

Applied Dynamical Systems Seminar

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**Thursday, October 29, 2015
3:30-4:30pm, HH-3017**

The Diffusive Logistic Model with A Free Boundary in Heterogeneous Environment

Abstract:

In this talk, we focus on the population dynamics of an invasive species in heterogeneous environment which is modelled by a diffusive logistic equation with free boundary condition, where the free boundary exactly represents the expanding front. We divide the environment into two cases: weak heterogeneous and strong heterogeneous. By choosing certain parameters in the system as varying parameters, we derive sufficient conditions for species spreading (resp. vanishing) in the strong heterogeneous environment; while in the weak heterogeneous environment, we obtain sharp criteria for the spreading and vanishing. Moreover, when spreading happens, we give an estimate for the asymptotic spreading speed of the free boundary.