Temple University Mathematics Colloquium

Dan Margalit

University of Utah

will speak on

Dimensions of Torelli groups

ABSTRACT:

The mapping class group $Mod(S)$ of a genus g surface $S = S_g$ is the group of connected components of $Homeo(S)$.

The action of $Mod(S)$ on $H_1(S, Z)$ gives a surjective homomorphism from $Mod(S)$ to $Sp(2g, Z)$. The Torelli group $I(S)$ is the kernel, and it thus encapsulates the nonarithmetic behavior of $Mod(S)$.

In this talk, we will explain both classical and new results on the finiteness properties of $I(S)$. For example, Johnson showed that $I(S_g)$ is finitely generated for g at least 3. In joint work with Mladen Bestvina and Kai-Uwe Bux, we show that the cohomological dimension of $I(S_g)$ is equal to $3g-5$. We also show that $H_{3g-5}(I(S_g))$ is infinitely generated. In particular, these theorems give a new perspective on the celebrated theorem of Mess that $I(S_2)$ is an infinitely generated free group. Our main tool is a new contractible complex, the "complex of minimizing cycles," on which $I(S)$ acts.

Monday, 18 February 2008

Lecture at 4:00 pm

Coffee, tea, and refreshments from 3-5 pm

Room 617, Wachman Building

Department of Mathematics