

FRANKLIN & MARSHALL COLLEGE  
and  
MILLERSVILLE UNIVERSITY

***A Virtual Joint Colloquium in Mathematics***

Thursday, November 5th, 2020, 4:00–5:00pm EDT

Dr. Xiaoxia Xie, Idaho State University

Persistence criteria for the nonlocal niche model and applications

**Abstract:** Long range dispersal is a common phenomenon in biology and ecology. To have a better understanding of the evolution of biodiversity in some ecosystem, there is a need to understand the influence of nonlocal dispersals on the survival/persistence of a population. In this talk, I will report on a recent study concerning persistence criteria in some nonlocal models on temporal and spatial heterogeneous environment. I will first present some spectral theory of the associated eigenvalue problem, such as the existence of the principal eigenvalue, and the asymptotic behaviors of the generalized principal eigenvalue with respect to its underlying parameters. As a consequence, I will discuss the applications of these results to the evolutionary invasion analysis. Secondly, I will show some results of the eigenvalue problem with indefinite weight functions, which have practical importance in the context of reserve design or pest control.

**Please contact one of the individuals below for the Zoom link to this event:**

Nicholas Baeth, F&M	nicholas.baeth@fandm.edu	(717) 358-4541
Baoling Ma, MU	baoling.ma@millersville.edu	(717) 871-4263
Erin Moss, MU	erin.moss@millersville.edu	(717) 871-5903
Iwan Praton, F&M	iwan.praton@fandm.edu	(717) 358-4238