SIMBa

BGSMath
BARCELONA GRADUATE SCHOOL OF MATHEMATICS

Seminari Informal de Matemàtiques de Barcelona

***Speaker*:** Renzo Bruera Méndez.
University: Universitat Politècnica de Catalunya.

Date: Wednesday, November 29th, 2023.
Schedule: 13:00, *coffee break*; 13:20, talk.
Place: UPC (FME aula 005) and Zoom.
Language: English.

Title: An interior regularity result for the MEMS problem

Abstract: In this talk we present an interior regularity result for the class of stable solutions to a semilinear elliptic equation with a singular nonlinearity. The class of nonlinearities that we consider are real-valued functions defined on [0,1) which are positive, nondecreasing, and whose integral on [0,1) is infinite. This equation is a generalization of a model for the deflection of a dielectric elastic membrane in a microelectromechanical system (MEMS). Solutions to this equation are critical points of an associated energy functional. We say that a solution is stable when the second variation of the energy at the solution is nonnegative. Under a growth assumption on the nonlinearity, we are able to prove that every stable solution is regular up to the optimal dimension, n=6.

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 at `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***.