

Department of Decision Sciences

Statistics Seminar

Infinite-dimensional diffusions in Bayesian inference and mathematical biology

Matteo Ruggiero

Università di Torino

Thursday, 22nd November 2012

12:30pm Room 3-E4-SR03 Via Röntgen 1 Milano

Abstract

We consider some recently introduced infinite-dimensional diffusion processes, related to certain random probability measures such as the GEM, the two-parameter Poisson-Dirichlet and the normalized inverse Gaussian distribution, with a twofold purpose: Bayesian nonparametric inference for discretely observed continuous-time phenomena and dynamic modeling of the species abundances in a large population. We show how some of these diffusions can be constructed and interpreted in a biological framework, by means of explicit population modeling and limit theorems, and how they can be used for defining time-dependent semi parametric mixture models in a Bayesian setting, which, with the aid of appropriate simulation strategies, are in turn used for estimating a time-indexed density surface.