

**ON OSCILLATORY PROPERTIES OF
 GENERALIZED ORDINARY DIFFERENTIAL
 EQUATIONS OF EMDEN-FOWLER TYPE**

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Consider the differential equation

$$u^{(n)}(t) + p(t) |u(t)|^{1+\frac{d}{\ln t}} \operatorname{sign} u(t) = 0, \quad t \geq a > 1, \quad (1)$$

where $p \in L_{loc}(R_+; R_+)$, $d \in R$.

Definition. We say that Eq. (1) has property **A** if any proper solution u is oscillatory if n is even, and is either oscillatory or satisfies $|u^{(i)}| \downarrow 0$, as $t \uparrow +\infty$, $i=0, \dots, n-1$, when n is odd.

Theorem 1. For Eq. (1) to have property **A**, it is sufficient that

$$\liminf_{t \rightarrow +\infty} t \int_t^{+\infty} s^{n-2} p(s) ds > \max \left\{ -\lambda(\lambda-1) \cdots (\lambda-n+1) e^{-\lambda d} : \lambda \in [0, n-1] \right\}$$

Theorem 2. Let $c \in (0, +\infty)$, $d \in R$. Then for the equation

$$u^{(n)}(t) + \frac{c}{t^n} |u(t)|^{1+\frac{d}{\ln t}} \operatorname{sign} u(t) = 0, \quad t \geq a,$$

to have property **A**, it is necessary and sufficient that

$$c > \max \left\{ -\lambda(\lambda-1) \cdots (\lambda-n+1) e^{-\lambda d} : \lambda \in [0, n-1] \right\} +$$