DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Seminar for Confirmation of Candidature

Mr. HAN Xixuan

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will give a talk

entitled

SVM-JACOBI FOR FITTING EXPONENTIAL SUMS TO PROBABILITY DISTRIBUTIONS WITH APPLICATIONS TO QUANTITATIVE FINANCE AND ACTUARIAL SCIENCE

Abstract

We propose a method called SVM-Jacobi to approximate probability distributions by linear combinations of exponential distributions, associated with a comprehensive asymptotic analysis. In multivariate cases, the method also effectively works to provide approximations by linear combinations of products of independent exponential distributions. The proposed method is particularly applicable and useful in quantitative finance and actuarial science. Many pricing and hedging formulas have closed forms under exponential distributions. By approximating the real distributions, we are capable to use the closed-form formulas and fitted coefficients of SVM-Jacobi to approximate the prices and Greeks. In addition to the methodology, we give examples of approximating the credit value adjustment of defaultable bonds, financial derivatives with single payments and credit default swaps, and the value of equity-linked death benefits. Some numerical results also are presented for illustration.

Keyword: SVM, Jacobi Expansion, distribution fitting, defaultable bonds, financial derivatives, CVA, CDS

on

Tuesday, January 26, 2016

2:30 p.m. – 3:30 p.m.

at

Room 301, Run Run Shaw Building

All interested are welcome