ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

Invitation to a Talk

Devika Khurana

"First-passage time of Stochastic differential equations"

N.0.27 | Friday, 26 June 2026 | 11:00 a.m.

Abstract

The first-passage time is a fundamental concept in stochastic processes, representing the time it takes for a process to reach a specified threshold for the first time. Often, considering a time-dependent threshold is essential for accurately modeling stochastic processes, as it provides a more accurate and adaptable framework. In this talk, we discuss the extension of an existing exact simulation method, originally developed for constant thresholds, to the case of time-dependent thresholds. Our proposed approach utilises the FPT of Brownian motion and accepts it for the FPT of a given process with some probability, which is determined using Girsanov's transformation. This method eliminates the need to simulate entire paths over specific time intervals, avoids time-discretisation errors, and directly simulates the FPT. We present results demonstrating the method's effectiveness, including the extension to time-dependent thresholds, and comparisons with existing methods through numerical examples.

Michaela Hitz and the Department of Statistics look forward to seeing you at the talk!