
LUCA LALOR, University of Calgary

A Numerical Solution to an Algorithmic and HFT Problem with a Jump-Diffusion Price Process

The main subject of this talk is to introduce an algorithmic and High-Frequency Trading model where the price process is of the jump-diffusion type. This talk begins with a brief introduction on how to apply Stochastic Optimal Control theory to algorithmic trading problems. A price process in the Jump-Diffusion setting is then introduced along with its infinitesimal generator, which encompasses one of the major modelling adjustments in this research. Previous research modelled the jumps through a diffusion approximation, while here the jumps are modelled directly. Preliminary results, using an Implicit-Explicit Finite Difference Scheme, for an Optimal Acquisition algorithmic trading problem will be presented. Here the jump part of the Jump-Diffusion price process will be a function of a Poisson process. This talk will end with a discussion on proposed modifications to the discussed algorithmic trading problem, so that the future models will account for the non-Markovian property seen in LOB data.