



UNIVERSITY OF ROCHESTER

# Department of Mathematics Colloquium Series

## ABSTRACT

The process of formation and developing of waves in a bounded curved region is one of the classical questions in physics. The applications include describing acoustic or electromagnetic waves in a medium, also many quantum systems can be described using essentially the same tools. It is important to know in particular how the geometric properties of the region such as its shape and curvature allow or do not allow waves to focus and eventually become very large.

In the mathematics language the spreading of the wave can be described in terms of a sum involving a certain set of functions, namely the eigenfunctions of the Laplace operator in the region or manifold under consideration. The size of the wave can be described in terms of various average values of its absolute value over the manifold, the so-called  $L^p$  norms for different choices of the number  $p$ .

The speaker will present various  $L^p$  estimates for eigenfunctions of the Laplacian in manifolds with and without boundary. A common theme is to try to see how the underlying geometry of the manifold does or does not lead to an unbounded growth of different  $L^p$  norms.

The talk is addressed to an audience with interest in mathematics.

Professor Christopher Sogge  
Winner of the Guggenheim Foundation Fellowship (2005)  
Department of Mathematics  
Johns Hopkins University

## *Estimates for Eigenfunctions of the Laplace Operator*

Thursday, November 2, 3:30–4:30 p.m.  
Hoyt Auditorium

UNIVERSITY OF  
ROCHESTER