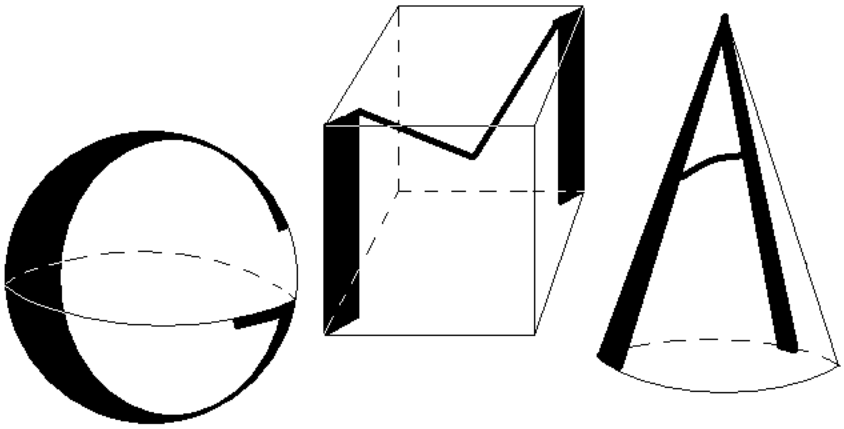

Colloquium

October 25, 4:05 p.m. (9^{th} Period)

(in the Atrium)

Speaker: Dr. Michael Hull

Title:Dehn's solution to the word problem in surface groups.

Abstract

Given a presentation of a group G, a solution to the word problem for this presentation is an algorithm which inputs a word in the given generators of G and determines whether or not the word represents the identity in G. This problem was introduced by Dehn in 1911, and at the same time Dehn produced an algorithm which solved the word problem for the standard presentation of the fundamental group of a closed, orientable surface. Topologically, this algorithm can be interpreted as determining when two closed curves on the surface are homotopic. I will present Dehn's proof, which combines ideas from group theory, computability, topology, and geometry. Furthermore, I will give a brief history of geometric group theory and discuss how some of its foundational ideas can be traced back to Dehn's proof. This talk will also serve as an advertisement for the graduate topics course in geometric group theory that I will be teaching in the Spring.