



STATISTICS DEPARTMENT COLLOQUIUM

****RESCHEDULED****

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Talk: 4:00 PM – *Science Center 309*

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“Modeling and Analyzing High-Frequency Financial Data”

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ABSTRACT

Volatilities of asset returns are central to the theory and practice of asset pricing, portfolio allocation, and risk management. In financial economics, there is extensive research on modeling and forecasting volatility up to the daily level based on Black-Scholes, diffusion, GARCH, stochastic volatility models and implied volatilities from option prices. Nowadays, thanks to technological innovations, high-frequency financial data are available for a host of different financial instruments on markets of all locations and at scales like individual bids to buy and sell, and the full distribution of such bids. The availability of high-frequency data stimulates an upsurge interest in research on better estimation of volatility.

High-frequency data observed on the prices of financial assets are commonly modeled by diffusion processes with micro-structure noise, and realized volatility based methods are often used to estimate integrated volatility. For problems involving with a large number of assets, the estimation objects we face are volatility matrices of large size. The existing volatility estimators work well for a small number of assets but perform poorly when the number of assets is very large. This talk will start with a review on low-frequency financial time series and high-frequency financial data. Then I will introduce popular realized volatility based estimators computed from high-frequency financial data and present my current work on estimating volatility matrices of large size.