

The PATCH Seminar

Supported by Bryn Mawr, Haverford, Penn, and Temple

Liam Watson

UCLA

“ L -spaces and Left-orderability”

A group is left-orderable if it admits a strict total order of its elements that is invariant under multiplication on the left. As an immediate consequence (exercise!), left-orderable groups are torsion free. For example, a finite cyclic group cannot be left-ordered; hence the fundamental group of a lens space is not left-orderable. L -spaces provide a generalization of lens spaces in the context of Heegaard Floer homology. These manifolds have simplest possible Heegaard Floer homology, though they need not have cyclic fundamental group. This talk will describe some evidence supporting the conjecture that L -spaces are equivalent to 3-manifolds with non-left-orderable fundamental group.

David Gay

University of Georgia

“Using Morse 2-functions to Trisect 4-manifolds”

Morse 2-functions are generic smooth maps to 2-manifolds, just as ordinary Morse functions are generic smooth maps to 1-manifolds. The goal of this talk is to get the audience to feel comfortable thinking about Morse 2-functions and to make the case that they are worth thinking about. As a vehicle for this agenda I’ll show how to construct a Morse 2-function on an arbitrary closed oriented 4-manifold X which yields a very natural decomposition of X into three diffeomorphic pieces. This seems to be the correct 4-dimensional analog of a Heegaard splitting; each piece is a 4-dimensional 1-handlebody, and the pieces are glued together along naturally arising 3-dimensional handlebodies. I will also throw in some other tidbits and hints about our larger Morse 2-function vision. This is a report on joint work with Rob Kirby.

Friday, April 20 at 3:00 and 4:30pm
Haverford College, KINSC H108