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Neutral Functional Differential Equations with Caputo Fractional Derivative on Time Scales

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Abstract :

In this work, we establish the existence and uniqueness of a solution for a class of initial value problems for implicit fractional differential equations with Caputo fractional derivative. The arguments are based upon the Banach contraction principle, the nonlinear alternative of Leray-Schauder type and Krasnoselskii fixed point theorem. As applications, two examples are included to show the applicability of our results.

Keywords : Initial value problem, Caputo's fractional derivative, neutral functional differential equations, fractional integral, fixed point, existence, time scale.

Mathematics Subject Classification : 26A33, 34A08

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