Cleveland State University
College of Science

COLLOQUIUM

Junping Shi, Ph.D.

Professor

Dept. of Mathematics, College of William and Mary

Modeling Animal Movement with Memory with Partial Differential Equations with Time-Delay

Friday Apr. 4th at 1:00pm in RT 1516

Bio: Junping Shi is a Professor of Mathematics in the College of William & Mary, and he was the Chair of the William & Mary Mathematics Department from 2018 to 2022. He studied mathematics in Nankai University of China from 1990-1993, and he obtained his PhD in mathematics from Brigham Young University in 1998. His research areas include nonlinear elliptic and parabolic equations, bifurcation theory and mathematical biology. He is an associate editor of Journal of Mathematical Analysis and Applications, Communications on Pure and Applied Analysis, and Applicable Analysis. His research has been supported by the National Science Foundation (NSF) since 2003, and he was the director of William & Mary NSF EXTREEMS-QED program in 2013-2019. He has published more than 190 papers which have been cited more than 10,000 times on Google Scholar.

Abstract: Animal populations often self-organize into territorial structure from movements and interactions of individual animals. Memory is one of cognitive processes that may affect the movement and navigation of the animals. We will review several mathematical approaches of animal spatial movements and also introduce our recent work using partial differential equations with time-delay to model and simulate the memory-based movement. We will show the bifurcation and pattern formation for such models. It is based on joint work with Chuncheng Wang, Hao Wang, Xiangping Yan, Qingyan Shi and Yongli Song.

Coffee available in RT 1517 before the talk at 12:30pm