High-Frequency Algorithmic Trading
with Momentum and Order Imbalance

My goal is to establish and solve the stochastic optimal control problem that captures the momentum and order imbalance dynamics of the Limit Order Book (LOB). The solution will yield an optimal trading strategy that will permit statistical arbitrage of the underlying stock, which will then be backtested on historical data.

Progress Timeline

DATE	THESIS	STA4505
Dec 2014	~~Complete CTMC calibration~~	
Dec 2014	~~Backtest naive strategies based on CTMC~~	
Jan-May	~~Study stochastic controls: ECE1639, STA4505~~	
Jun 5	~~Establish models~~	~~Exam Study~~
Jun 12	~~Establish performance criteria~~	~~Exam Study~~
Jun 15	Derive DPP/DPE	~~EXAM~~
Jun 19	Derive DPP/DPE	
Jun 26	Derive DPE/Solve PDEs	
Jul 3	Solve PDEs	
Jul 10	Solve PDEs and implement numerical solution	Numerical solution
Jul 31	Backtest solution on historical data	Implement simulations
Aug 15	Dissertation Writeup	Project Writeup