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Bounded solutions in a given set of differential systems. (English) Zbl 0944.34012

J. Comput. Appl. Math. 113, No. 1-2, 73-82 (2000).

The authors deal with systems of ordinary differential equations of the form

$$\dot{y} = Ay + g(t, y, z), \quad \dot{z} = h(t, y, z), \tag{1}$$

where A is a hyperbolic $m \times m$-matrix (i.e. a real constant matrix with all eigenvalues having nonzero real parts). g and h are supposed to be continuous vector functions. Using the continuation method, which was developed by *M. Furi* and *P. Pera* [Ann. Pol. Math. 47, 331-346 (1987; Zbl 0656.47052)], the authors prove the existence of at least one bounded (on $\mathbb{R}$) solution to (1) lying in a given set. This set is defined by means of strict bounded (on $\mathbb{R}$) lower and upper functions to (1), whose existence is assumed. Under the existence of more families of such strict lower and upper functions to (1) a multiplicity result is formulated.

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MSC:

34B15	Nonlinear boundary value problems for ordinary differential equations	Cited in **1** Review
34C11	Growth and boundedness of solutions to ordinary differential equations	Cited in **1** Document

Keywords:

asymptotic boundary value problem; boundedness in a given set; continuation method

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