



DEPARTMENT OF APPLIED MATHEMATICS

應 用 數 學 系

**The Hong Kong Polytechnic University
Department of Applied Mathematics**

Colloquium

Asset models and numerical method for pricing options

by

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Abstract

Many types of options are available on various underlying assets like stocks, commodities, exchange rates, interest rates. The basic so-called vanilla options give the holder right to buy (call option) or sell (put option) the underlying asset with a fixed exercise price.

Different types of models have been proposed to mimic the price of assets. A basic model is a geometrical Brownian motion. Its various generalizations include stochastic volatility, jumps, and volatility surfaces.

Many numerical methods have been developed to price options when analytical formulas are not available. Possibly the most obvious approach is the Monte Carlo method which simulates paths of asset prices and based on these estimates the price of option. Another intuitive way is to form a tree of possible asset prices and based on it computes the price. Often the probability distribution function of asset prices is known and with it the price can be obtained by integrating. Alternative approach is to formulate a partial differential equation for the price and solve it using, for example, a finite difference method.

Date : 10 January, 2017 (Tuesday)

Time : 11:00a.m. – 12:00noon

Venue : TU801, The Hong Kong Polytechnic University

***** ALL ARE WELCOME *****