
On Some New Applications of the Guiding Functions Method

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Abstract

In this talk, we consider applications of the guiding functions method (see, e.g., [1]) to the study of qualitative behavior of solutions of differential equations and inclusions and trajectories of nonlinear control systems. In particular, the notion of an A-bifurcation for a system of differential equations in a Hilbert space is described and the existence and uniqueness of an A-bifurcation point is presented. The abstract result is applied to the study of the global structure of the solution set of a feedback control system governed by integro-differential equations. A multiparameter global bifurcation problem for periodic solutions of operator-differential inclusions whose multivalued parts are not necessarily convex-valued is described. Some results concerning the asymptotic behavior of solutions of differential and functional differential inclusions are considered. References. [1] V. Obukhovskii, P. Zecca, N.V. Loi, and S. Kornev, *Method of Guiding Functions in Problems of Nonlinear Analysis*, Lecture Notes in Math. 2076, Springer, Berlin – Heidelberg, 2013.

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