NIMBioS

National Institute for Mathematical and Biological Synthesis

cordially invites you to an

Interdisciplinary Seminar

with

Dr. Olivia Prosper

on

"Spatial heterogeneity, host movement, and the transmission of mosquito-borne disease"

Tuesday, October 30, 2018
3:30-5 p.m.
Reception & refreshments at 3 p.m.

Hallam Auditorium, Room 206
1122 Volunteer Boulevard

Dr. Olivia Prosper is an assistant professor of mathematics at the University of Kentucky. She received her Ph.D. in Mathematics in 2012 from the University of Florida under the mentorship of Maia Martcheva. From 2009 through 2011, Prosper was an NSF IGERT Fellow. From 2012 to 2015, she was Instructor in Applied and Computational Mathematics, a teaching and research postdoctoral position, at Dartmouth College. Her current research interests include improving our understanding of how spatial heterogeneity in transmission and competition between pathogens influences the emergent dynamics and metrics of disease systems, particularly vector-borne disease.

Abstract: The Ross-Macdonald framework, a suite of mathematical models for the transmission of mosquito-borne disease, made numerous simplifying assumptions including that transmission occurs in a homogeneous environment. Despite these assumptions, this modeling framework has been invaluable to the study of vector-borne disease and to informing public health policy. In recent years, more attention has been paid to the role of human movement in regions with spatially heterogeneous disease transmission. In this talk, I will introduce metapopulation frameworks for vector-borne disease, based on the Ross-Macdonald model, in which human movement connects discrete populations with different levels of malaria transmission. I will discuss properties of this model, compare these properties to the homogeneous case, and will discuss the implications for malaria control. Finally, I will present an approach for identifying the appropriate network structure for the metapopulation model, using either mobile phone or geographical data.

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The seminar will be live streamed. Visit
http://www.nimbios.org/videos/livestream.

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