International Seminar
"Operator Theory, Differential Equations and their Applications"

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On the Isolation/Nonisolation of a Cosymmetric Equilibrium and Bifurcations in its Neighborhood

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A dynamical system with a cosymmetry is considered. V. I. Yudovich showed that a noncosymmetric equilibrium of such a system under the conditions of the general position is a member of a one-parameter family. Here it is assumed that the equilibrium is cosymmetric, and the linearization matrix of the cosymmetry is nondegenerate. It is shown that, in the case of an odd-dimensional dynamical system, the equilibrium is also nonisolated and belongs to a one-parameter family of equilibria. In the even-dimensional case, the cosymmetric equilibrium is, generally speaking, isolated.

Bifurcations in the neighborhood of a cosymmetric equilibrium when the kernel of the linearization matrix is two-dimensional are studied in detail. The Lyapunov-Schmidt method is applied when the dynamical system and its cosymmetry depend on a real parameter. The central manifold method is applied in the similar case of a multidimensional parameter. Bifurcations of stable and unstable arcs on families of equilibria are investigated.

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