

COE Lectures on Probability and Statistics



Speaker: Prof. Alexander Lindner
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Place: 36-205/207, Yagami Campus, Keio University

Title: Generalised Ornstein-Uhlenbeck processes

Lecture 1 September 18, 2007 (Tue.) 13:00 ~ 14:30

Generalised Ornstein-Uhlenbeck processes are stochastic processes defined in terms of a bivariate Lévy process. A Lévy process itself is a process with stationary and independent increments and some further properties, and in this first lecture we will study properties of Lévy processes which are relevant for the development of generalised Ornstein-Uhlenbeck processes, such as the Markov property or Lévy processes of finite variation.

Lecture 2 September 18, 2007 (Tue.) 15:00 ~ 16:30

In this lecture, we will provide some basic knowledge of stochastic integration with respect to Lévy processes first, and then define the generalised Ornstein-Uhlenbeck process as such an integral. We will give several examples of generalised Ornstein-Uhlenbeck processes which appear in finance, insurance mathematics and storage theory and derive a stochastic differential equation for the generalised Ornstein-Uhlenbeck process.

Lecture 3 September 19, 2007 (Wed.) 13:00 ~ 14:30

In this lecture we shall derive some of the basic properties of generalised Ornstein-Uhlenbeck processes. Firstly, we will show that such a process satisfies the Markov property. Then we shall concentrate on the question whether there exist stationary versions of such processes, and study their autocorrelation function and tail behaviour.