

國立中央大學數學系

專題演講

主 講 人：陳亭甫教授 (逢甲大學應用數學系)

演講題目：Applications of mathematics to financial engineering

演講茶會：2022年03月24日(星期四) 3:30 p.m. ~ 4:00 p.m.

茶會地點：中央大學鴻經館M306

演講時間：2022年03月24日(星期四) 4:00 p.m. ~ 5:00 p.m.

演講地點：中央大學鴻經館M107

Abstract：

Financial engineering is an interdisciplinary study that applies mathematics, statistics, and programming tools to the financial market to evaluate the fair price of financial derivatives and analyze the variations in the market. In this talk, we focus on applying mathematical tools to financial engineering, and there are four topics included. (1) We describe how to construct the stochastic differential equation (SDE) models for the financial asset price. We will introduce models from the basic Black-Scholes to advanced dynamics models. (2) The parameter estimation under the state-space model. We present the particle filter method and the EM algorithm to estimate models' parameters with hidden variables. (3) We introduce how to evaluate the fair value of financial derivatives by solving characteristic functions and applying numerical methods. (4) The application of financial engineering, including the risk management for the financial and insurance market and portfolio construction with dynamic risk preference through reinforcement learning.

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