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Integral equivalence of two systems of differential equations. (English) Zbl 0643.34042
Atti Accad. Naz. Lincei, VIII. Ser., Rend., Cl. Sci. Fis. Mat. Nat. 78, 4-12 (1985).

The aim of the author is to give some new necessary and sufficient conditions for the nonlinear equation of the form $x'' + f(x)h(x')x' + g(x)k(x') = 0$, which is known as the generalized Liénard equation, to have only bounded solutions. Here f and g are continuous functions on \mathbb{R} while h and k are continuous positive functions on \mathbb{R} . It is noted that the same problem has previously studied by several authors and some results requiring also the signum condition $xg(x) > 0$ among the others have been obtained. The objective of the present paper is now to eliminate this condition. The result is given in the form of a theorem whose statement is rather simple while whose proof depends on a long sequence of lemmas and propositions.

Reviewer: M.Ideman

MSC:

- 34C11** Growth and boundedness of solutions to ordinary differential equations
- 34C20** Transformation and reduction of ordinary differential equations and systems, normal forms
- 34A34** Nonlinear ordinary differential equations and systems

Keywords:

generalized Liénard equation; bounded solutions