## Roger Lee (U. Chicago, USA) Title: Variance Swaps on Time-Changed Markov Processes

Abstract: We prove that a variance swap has the same price as a co-terminal Europeanstyle contract, whenever the underlying is an exponential Markov process, time-changed by an arbitrary continuous stochastic clock, which has arbitrary correlation with the driving Markov process, which is allowed to have state-dependent jump distributions. The European contract's payoff function satisfies an ordinary integro-differential equation, which depends only on the dynamics of the Markov process, not on the clock. We present examples of Markov processes where the payoff function that prices the variance swap can be computed explicitly. Joint work with Peter Carr and Matt Lorig.