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EXISTENCE AND UNIQUENESS RESULTS FOR CAPUTO FRACTIONAL INTEGRO-DIFFERENTIAL EQUATIONS

HAMOUD, AHMED A. (DEPARTMENT OF MATHEMATICS, TAIZ UNIVERSITY) ;

ABDO, MOHAMMED S. (DEPARTMENT OF MATHEMATICS, DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY) ;

GHADLE, KIRTIWANT P. (DEPARTMENT OF MATHEMATICS, DR. BABASAHEB AMBEDKAR MARATHWADA UNIVERSITY)

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Abstract

This paper successfully applies the modified Adomian decomposition method to find the approximate solutions of the Caputo fractional integro-differential equations. The reliability of the method and reduction in the size of the computational work give this method a wider applicability. Also, the behavior of the solution can be formally determined by analytical approximation. Moreover, we proved the existence and uniqueness results and convergence of the solution. Finally, an example is included to demonstrate the validity and applicability of the proposed technique.

Keywords

Modified Adomian decomposition method; Caputo fractional derivative; fractional integro-differential equation; approximate solution

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(34141) Korea Institute of Science and Technology Information, 245, Daehak-ro, Yuseong-gu, Daejeon TEL 042)869-1004

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