



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

***MATHEMATICS COLLOQUIUM***

**The influence of domain shape in  
reaction-diffusion equations**

By

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Abstract

The broad theme of this talk will be the interplay between diffusion and geometry of domains in the framework of reaction-diffusion equations of bistable type. These equations arise in a variety of contexts, in biology, ecology, phase transitions, etc. Bistable equations describe situations when two stable states compete with each other. Here, we are interested in understanding how the geometry of the domain interacts with the dynamical properties. I will first present classical results related to convexity. I will then discuss general properties for propagation of invasion waves. These questions involve new qualitative results for some non-linear elliptic and parabolic partial differential equations. I will also discuss recent results about uniqueness/non uniqueness of stationary solutions in unbounded domains in which the geometry of the domain plays a surprisingly strong role.

**Date : 16 May 2025 (Friday)**

**Time : 3:00p.m.-4:00p.m.**

**Venue : Lecture Theatre H (near Lift 27/28)**

*All are Welcome!*