

COLLOQUIUM
UNIVERSITY OF PITTSBURGH
TUESDAY, JANUARY 8, 2008
704 THACKERAY HALL
3:00 P.M.

PROFESSOR MARIKO ARISAWA
INRIA PARIS-ROCQUENCOURT

HOMOGENIZATION OF THE LEVY OPERATOR
AND THE STOCHASTIC VOLATILITY MODEL

ABSTRACT: We are interested in the jump-diffusion models in the mathematical finances. When the underlying asset price process contains the jump, the usual Black-Scholes second-order parabolic partial differential equation is replaced by the integro-differential equation with the Lévy operator. According to the model of the distribution of the jump, the Lévy operator may contain various possibly singular, non-symmetric density measures. We study the qualitative properties of the Lévy operator, for example regularizing effect, ergodicity, homogenization, by using the method of the viscosity solution. The pricing of the exotic options such as American option, Look back option, etc leads to some new boundary conditions, too. In this talk, we intend in particular to apply the homogenization results to investigate the stochastic volatility model, which contains the jump-diffusion process with the very fast mean reversion.

Refreshments served at 2:30 p.m.
in the Math Dept. COMMON ROOM, Thackeray 705

*The speaker is a candidate for a position in the Department.