

RARE**OSCILLATORY SOLUTIONS OF
FUNCTIONAL DIFFERENTIAL
EQUATIONS****(THE ADVANCED TYPE EQUATION)****BY****Mrs. K.A.I.M. KUMARAPALI
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ABSTRACT

This work is in the main relevant to the second order advanced type functional differential equation.

That is

$$x''(t) + \sum_{i=0}^n \sum_{\substack{j=0 \\ i \leq j}}^n p_{ij} x(t + \tau_i + \tau_j) = 0 \quad \text{----- (A)}$$

$$t \in [t_0, \infty), \quad t_0 > 0.$$

p_{ij}, τ_i 's are real constants,

where $\tau_i > 0, \tau_i < \tau_{i+1}$ and p_{ij} changes sign for $i, j = 1 \dots n$.

The associated characteristic equation is

$$h(\lambda) \equiv \lambda^2 + \sum_{i=0}^n \sum_{\substack{j=0 \\ i \leq j}}^n p_{ij} e^{\lambda(\tau_i + \tau_j)} = 0 \quad \text{----- (B)}$$

Theorem

The solutions of the equation **(A)** are oscillatory, if and only if, the characteristic equation **(B)** has no real roots.