Department of Mathematics,
University of California San Diego

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Math 218 - Seminar on Mathematics for Complex Biological Systems

Prof. Xu Yang

Department of Mathematics, UC Santa Barbara

Mean-field models for chemotaxis

Abstract:

This talk will focus on my works on mean-field models for chemotaxis based on kinetic theory, including pathway based mean-field models, augmented Keller-Segel model for E. coli chemotaxis, and an asymmetric model for biological aggregation. I will give mathematical derivation of the mean-field models by taking some proper moment closure of kinetic biological systems. Building biological mechanism in the models are essential to capture some interesting swarming phenomena, for example, phase-delayed traveling wave (memory effect) and soliton solution (asymmetric sensing). Connections to the chemotaxis model proposed in [G. Si, T. Wu, Q. Quyang and Y. Tu, Phys. Rev. Lett., 109 (2012), 048101] will be also discussed.

Hosts: Li-Tien Cheng, Bo Li, and Ruth Williams

Thursday, March 15, 2018
2:00 PM
AP&M 5829

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