



# COLLOQUIUM

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**Dispersal strategy of hosts and evolution of pathogen  
virulence in a two-patch model with travel loss**

**Friday Mar. 21 at 1:00pm in RT 1516**

*Bio:* Prof. Wu earned his Ph.D. in Mathematics from National Taiwan Normal University in Taiwan and was a visiting scholar at the Mathematical Biosciences Institute (MBI) at Ohio State University. He is currently a Professor at National Yang Ming Chiao Tung University, specializing in PDE and dynamical systems. He is now visiting OSU again as part of his sabbatical. His research focuses on their applications in mathematical biology, particularly in propagation dynamics in ecological interactions and infectious diseases.

*Abstract:* In this talk, we investigate how migration affects the evolution and dynamics of pathogens in animal populations, using a two-strain SIR epidemic model with travel loss in patchy environments. We prove that under suitable conditions, an optimal strategy for migration rates exists, such that the host of a strain adopting this strategy wipes out the other strain. This also reveals that migration causes the dynamics to not be completely determined by the basic reproduction numbers. By considering the effects of travel loss, our results offer insights into the evolution of pathogen virulence, suggesting that lower virulence may be favored in hosts with slower migration rates if the travel loss is large. This is joint work with Bo-Sheng Chen.

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