

# Joint Statistics Seminar

*The Hong Kong University of Science and Technology*

## Extremal Behaviour of Stochastic Volatility Models

by

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**Date: May 25, 2006 (Thursday)**

**Time: 3:30 p.m. - 4:30 p.m.**

**Venue: Room 3311 (Lift 17/18)**

### ***Abstract***

Empirical volatility changes in time and exhibits tails, which are heavier than normal. Moreover, empirical volatility has - sometimes quite substantial - upwards jumps and clusters on high levels. We investigate classical and non-classical stochastic volatility models with respect to their extreme behavior. We show that classical stochastic volatility models driven by Brownian motion can model heavy tails, but obviously they are not able to model volatility jumps. Such phenomena can be modelled by Levy driven volatility processes as, for instance, by Levy driven Ornstein-Uhlenbeck models. They can capture heavy tails and volatility jumps. Also volatility clusters can be found in such models, provided the driving Levy process has regularly varying tails. This results then in a volatility model with similarly heavy tails. As the last class of stochastic volatility models, we investigate a continuous time GARCH(1,1) model. Driven by an arbitrary Levy process it exhibits regularly varying tails, volatility upwards jumps and clusters on high levels.

This is joint work with Vicky Fasen and Alexander Lindner.

***All interested are welcome!***

*For details, please contact ISMT Department.*