

Seminar 2

Splitting of separatrices of periodically forced systems in the plane

Abstract

Consider a continuous dynamical system in the plane having a hyperbolic critical point whose stable and unstable manifolds coincide. Then we say that this invariant manifold is a separatrix. The separatrices are a very sensitive object with respect to perturbations, so when we perturb, generically, the invariant manifolds do not coincide anymore and the splitting of separatrices phenomenon occurs. We study this phenomenon by means of the Melnikov method. We follow [1] as structure of the talks. For a deeper understanding we suggest [2].

Lecture 1, 29/05/19

Title: Splitting of separatrices and the Melnikov method

Speaker: Prof. Tere M-Seara (UPC)

Lecture 2, 12/06/19

Title: The Melnikov method

Speaker: Salvador Borrós Cullerell (UAB).

Lecture 3, 03/07/19

Title: The Melnikov function

Speaker: Clara Cufí Cabré (UAB)

Lecture 4, 10/07/19

Title: Examples of periodically forced systems

Speaker: Gladston Duarte Ferreira (UB)

References

- [1] M-Seara, T. *Splitting of separatrices of periodically forced systems in the plane* (slides prepared for Lecture 1), 2019.
- [2] Wiggins, S. *Introduction to Applied Nonlinear Dynamical Systems and Chaos*, Second Edition, Springer, 2003.