



Seminário de Sistemas Dinâmicos da UFF

ON MAGNETIC FLOWS Freddy Castro

UFRJ

Data: 2 de Junho - Sexta-feira

Hora: 14h.

Local: Sala 407, Bloco H, Campus do Gragoatá.

Resumo

We are going to work with the magnetic flows defined in smooth manifolds of any dimension, a simple example of such flows are the geodesic flows. The idea is to obtain some dynamic properties, which already exist for the geodesic flows. Our main results are

Theorem A: *Almost every magnetic flow has positive topological entropy or a finite number of periodic orbits.*

This theorem exists on surfaces due to Miranda [3]. We need some previous results to complete Theorem A, for this we will get the version of the Kupka-Smale's Theorem, Franks' Lemma and the k -jets Theorem in the context of magnetic flows. Our main tool is the *Geometric Control Theory* that was applied in the Hamiltonian flows by Ruggiero and Rifford [1] and [4].

In the case that the magnetic flux has a finite number of periodic orbits in low energy level, a problem is to show an elliptical orbit, which would imply that the flux also has positive topological entropy.

REFERENCES

- [1] A. Lazrag, L. Rifford, R. Ruggiero. Franks' lemma for C^2 -Mañé perturbations of Riemannian metrics and applications to persistence. Preprint, 2014.
- [2] J. A. Miranda. Generic properties for magnetic flows on surface. *Nonlinearity* 19(2006) 1849-1874.
- [3] J. A. Miranda. Positive topological entropy for magnetic flows on surfaces. *Nonlinearity* 20(2007) 2007-2031.
- [4] L. Rifford, R. Ruggiero. Generic properties of closed orbits of Hamiltonian flows from Mañé's viewpoint. *International Math. Research Notices* 22 (2012) 5246-5265.