THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

DEPARTMENT OF MATHEMATICS

MATHEMATICS COLLOQUIUM

Modelling the propagation of epidemics with diffusion

By

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Abstract

Various diffusion mechanisms are key to the propagation of epidemics. As a matter of fact, diffusion arises under several guises in epidemiology. After reviewing some classical results, I will present recent works that deal with diffusion and were motivated by the Covid-19 pandemic. I will first discuss models of spatial spreading of epidemics. Then, I will present a new model for the dynamics of epidemics that includes the effects of heterogeneity of individual behaviors and social diffusion. I will show that this model yields rich dynamical structures that exhibit outstanding features of epidemics such as the formation of plateaus, "shoulders" and rebounds, as were observed in the dynamics of the Covid-19 epidemics. I will discuss results we have obtained on this system, and some challenges it raises. I report here on joint work with B. Desjardins, J. Weitz, and J-M. Oury.

Date : 24 March 2023 (Fri)
Time : 3:00pm
Venue : Lecture Theater F (Lifts 25/26)

All Are Welcome!