

Méthodes topologiques en analyse non linéaire:développements récents -
Conférence à la mémoire du Professeur Andrzej Granas
4 - 8 juillet 2022

Topological Methods in Nonlinear Analysis: Recent Advances - Conference
in memory of Professor Andrzej Granas
July 4 - 8, 2022

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Global bifurcation from equilibria of autonomous Hamiltonian systems

The aim of the talk is to show the application of some methods of equivariant algebraic topology to study the existence of nonstationary periodic solutions of autonomous Hamiltonian systems in the neighbourhood of the equilibrium. More precisely, using the theory of the equivariant Conley index and the degree for equivariant gradient maps, we prove generalizations of Lyapunov Center Theorem.

In particular, degenerate equilibria can be considered as well as nondegenerate ones. We discuss also the case when the problem is symmetric, i.e. we consider the potential defined on the orthogonal representation of a compact Lie group and assume that it is invariant. In this situation we do not require that equilibria are isolated. Moreover, using the degree for equivariant gradient maps, we obtain the global bifurcation, not only the local one.