

Department of Applied Mathematics Seminar

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Topic

Linear-Quadratic Stackelberg Games for Jump-Diffusion Systems

Date | Time

10 April 2025 (Thursday) | 19:30 – 20:30 (HK Time)

Meeting ID | Password

897 4056 2399 | 0410

Zoom Link

<https://polyu.hk/Hfvoz>

Abstract:

In this talk, we study linear-quadratic leader-follower Stackelberg differential games for jump-diffusion stochastic differential equations. In Stackelberg games, the leader holds a dominating position; the leader chooses, and then, announces her/his optimal strategy by considering the rational behavior of the follower. The follower then chooses her/his optimal solution based on the choice of the leader. This describes a sequential and hierarchical optimization problem between the leader and the follower, which arises in various applications such as finance, engineering, and science.

First, we study the case of complete information, where both the leader and the follower have access to the full filtration F generated by the underlying stochastic processes. Then we study the case of asymmetric information, where the leader and the follower have access to partial filtrations $G_1 \subset F$ and $G_2 \subset F$, respectively, with $G_2 \subset G_1$ reflecting the asymmetric information structure. In both problems, by the stochastic maximum principle as well as the four-step scheme, we obtain the explicit feedback-type Stackelberg equilibrium for the leader and the follower.

ALL ARE WELCOME