

2012

# MATHEMATICS COLLOQUIUM

FRIDAY, NOVEMBER 2<sup>ND</sup> @ 4:00

PHYSICAL SCIENCE BUILDING ROOM 308

**Floyd Williams**

**University of Massachusetts Amherst**

## **Fourier analysis, scattering, and mock zeta function of certain black hole vacua**

We consider Fourier expansions of functions invariant under the action of some discrete group. Such functions therefore are a generalization of ordinary periodic functions on the real line  $\mathbb{R}$ , where the discrete group is the group of integers. Our interest is in hyperbolic space - the upper  $1/2$  plane, for example. In particular we focus on some group actions that are quite simple in character and which define a black hole, or a ground state vacuum, and an associated zeta function, whose zeros are related to scattering theory. Since we will focus only on concrete examples, the talk would be largely self-contained, with the requirement of a good background in advanced real and complex calculus. No knowledge of scattering theory nor of black holes will be assumed.

**Refreshments in PS 317 at 3:30 PM**