Seminari Informal
de Matemàtiques de Barcelona

Speaker: Robert Cardona.
University: Université de Strasbourg.

Date: Wednesday, April 20th, 2022.
Schedule: 12:00, *virtual coffee break*; 12:20, talk.
Place: UPC (FME aula 002) and Zoom.
Language: English.

Title: Undecidability in dynamical systems: from Turing machines to hydrodynamics

Abstract: Logical and computational undecidability are notions that date back to the foundational works of Gödel and Turing developed during the first half of the 20th century. Since then, several questions in mathematics have been shown to be undecidable. In this talk, we first introduce Turing machines and explain how they can be related to the theory of dynamical systems to prove that some of their properties can be undecidable. In the context of hydrodynamics, we will be interested in the Euler equations for ideal fluids, and the undecidability properties of its solutions. We will discuss informally some recent results establishing the existence of undecidability phenomena in hydrodynamics. These results are based on several joint works with Eva Miranda, Daniel Peralta-Salas, and some of them also with Francisco Presas.

About us: *SIMBa* is a youth mathematics seminar organized by graduate students in the Barcelona area. It is aimed towards graduate and last course undergraduate students. Our goals are divulging the knoweledge from different branches of mathematics for those interested and promote 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 at www.ub.edu/simba/en/.

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