

Geometry, Topology and Dynamics Seminar

Mapping class groups and monodromy of some families of algebraic curves

Nick Salter (University of Chicago)

Abstract: Complex algebraic geometry is a wonderfully rich source of geometric/topological phenomena. In this talk, I will survey some connections between classical notions in algebraic geometry (e.g. smooth algebraic curves in the projective plane) and low-dimensional topology, particularly the mapping class group. The connection arises through the notion of a "Riemann surface bundle". A "family" of algebraic curves arising via algebraic geometry naturally forms such a fiber bundle, and any such bundle has a monodromy representation, i.e. a subgroup of the mapping class group. These groups are rich and interesting, but currently very poorly understood. I will discuss some work of mine in this direction - one result constrains the size of these groups, and another shows they are quite large in certain contexts. This will involve a blend of ideas from algebraic geometry and the theory of the mapping class group, particularly the Torelli group.

Monday, April 3 at 3:00 PM in SEO 636