A numerical study on the non-smooth solutions of the nonlinear weakly singular fractional integro-differential equations

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Abstract

The solutions of weakly singular fractional integro-differential equations involving the Caputo derivative have singularity at the lower bound of the domain of integration. In this paper, we design an algorithm to prevail on this non-smooth behaviour of solutions of the nonlinear fractional integro-differential equations with a weakly singular kernel. The convergence of the proposed method is investigated. The proposed scheme is employed to solve four numerical examples in order to test its efficiency and accuracy.

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