

THE MATHEMATICS DEPARTMENT PRESENTS

A MATHEMATICS COLLOQUIUM

THURSDAY, June 7, 2007

BOND HALL 227

4:00 pm

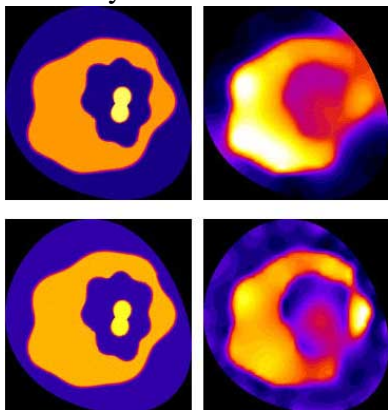
Title: **Optical Tomography in two dimensions: An inverse boundary value problem**

Speaker: **Dan Fortin**, Western Washington University

Abstract: It was recently discovered that human tissue has a relative transparency to infrared light in the region 700-1000nm. Following this discover medical imaging techniques have been developed using near-infrared light. Optical Tomography is an imaging method which seeks to recover the spatial distribution of tissue **absorption** and **scattering** parameters in the near-infrared and optical wavelength range from surface measurements of light transmission. In this talk we will consider a two dimensional convex body, and investigate the inverse problem of recovering the absorbtion and scattering parameters of the body by probing it with light. The two main questions of interest are:

1. Do surface measurements uniquely determine the absorbtion and scattering parameters?
2. Can we solve for these parameters?

The talk will be focused on answering these questions, and the mathematics involved should be accessible to anyone familiar with differential equations.



Refreshments will precede the talk at 3:30pm in Bond Hall 300
courtesy of Steve McDowall.