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OSCILLATION OF A CLASS OF FORCED FRACTIONAL DIFFERENCE EQUATIONS

M. RENI SAGAYARAJ[1], A. GEORGE MARIA SELVAM[2] AND M. PAUL LOGANATHAN[3]

[1,2] Sacred Heart College, Tirupattur - 635 601, S.India,
[3] Department of Mathematics, Dravidian University, Kuppam, India

Abstract

In this paper, we deal with oscillation of fractional difference equations of the form

$$\Delta_*^{\alpha} x(t) + f_1(t+\alpha, x(t+\alpha)) = v(t) + f_2(t+\alpha, x(t+\alpha)), \quad t \in N_{a+m-\alpha}$$

with initial conditions

$$\Delta_*^{\alpha-k} x(t)|_{t=t_k} = x_k \ (k = 0, 1, ..., m-1),$$

where Δ_*^{α} is the Caputo fractional derivative of order α, $m-1 < \alpha \leq m$, $m \geq 1$ is an integer and x_k $(k = 0, 1, ..., m-1)$ are constants. We obtain some oscillation theorems by applying Young's inequality. An example is given to illustrate our theoretical results.

Key Words : *Caputo derivative, Oscillation, Fractional difference equations.*

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