

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 index of a critical orbit and its applications to symmetric elliptic systems**

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The main aim of the talk is to investigate critical points of some functionals, associated with differential equations with symmetries. The symmetries imply that the critical points do not have to be isolated. That is why we study an index of a critical orbit, defined in terms of the degree for gradient equivariant maps. We apply techniques of equivariant analysis to establish a connection between the index of the critical orbit with the index of a critical point of the map restricted to the space normal to the orbit.

The second aim of the talk is to apply the abstract results to nonlinear elliptic systems. For such systems we study global bifurcations from constant solutions, given as critical points of their potentials. Allowing the potentials to be symmetric, we do not require that these solutions are isolated. We study the global bifurcation phenomenon from families of orbits of such solutions, proving the emanation of connected sets of non-constant solutions. Additionally, we study the structure of the bifurcating sets, proving in some cases that these sets are unbounded.