

## Probability Theory in Finance and the Black-Scholes Formula

Financial mathematics is a branch of applied math that uses mathematical techniques and models to make optimal decisions in the financial market. The goal of my project is to use the Black-Scholes Formula for pricing a call option. To achieve that, I will first seek to gain an understanding of probability theory, one of the main ingredients in the Black-Scholes Formula. The central objects of probability theory are random variables, stochastic processes, and events: mathematical abstractions of non-deterministic events or measured quantities that may either be single occurrences or evolve over time in an apparently random fashion. Some topics I will study include measure theory, set theory, expected values, conditional expectation and stochastic processes. I will also use some analysis, especially sequences, continuous functions and their properties.