jayshrivas95@gmail.com

*Department of Mathematics,
Govt. Chandulal Chandrakar Arts and Science College,
Patan, Durg, 491111, Chhattisgarh, INDIA

E-mail : rohitverma1967@rediffmail.com

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Abstract: In this paper, we extend the concept of interpolative Kannan-type contractions to complete fuzzy metric spaces and establish the existence and uniqueness of fixed points. A Picard iteration scheme is shown to converge to the unique fixed point. An illustrative example involving a nonlinear integral equation demonstrates the applicability of the main result.

Keywords and Phrases: Fuzzy metric space, interpolative Kannan contraction, fixed point.

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1. Introduction

Fixed point theory plays a fundamental role in nonlinear analysis and has wide-ranging applications in areas such as optimization, control theory, differential equations, and computer science. Since the introduction of Banach's Contraction Principle [2], many generalizations have been proposed in metric fixed point theory.