UNIVERSITÀ DEGLI STUDI DI TRENTO

Dipartimento di Matematica

SEMINARI

Friday, November 10 – at 11.00 a.m.

Seminar Room "1" – Povo0, Via Sommarive 14
and online through the ZOOM platform:
please contact dept.math@unitn.it to get the code

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Continuous affine Volterra processes: Ergodicity, statistics and regularity of the occupation measure

Abstract

We study limit distributions, stationary processes, and ergodicity for continuous affine Volterra processes. Firstly, we prove the existence of limit distributions and stationary processes for affine Volterra processes on $\mathbb{R}_+^m$ obtained from

$$X_t = x_0 + \int_0^t k(t-s)(b + \beta X_s)ds + \int_0^t k(t-s)\sigma(X_s)dB_s$$

where $\sigma(x) = \mathrm{diag}(\sigma_1\sqrt{x_1}, \ldots, \sigma_m\sqrt{x_m})$. Although the process is non-markovian, its limit distribution is independent of the initial state x_0 if and only if $k \notin L^1(\mathbb{R}_+)$. Afterward, we prove the law-of-large numbers and deduce that the corresponding stationary process is ergodic and mixing. As an application we consider the maximum-likelihood estimation of the drift parameter b for continuous and discrete high-frequency observations. In the second part of this talk we address the behaviour of the process at the boundary in terms of regularity of occupation measures at the boundary of the state space.

This talk is partially based on joint works with Mohamed Ben Alaya and Pen Jin.

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