FUDAN UNIVERSITY

Applied Math Ph.D. Seminar

Backward Stochastic Partial Differential Equations: Applications to Stochastic Optimal Control of Partially Observed Systems

Speaker: Yuyang Ye (Fudan University)

Time: 2024-10-17, 16:10 to 17:00

Location: Rm 1801, Guanghua East Tower

Advisor: Shanjian Tang (Fudan University)

Abstract: Backward stochastic partial differential equations (BSPDEs), as an infinite-dimensional extension of backward stochastic differential equations, are crucial in stochastic optimal control theory. This study explores the Cauchy problem for a class of linear BSPDEs. For deterministic leading coefficients, we establish the solvability and Hölder regularity of well-posed strong solutions to fractional BSPDEs using potential theory of the fractional heat kernel. Additionally, we apply fractional adjoint BSPDEs to analyze stochastic optimal control in partially observed systems driven by α-stable Lévy processes. In the case of stochastic leading coefficients, we propose a perturbation method to derive Schauder estimates.