

THE MATHEMATICS DEPARTMENT PRESENTS

# A MATHEMATICS COLLOQUIUM

THURSDAY, April 19, 2007

BOND HALL 227

4:00 pm

**Title: Finite Difference Methods for Partial Differential Equations and the Lax Equivalence Theorem**

**Speaker: Heather Cleveland**, Western Washington University

**Abstract:** In this talk, I will introduce three basic types of partial differential equations, and discuss numerical methods commonly used to solve them. Specifically, the finite difference method will be studied by working through an example of the heat equation. We will use the numerical solution for the heat equation to illustrate important concepts that appear in the Lax Equivalence Theorem, such as consistency, convergence, and stability. The Lax Equivalence Theorem is commonly known as the fundamental theorem for numerical partial differential equations, and provides a way to analyze difference schemes for well-posed linear initial-value problems.

Refreshments will precede the talk at 3:30pm in Bond Hall 300  
courtesy of Yun-Qiu Shen.