Departmental Colloquium

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2:00pm, HH-3017

Front Propagation Phenomena in Heterogeneous Environments

ABSTRACT:

Front propagation phenomena are ubiquitous in many scientific areas such as biology, combustion theory, ecology, and so on, and have been attracting a lot of study in recent years especially in heterogeneous environments. In this talk, I will introduce the mathematical development of front propagation phenomena in reaction-diffusion equations and nonlocal dispersal equations, which have been widely used to model the evolution of species. I will first present some basics about traveling fronts in the classical Fisher's equation. Then, I will move to front propagation phenomena in reaction-diffusion equations with the focus on periodic traveling fronts and transition fronts in periodic media and heterogeneous media, respectively. It is followed by the introduction of front propagation phenomena in nonlocal dispersal equations and related mathematical challenges. Finally, I will introduce some related problems in random/stochastic environments.