

## Departmental Colloquium

### *Structure theorems for actions of homeomorphism groups*

Kathryn Mann (Brown University)

**Abstract:** The groups  $\text{Homeo}(M)$  and  $\text{Diff}(M)$  of homeomorphisms or diffeomorphisms of a manifold  $M$  have many striking parallels with finite dimensional Lie groups. In this talk, I'll describe some of these, and explain new work, joint with Lei Chen, that gives an orbit classification theorem and a structure theorem for actions of homeomorphism and diffeomorphism groups on other spaces, analogous to some classical results for actions of locally compact Lie groups. As applications, we answer many concrete questions towards classifying all actions of  $\text{Diff}(M)$  on other manifolds (many of which are nontrivial, for instance  $\text{Diff}(M)$  acts naturally on the unit tangent bundle of  $M$ ...) and resolve several threads in a research program initiated by Ghys. I'll aim to give both a broad overview and several toy applications in the talk.

Friday, March 15 at 3:00 PM in 636 SEO