



DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE  
THE UNIVERSITY OF HONG KONG

40<sup>th</sup> Anniversary Seminar Series

**Professor Charles S. TAPIERO**

*Topfer Chair Distinguished Professor of  
Financial Engineering and Technology Management  
Department of Finance and Risk Engineering  
Polytechnic University of New York  
U.S.A.*

will give a talk

entitled

**MEMORY-BASED PERSISTENCE IN STOCHASTIC  
AND COUNTING RANDOM WALK PROCESSES  
(with Implications to Insurance and Finance)**

Abstract

The search for non-random patterns in apparently random data is of concern in a broad variety of fields and an extremely large number of techniques and approaches are used for that purpose. In actuarial insurance and financial modeling for example, both jump processes (CTRW-Continuous Time Random Walks) and stochastic differential equations are profusely used to capture the random character of risk events and prices. Explicitly, in actuarial science much use is made of the Poisson process (or processes based on similar assumptions) while in finance the Brownian motion is used to represent the behavior of an underlying process uncertainty. These models assume that "uncertainty" is independent of its past, presuming that memory has no effect on future events uncertainty. However, in some cases, this may be too strong an assumption, and thereby the importance to structure uncertainty in terms of the types of dependence that beset randomness. Seminal papers and research on persistence have contributed to the concern that certain random phenomena do not behave as a simple random walk and thereby have pointed out both theoretical and practical implications of assuming that randomness can be "biased" in some manner.

The purpose of this talk is to consider a memory-based persistent stochastic processes and provide some theoretical results with implications and applications to both finance and insurance. For example, a counting random walk, based on a Markov memory of the last event in a random process which is a different model than the Weiss persistent random walk model is analyzed. At the same time, we shall point out to some preliminary results focused on the effects of short time memory.

on

**Friday, November 2, 2007**

**2:00 p.m. – 3:00 p.m.**

at

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

**Visitors Please Note that the University has limited parking space. If you are driving please call the Department at 2859 2466 for parking arrangement.**