Department of Mathematics, Statistics and Computer Science
St. Francis Xavier University
Presents

An Eigenvalue Optimization Problem in Mathematical Ecology

by
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Determining how to deploy resources for a species so as to provide the most benefit is a central issue in many Ecological settings. A common mathematical formulation of this problem leads to an indefinite weight eigenvalue problem on an arbitrary two dimensional domain with Neumann boundary conditions. The weight function characterizes heterogeneities in the quality of the habitat while the principal eigenvalue of the problem gives the critical diffusivity the species must not exceed in order to persist in the habitat. By examining which weight functions generate the smallest principal eigenvalue, several important qualitative results regarding the optimal distribution of resources are established.

Refreshments will be served before the talk in AX24A