Seminari Informal
de Matemàtiques de Barcelona

Speaker:	Rosalba García Millán.
University:	University of Cambridge.
Date:	Wednesday, January 13th, 2021.
Schedule:	12:00, *virtual coffee break*; 12:20, talk.
Place:	Zoom (the link will be posted on our website).
Language:	English.
Title:	Time-dependent branching processes: a model of oscillating neuronal avalanches

Abstract: Recently, neuronal avalanches have been observed to display oscillations, a phenomenon regarded as the co-existence of a scale-free behaviour (the avalanches close to criticality) and scale-dependent dynamics (the oscillations). Ordinary continuous-time branching processes with constant extinction and branching rates are commonly used as models of neuronal activity, yet they lack any such time-dependence. In my talk, I will show how we extended a basic branching process by allowing the extinction rate to oscillate in time as a new model to describe cortical dynamics. I will discuss about some observables, such as the avalanche shape, that we calculated in closed form by means of a perturbative field theory, and compared to available experimental results.

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***.