

For favour of posting

DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE
THE UNIVERSITY OF HONG KONG

Seminar for Confirmation of Candidature

Mr. WEI Boyu

*Department of Statistics and Actuarial Science
The University of Hong Kong*

will give a talk

entitled

PRICING AND REPLICATING VARIANCE DERIVATIVES UNDER FUNCTIONAL ITÔ CALCULUS

Abstract

This talk concentrates on pricing and replicating exotic derivatives whose payoffs are general functions of paths of the underlying asset price and its realized variance, such as gamma and conditional variance swaps.

In the first part, the model-free static replication strategies are derived. A main result is that under the Markovian setting, a general discretely-observed payoff can be semi-statically replicated by a zero-coupon bond and a portfolio of calls and puts on the underlying.

In the second part, dynamic replication and valuation strategies are obtained under stochastic volatility model. It is shown that in both idealized continuous and realistic discrete settings the derivative value process satisfies a path-dependent partial differential equation (PPDE). As a corollary, the derivative can be dynamically replicated by the underlying asset and its variance swap. The PPDE is transformed into a functional forward-backward stochastic differential equation (FFBSDE), a special case of a BSDE, which can be solved numerically. Alternatively, for a discretely-observed payoff, the PPDE is equivalently expressed by n classical PDEs, which can be solved iteratively.

on

Tuesday, July 29, 2014

10:00 a.m. – 11:00 a.m.

at

**Room 524, Meng Wah Complex
(behind the Chong Yuet Ming Amenities Centre)**

All interested are welcome