



Statistical Sciences
UNIVERSITY OF TORONTO

SEMINAR

February 16th, 2016 at 3:30pm

**Refreshments at 3:10pm*

Sidney Smith Hall, Room 1084

Speaker: Sveinn Olafsson, University of California
Santa Barbara

Hosts: Jamie Stafford

Short-term asymptotic properties of option prices and implied volatility under financial models with jumps and stochastic volatility

Asymptotic analysis of option prices has received considerable attention in recent years, due to its importance in model selection and calibration. In this talk we consider the behavior of option prices and implied volatility in an asymptotic regime where time-to-maturity and log-moneyness become small, under a rich class of stochastic volatility models with independent stable-like jumps of infinite variation. In particular, we obtain high-order expansions for the implied volatility skew (i.e. the strike derivative), which has received relatively little attention in the literature, but is actively monitored in practice by traders and analysts. Our results shed light on the relationship between important model parameters and the implied volatility smile near expiry, and simulation results indicate that our asymptotic

expansions give good fits for options with maturities up to one month. Finally, an analysis of recent S&P500 implied volatility data shows it to be consistent with the infinite variation jump component of our models.