SIMBa

BGSMath
BARCELONA GRADUATE SCHOOL OF MATHEMATICS

Seminari Informal de Matemàtiques de Barcelona

***Speaker*:** Dídac Gil Rams.
University: Centre de Recerca Matemàtica.

Date: Wednesday, March 6th, 2024.
Schedule: 13:00, *coffee break*; 13:20, talk.
Place: UPC and Zoom.
Language: English.

Title: Splitting of separatrices in generalized standard maps

Abstract: We study transversal intersections between the invariant manifolds (stable and unstable) associated to an hyperbolic fixed point for a class of maps. These intersections are known as homoclinic orbits. The existence of these kind of orbits is one of the most celebrated methods to prove the existence of chaotic dynamics in a system. Indeed the Morse-Smale theorem ensures that if there exist transversal intersections between the invariant manifolds of the same invariant object, the system is locally conjugate to a Smale horseshoe with infinite symbols. We look for this phenomena in the named generalized standard maps. This generalization includes the already studied maps like the standard map, first studied by Lazutkin, or the perturbed McMillan map. We obtain an asymptotic formula for the Lazutkin invariant, value related to the area between two homoclinic points, and its first term depends on a Stokes constant that is generically different from zero. To do so, one of the techniques that we use is the inner equation related to our generalized standard maps.

About us: *SIMBa* is a mathematics seminar organized by graduate students in the Barcelona area. It is aimed towards graduate and last course undergraduate students. Our goals are disseminating knowledge from different branches of mathematics for those interested and promoting networking between the attendants.
This seminar is backed by the Faculty of Mathematics and Computer Science at Universitat de Barcelona, Faculty of Mathematics and Statistics at Universitat Politècnica de Catalunya, the Department of Mathematics from Univesitat Autònoma de Barcelona, CRM, IMUB and BGSMath.

Fore more information, visit seminari-simba.github.io/en.

If you have any doubt or comment do not hesitate to contact us by sending an email to ***seminari.simba@gmail.com***.