

ON SOLVING FUZZY DIFFERENTIAL EQUATIONS BY EXTENDED EULER METHODS BASED ON ROOT MEAN SQUARE AND HARMONIC MEAN

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ABSTRACT

The goal of this research is to provide improved versions of Euler's methods for solving differential equations with fuzzy initial conditions, including Euler's Method, Modified Euler's Method, and Improved Euler's Method with Root Mean Square and Harmonic Mean. To deal with this dependence problem in a fuzzy environment, we update Euler's classical methods using Zadeh's extension concept for fuzzy sets. Finally, we present a numerical example that compares these methods to the traditional Euler's Method and displays that the enhanced methods attain acceptable accuracy.

KEYWORDS: Fuzzy Initial Value Problem, Euler's Method, Modified Euler's Method, Improved Euler's Method, Root Mean Square, Harmonic Mean.

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