

Some oscillation criteria for the second-order linear delayed differential equation

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On the half-line $\mathbb{R}_+ = [0, +\infty[$, we consider the second-order linear delay differential equation

$$(1) \quad u''(t) + p(t)u(\tau(t)) = 0,$$

where $p: \mathbb{R}_+ \rightarrow \mathbb{R}_+$ is a locally Lebesgue integrable function and $\tau: \mathbb{R}_+ \rightarrow \mathbb{R}_+$ is a measurable function such that

$$\tau(t) \leq t \quad \text{for a.e. } t \geq 0.$$

New oscillation criteria are established for the second-order two-term linear delay differential equation (1). In particular, a suitable a priori bound of non-oscillatory solutions is found which plays a crucial role in the proofs of the results obtained.