UNICAMP – IMECC
Departamento de Matemática

Seminário de Sistemas Dinâmicos e Estocásticos

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Título: First exit times behavior of some strong Markov
processes with large jumps at small intensity

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Resumo. Motivated by climatological studies Imkeller and Pavlyuke-vich and collaborators showed in a series of articles that the study of diffusions in multi-well potentials with α-stable Lévy noise at small intensity may provide substantial conceptual insight in the behavior of paleoclimatic time series. A crucial step here is to determine the asymtotic first times of such a diffusion from the domain of attraction of the deterministic system. It turns out that the expected exit time grows asymptotically polynomially in the inverse noise intensity, which contrasts sharply with the exponential scales usually obtained by the Freidlin-Wentsell theory for diffusions with Brownian motion at small intensity. Since the reasoning is quite general, elementary, but nontrivially technical and so far did not cover the natural cases of linear systems, we generalize it for this purpose to an abstract class of systems, whose prerequisites can be verified.