Department of Mathematics
University of Notre Dame

Paul Apisa - University of Wisconsin Madison

TOPOLOGY SEMINAR

Guest Speaker: Paul Apisa

University of Wisconsin Madison

Date: Tuesday, October 10, 2023
Time: 2:30 PM
Location: 258 Hurley Bldg
Zoom Link: NA

Lecture Title:

Hurwitz Spaces, Hecke Actions, and Orbit Closures in Moduli Space

Abstract

The moduli space of Riemann surfaces is a space whose points correspond to the ways to endow a surface with a hyperbolic metric or, equivalently, complex structure. Geodesic flow on moduli space can be used to generate an action of GL(2, R) on its cotangent bundle. While work of Eskin, Mirzakhani, Mohammadi, and Filip implies that GL(2, R) orbit closures are varieties, the question of which ones occur is wide open. Aside from two well-understood constructions (taking loci of branched covers and subloci of rank two orbit closures) there are only 3 known families of orbit closures: the Bouw-Moller curves, the Eskin-McMullen-Mukamel-Wright (EMMW) examples, and 2 sporadic examples. Building on ideas of Delecroix-Rueth-Wright, I will describe work showing that the Bouw-Moller and EMMW examples can be constructed using just the representation theory of finite groups. The main idea is to connect these examples to Hurwitz spaces of G-regular covers of the sphere for an appropriate finite group G. In the end, I will describe a construction that inputs a finite group G and a set of generators satisfying a combinatorial condition and outputs a GL(2, R) orbit closure in moduli space.