Seminari Informal
de Matemàtiques de Barcelona

Speaker:	Jordi Daura Serrano.
University:	Universitat de Barcelona.
Date:	Wednesday, April 6th, 2022.
Schedule:	12:00, *virtual coffee break*; 12:20, talk.
Place:	UB (FMI, aula B1) and Zoom.
Language:	English.
Title:	Degree of symmetry of manifolds and the toral rank conjecture

Abstract: The aim of the theory of transformation groups is to study the symmetry of spaces like manifolds, by studying group actions on them. One of the fundamental questions is the following: given a manifold M, how "big" a compact Lie group acting effectively on M can be? Although the most well-known manifolds are highly symmetric, like spheres and tori, it is conjectured that most manifolds admit few or no compact group actions. In order to make this question more precise, it is possible to associate to a manifold its degree of symmetry, a value which tells us how symmetric this manifold is. Moreover, we may try to compute it by using topological and geometric information of the manifold. These type of computations are really hard and they lead to interesting questions, like the toral rank conjecture, formulated by S.Halperin in 1985. In the first part of the talk will be a brief introduction to the theory of compact transformation groups and the various definitions of degree of symmetry, while in the second part I will explain the statement of the toral rank conjecture.

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 knowledge 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*.