Hong Kong Consortium of Quantitative Finance







香港科技大學 THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY



## Hong Kong - Singapore joint Seminar Series in Financial Mathematics/Engineering

# Some recent progress on stochastic maximum principle with nonconvex control domain

#### Prof. Shaolin Ji Shandong University

#### Abstract

Peng (1990) first established a general stochastic maximum principle (SMP) for the classical stochastic control problem with nonconvex control domains. Then some researchers extended the SMP to more general control problems where the state equations are forward-backward stochastic differential equations (FBSDE). In this presentation, we introduce two recent works. The first issue is that the state equation is a decoupled FBSDE in which the backward equation admits quadratic growth in the argument z. The second issue is that the state equation is a fully coupled FBSDE. For both cases, we study the corresponding stochastic optimal control problems with nonconvex control domains and derive the global SMPs with entirely new terms.

#### About the speaker

Prof. Shaolin Ji is a professor at Shandong University. His research interests include financial mathematics, stochastic control and nonlinear expectations theory. Professor Ji has published a series of achievements in the Review of Financial Studies, Probability Theory and the Related Fields, and SIAM Control and Optimization. His recent studies include asset pricing under model uncertainty, Neyman-Pearson lemma under nonlinear expectation, and BSDE driven by G-Brownian motion.

#### Date

Nov 03, 2022 (Thursday) (HK Time) **Time** 16:00 – 17:00 (HK Time)

### Zoom

https://polyu.zoom.us/j/99 578546852?pwd=S1pBcD JwdVlQb0tadmhVanM5Q W1pZz09

Meeting ID: 995 7854 6852 Passcode: 1103