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Property A of the $(n+1)^{th}$ order differential equation $\left[\frac{1}{r_1(t)}\left(x^{(n)}(t)+p(t)x(t)\right)\right]' = f(t,x(t),\cdots,x^{(n)}(t))$. (English) Zbl 1072.34034

Arch. Math., Brno 36, Suppl., 487-498 (2000).

Asymptotic properties of nonoscillatory solutions of

$$\left[\frac{1}{r_1(t)}(x^{(n)}+p(t)x)\right]' = f(t,x,\cdots,x^{(n)}) \tag{1}$$

are investigated in case r and p are bounded from bellow and from above by positive constants and f fulfils the sign condition $f(t,x_1,\ldots,x_{n+1})x_1 \le 0$. Hence, the operator $x^{(n)}+px$ is oscillatory and this case is very rare studied. Sufficient conditions are given for every nonoscillatory proper solution x of (1) to be the solution of $x^{(n)}+px=\alpha(t)\,sgn\,x(t)$ with a positive function α (depending on x), $\lim_{t\to\infty}\alpha(t)=0$.

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MSC:

34C10 Oscillation theory, zeros, disconjugacy and comparison theory for ordinary differential equations
34C15 Nonlinear oscillations and coupled oscillators for ordinary differential equations

Keywords:

property A; oscillatory solutions

Full Text: EuDML EMIS