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Oscillation criteria for the second-order linear advanced differential equations

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

$$u''(t) + p(t)u(\sigma(t)) = 0, \tag{1}$$

where $p\colon \mathbb{R}_+ \to \mathbb{R}_+$ is a locally Lebesgue integrable function and $\sigma\colon \mathbb{R}_+ \to \mathbb{R}_+$ is a continuous function such that $\sigma(t) \geq t$, for $t \geq 0$.

New oscillatory criteria are established for solutions to equation (1). Riccati's technique and suitable estimates of non-oscillatory solutions are used for the proof of the obtained results. The presented criteria, in a certain sense, generalize those known from the theory of ordinary differential equations.