SIMBa

BGSMath
BARCELONA GRADUATE SCHOOL OF MATHEMATICS

Seminari Informal de Matemàtiques de Barcelona

***Speaker*:** Ainoa Murillo.
University: Universitat de Barcelona.

Date: Wednesday, April 15th, 2026.
Schedule: 12:20 talk.
Place: UB (Aula B7) and Zoom.
Language: English.

Title: Resonant structures around a normally elliptic invariant curve of a 3D volume-preserving map.

Abstract: We study the dynamics near a normally elliptic invariant curve of a three-dimensional volume-preserving map, focusing on situations where the tangent and normal frequencies satisfy one or two independent resonance relations (single and double-resonant cases).
These resonances can lead to a variety of dynamical behaviours. We begin by describing the three-dimensional resonant structures that arise in the single-resonant case.
Since certain single resonances may destroy the invariant curve or prevent its reducibility to linear dynamics with constant coefficients, we distinguish several scenarios within the double-resonant regime. We then describe the corresponding bifurcations and classify the three-dimensional structures that appear in a neighbourhood of the curve. Some of these phenomena have no analogue in two-dimensional systems and therefore cannot be captured by planar reductions.

About us: *SIMBa* is a mathematics seminar organized by graduate students in the Barcelona area. It is aimed towards graduate and last–year 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 at Universitat Autònoma de Barcelona, CRM, IMUB and BGSMath.

Fore more information, visit seminari-simba.github.io/en. You may contact us by sending an email to ***seminari.simba@gmail.com***.