

1137-92-107

Chiu-Yen Kao* (ckao@cmc.edu). *Study of a Mixed Dispersal Population Dynamics Model.*

In this talk, we discuss a mixed dispersal model with periodic and Dirichlet boundary conditions and its corresponding linear eigenvalue problem. This model describes the time evolution of a population which disperses both locally and nonlocally. We investigate how long time dynamics depend on the parameter values. Furthermore, we study the minimization of the principal eigenvalue under the constraints that the resource function is bounded from above and below, and with a fixed total integral. Biologically, this minimization problem is motivated by the question of determining the optimal spatial arrangement of favorable and unfavorable regions for the species to die out more slowly or survive more easily. Our numerical simulations indicate that the optimal favorable region tends to be a simply connected domain. Numerous results are shown to demonstrate various scenarios of optimal favorable regions for periodic and Dirichlet boundary conditions. This is a joint work with Marina Chugunova, Baasansuren Jadamba, Christine Klymko, Evelyn Thomas and Bingyu Zhao. (Received January 30, 2018)