

Hong Kong - Singapore joint Seminar Series in Financial Mathematics/Engineering

A probability approximation framework via Markov process approach

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Abstract

We view the classical Lindeberg principle in a Markov process setting to establish a probability approximation framework by the associated Itô's formula and Markov operator. As applications, we study the error bounds of the following approximations: approximating a family of online stochastic gradient descents (SGDs) by a stochastic differential equation (SDE) driven by multiplicative Brownian motion, approximation of ergodic measure of SDEs driven by stable processes, approximation of ergodic measure of singular SDEs driven by Brownian motion, etc. The tools used in these applications include Duhamel principle, Malliavin calculus, Zvonkin transform, time-change techniques, etc. This talk is based on the joint work with Peng Chen and Qi-Man Shao.

About the speaker

Dr. Lihu Xu graduated from Imperial College London in 2008, and currently is an associated professor at University of Macau. His research interests lie in probability approximation, stochastic processes, large deviations with their applications to statistics and machine learning.

Date

11 Aug 2022(Thursday)
(HK Time)

Time

3:00pm – 4:00pm (HK
Time)

Zoom

<https://cityu.zoom.us/j/99250073104?pwd=MkM1bE1XS0ZHM1ZaSjgrT3INRHdLZz09>

Meeting ID:

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