Department of Mathematics and Computer Science

Friday, April 21, 2017, 4:10 pm

COLLOQUIUM TALK

Speakers: Corinne Barnett & Grant Lakeland (EIU)

Old Main 2231

One-cusped hyperbolic prisms and reflection groups

Abstract:

A polygon tiles the Euclidean plane, the sphere, or the hyperbolic plane by reflections if we obtain a tiling by repeatedly reflecting the polygon across its sides, and the sides of the resulting copies. Similarly, a hyperbolic polyhedron tiles hyperbolic 3-space $\mathbb{H}^3$ by reflections if reflecting across faces results in a tiling of $\mathbb{H}^3$. The simplest such polyhedra are tetrahedra, and there are 32 hyperbolic tetrahedra which tile by reflections. We study some of the next simplest, namely the five-sided hyperbolic prisms, with one ideal vertex, which tile by reflections. In this talk, we will describe a combinatorial enumeration of these prisms, as well as how to find the polyhedra explicitly in $\mathbb{H}^3$. Time permitting, we will discuss some applications of these results.

SNACKS IN FACULTY LOUNGE AT 3:30 PM.
EVERYONE WELCOME (EVEN IF YOU ARE UNABLE TO ATTEND THE TALK)