



THE UNIVERSITY OF  
CHICAGO

Department of Statistics

MASTER'S THESIS PRESENTATION

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Maximum Likelihood Particle Filter: An Application to Option  
Markets

WEDNESDAY, April 29, 2015, at 11:00 AM  
Eckhart 110, 5734 S. University Avenue

ABSTRACT

This master paper exploits the particle filter for extraction of the unobserved latent variables and estimation of parameters of a jump-diffusion process that aims to explain the dynamics of the option market, specifically, the option on the S&P500 index and Volatility Index, by a maximum-likelihood approach. The particle filter adapts Sampling Importance Sampling with Auxiliary proposal, utilizes a continuous likelihood evaluation approach and employs the Covariance Matrix Adaption Evolution Strategy for non-convex optimization.