

# TEMPLE UNIVERSITY MATHEMATICS COLLOQUIUM

**Matthew Stover**

University of Michigan

will speak on

## **Ends of hyperbolic manifolds**

ABSTRACT: Let  $M$  be a compact  $n$ -manifold with nonempty boundary consisting of a nonempty disjoint union of tori. Does the interior of  $M$  admit a complete hyperbolic metric of finite volume? When  $n$  is 2 or 3, there is a very satisfying answer depending only on the topology of  $M$ . In higher dimensions we know very little. For example, we do not know a single example of a 1-ended complete hyperbolic  $n$ -manifold of finite volume for any  $n > 3$ . The only known constructions in high dimensions are either arithmetic or hybrids of arithmetic manifolds. I will explain why 1-cusped arithmetic hyperbolic manifolds do not exist for any  $n > 29$ . This follows from a much stronger finiteness theorem, namely that for every  $k > 0$ , the arithmetic negatively curved locally symmetric spaces with  $k$  ends fall into finitely many commensurability classes.

MONDAY, JANUARY 28, 2013

LECTURE AT 4:00 PM

COFFEE, TEA, AND REFRESHMENTS FROM 3:30 PM

ROOM 617, WACHMAN BUILDING

DEPARTMENT OF MATHEMATICS