



IMS September Meeting 2007 Seminar

Title: Large fluctuations in stochastic dynamical systems

Speaker: H.Z. Wu

Date: Mon 3rd September 2007 at 3:00PM

Location: ENG226

Abstract: differential equations (SDEs) are commonly used in modeling the trajectories of processes whose motion is determined by random movements. In particular, we are interested in the application of SDEs to inefficient financial markets (IFM) in which investors take historical information into account when making their investment decisions. We study the almost sure asymptotic rate of growth of the partial maxima and minima of solutions of both linear and non-linear SDEs, as these represent the largest possible fluctuations in the price or returns of the asset.

in IFM, prices or returns exhibit short run positive autocorrelations (which mimic market bubbles), SDEs involving delay factors are investigated and compared with SDEs under the classical Efficient Market Hypothesis. We also develop Markov models driven by semi-martingales other than standard Brownian motion. While these semi-martingales preserve the size of large fluctuations of Brownian markets, they differ from Brownian motion by possessing dependent increments, and so can create the presence of non-trivial autocorrelations in security returns.

work is joint with my supervisor Dr. John Appleby.

<http://maths.ucd.ie/ims07>