UFSCar

DEPARTAMENTO DE MATEMÁTICA

COLÓQUIO

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IMPA

Falará sobre:

On Computational Methods for Stochastic Differential Equations

Resumo. The theory of Stochastic Differential Equations (SDEs) is a topic in the area of stochastic analysis, at the crossing of random processes and differential equations, with a huge development in the last years and with a ample variety of application in the modelling of practical situations where noise and uncertainty play a significant role. In particular its usefulness in mathematical finance, neurosciences and system biology has dramatically raised the profile of SDEs. Since analytic solutions of these equations are rarely available, in recent years much attention has been paid to the design of reliable methods for the computer simulation of their solutions.
In this talk we will present at first an introduction to the discrete-time integration of SDEs. It covers strong and weak discretization methods, their stability properties and computational implementation. Some issues connected to the relation between Monte Carlo simulation of SDEs and Partial Differential Equations will be discussed. We will also consider some problems concerning the generation, implementation and simulation of the stochastic algorithms.

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