THE CHINESE UNIVERSITY OF HONG KONG

Department of Statistics

will present a seminar entitled

Nonparametric Transition-Based Tests for Diffusions

by

Dr. Heng Peng
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on

Monday, 27 February 2006
2:30pm – 3:30pm

in

Science Centre E108
The Chinese University of Hong Kong

Abstract:

We develop a specification test for the transition density of a discretely-sampled continuous-time diffusion process, based on a comparison of a nonparametric estimate of the transition density or distribution function to their corresponding parametric counterparts assumed by the null hypothesis. Using the closed form expansions for the transition density of Ait-Sahalia (2002) under the null parametric model and the explicit nonparametric estimate of transition density of Fan, Yao and Tong (1996), we are able to consider a direct comparison of the two densities for an arbitrary specification of the null parametric model. Using two different discrepancy measures between the null and alternative transition density and distribution functions, we simultaneously test the model's assumptions on the drift and diffusion functions. Our approach does not impose the assumption that the alternative model is a one-factor diffusion model and allows multi-factor stochastic volatility models or any stationary Markovian processes. We establish the asymptotic null distributions of proposed test statistics and compute their power functions. The finite sample properties are critically investigated via simulation studies and are compared with the test statistic of Hong and Li (2005).

All are Welcome