

Colloquium

Prof. Manjun Ma
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Monday, August 22, 2016
2:00-3:00 pm in HH-3017

*Global bifurcation and stability of steady states for a
reaction-diffusion-chemotaxis model with volume-filling effect*

Abstract: We will talk about a reaction-diffusion-chemotaxis model with volume-filling effect in a bounded domain with Neumann boundary conditions. We first establish the global existence of classical solutions bounded uniformly in time. Then applying the asymptotic analysis and bifurcation theory, we obtain both the local and global structure of steady states bifurcating from the homogeneous steady states in one dimension by treating the chemotactic coefficient as a bifurcation parameter. Moreover we find the stability criterion of the bifurcating steady states and give a sufficient condition for the stability of steady states with small amplitude. The pattern formation of the model is numerically shown and the stability criterion is verified by our numerical simulations.