Seminari Informal de Matemàtiques de Barcelona

Speaker:	Jack Thompson.
University:	The University of Western Australia.
Date:	Wednesday, October 18th, 2023.
Schedule:	13:00, *coffee break*; 13:20, talk.
Place:	UB (FMI aula B2) and Zoom.
Language:	English.
Title:	Overdetermined problems involving the fractional Laplacian

Abstract: Overdetermined problems are a class of partial differential boundary value problem where 'too many' boundary conditions are imposed on the solution. Such problems appear in physics, biology, and other applied sciences due to their strong connection with shape optimisation. The mathematical objective is to understand and classify the regions that admit solutions that satisfy all the required properties.

A classical result in this area is Serrin's problem, which says that a bounded domain in $\mathbb{R}^n$ that admits a function with constant Laplacian, zero Dirichlet data, and constant Neumann data must be a ball. We will consider two generalisations of this problem, both driven by the fractional Laplacian, and give an overview of the current literature and open problems.

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 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*.