

Oscillation criteria for second-order functional dynamic equations on time-scales

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The authors consider a broad class of second-order functional dynamic equations on time scales, namely,

$$(r(t)|x^\Delta(t)|^{\gamma-1}x^\Delta(t))^\Delta + F(t, x(t), x(\tau(t)), x^\Delta(t), x^\Delta(\tau(t))) = 0,$$

and establish some new results on the oscillatory behavior of solutions. The cases

$$\int_{t_0}^{\infty} \frac{\Delta t}{r^{1/\gamma}(t)} = \infty$$

and

$$\int_{t_0}^{\infty} \frac{\Delta t}{r^{1/\gamma}(t)} < \infty$$

are both considered. While many existing works are for special cases of the above equation and only cover the delay case $\tau(t) \leq t$, the results in this paper can be applied to the advanced case $\tau(t) \geq t$ as well. Examples are given to illustrate the results.

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