

ON THE ASYMPTOTIC BEHAVIORS OF SOLUTIONS CERTAIN  
NON-LINEAR NEUTRAL EQUATIONS WITH MULTIPLE  
DEVIATING ARGUMENTS

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**Abstract**

In this paper, we obtain sufficient conditions for all solutions of neutral equation of the form

$$\frac{d}{dt} \left[ x(t) + \sum_{i=1}^2 c_i(t)x(t - \tau_i(t)) \right] + \sum_{i=1}^2 p_i(t)x(t) + \sum_{i=1}^2 q_i(t)h_i(x(t))x(t - \sigma_i(t)) \\ + r(t) \int_{t-\delta(t)}^t x(s) ds = 0$$

to approach zero as  $t \rightarrow \infty$ . The technique of proof involves defining an appropriate Lyapunov functional. The obtained result includes and improves some results in the literature.

**Keywords:** Non-linear neutral equations, deviating arguments, Lyapunov functional

**References**

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