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Oscillation of Solutions and Behavior of the Nonoscillatory Solutions of Second-order Nonlinear Functional Equations

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Abstract: The aim of this study is to present new oscillation theorems for certain classes of second-order nonlinear functional differential equations of the type

$$x''(t) + p(t)f(x(t),\, x(\tau(t))) = 0, \qquad (*)$$
$$x''(t) + p_1(t)f_1(t,\, x(t),\, x'(t))x'(t) + q(t)g_1(x(\tau(t)) = 0,\ t \in [t_0,\, \infty),\, t_0 > 0.$$

In the study of Eq. $(*)$, no sign condition on $p(t)$ is explicitly assumed. Also, we study the behavior of the nonoscillatory solution of Eq. $(*)$.

Keywords: *nonlinear; functional differential equations; oscillatory solution; nonoscillatory solution.*

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