

# Applied Dynamical Systems Seminar

Dr. Xiaoqiang Zhao,  
Memorial University

Monday, October, 7, 2013  
3:00p.m., HH-3017

## *The Principal Eigenvalue of A Periodic Parabolic Problem*

Abstract:

The principal eigenvalue is a basic concept in the field of parabolic partial differential equations. In recent decades, a large amount of research works have been devoted to the study of qualitative properties of the principal eigenvalue and its eigenfunction for second-order linear elliptic operators. As far as the nonautonomous periodic-parabolic operator is concerned, however, much less has been known for the associated principal eigenvalue, especially when the advection term appears. The principal eigenvalue for linear periodic-parabolic operators becomes important when a time periodic environment is involved. In this talk, I will report our recent research on a one-dimensional periodic-parabolic eigenvalue problem. The dependence of the principal eigenvalue on the diffusion and advection coefficients is investigated. If time permits, I will mention an application of the developed theory to a nonlocal reaction-diffusion-advection model of a single phytoplankton species with periodic incident light intensity. This talk is based on a joint work with Rui Peng.

Coffee and cookies will be served.

Seminar website: <http://www.math.mun.ca/~shuz/seminars.html>