GRADUATE STUDENT TOPOLOGY SEMINAR

UNIVERSITY OF NOTRE DAME

Department of Mathematics

Guest Speaker: Hoang Le Xuan

University of Notre Dame

Lecture Title:

The Hopf invariant one problem

Date: Tuesday, November 10, 2026

Time: 12:15 PM

Location: 258 Hurley Hall

Abstract:

This talk introduces the Birman exact sequence, which relates the mapping class group of a surface with a marked point to that of the surface without it. We will discuss the two maps in the sequence: the forgetful map, which forgets the marked point, and the point-pushing map, which identifies the kernel with the fundamental group of the surface. We will also see how pushing a point around a simple loop can be written in terms of Dehn twists. As an application, we prove that for $g \geq 1$, the pure mapping class group $\mathrm{PMod}(S_{g,n})$ is generated by finitely many Dehn twists about nonseparating simple closed curves. The material follows Chapter 4 of Primer on Mapping Class Groups.