Seminario de análisis matemático y aplicaciones
Analisi matematikoa eta aplikazioak mintegia

A nonlocal Fokker-Planck equation arising in the modelling of Lithium-ion batteries: Kramers and non-Kramers phase transitions

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ABSTRACT: In this talk I will discuss a model of Lithium-ion batteries which consists in a constrained Fokker-Planck equation. This model exhibits a very rich class of dynamical behaviours for different values of the parameters of the system, including hysteresis, oscillations and the transfer of mass between different stable states of the system. I will explain why different types of dynamics arise for different parameter ranges. Some of the behaviours can be explained by means of the classical Kramers formula which characterizes the mass transfer between the different stable states of a bistable system, but some of the behaviours of the system require an alternative explanation. Some rigorous results yielding a limit model which exhibits hysteresis will be discussed.

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