

PRACTICE JOB TALK
Department of Statistics

**Modeling the Stock Price Process as a Continuous-time Discrete
Jump Process**

by

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ABSTRACT

An important aspect of the stock price process, which has often been ignored in the financial literature, is that prices on organized exchanges are restricted to lie on a grid. In this paper, we consider pure jump models for the stock price process which integrate the randomness of jump times with the discreteness of the jump size. The convergence, estimation, discrete time approximation, and uniform integrability conditions for this model are studied. The effect of stochastic volatility is studied in this setting. A Bayesian filtering technique is proposed as a tool for risk neutral valuation and hedging. This emphasizes the need for using statistical information for valuation of derivative securities, rather than relying on implied quantities.