

DEPARTMENT OF MATHEMATICS AND STATISTICS
AND
CENTER FOR COMPUTATIONAL SCIENCES
MISSISSIPPI STATE UNIVERSITY

COLLOQUIUM

Optimal Control of an Integro- difference Population Model

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Friday, February 9, 2007 at 3:30 pm

Allen 14

Abstract: Integro-difference equations are models that are discrete in time and continuous in space. These equations model populations with discrete generations with separate growth and dispersal stages. The dispersal is modeled by an integral of the population density (after the growth) against a kernel. Optimal control of such a hybrid equation is a new area and involves a combination of the techniques from the discrete version of Pontryagin's Maximum Principle and from control of partial differential equations. Analysis and characterization of an optimal harvesting control will be given using an adjoint equation. Numerical algorithms and illustrations will be included for a variety of dispersal kernels and growth functions.

There will be a reception for Dr. Lenhart at 3:00 in Allen 467.