Floer homology and Fractional Dehn twists

Matthew Hedden, Michigan State University

There is a rational valued invariant of an automorphism of a surface with a single boundary component called the fractional Dehn twist coefficient. Roughly, it measures the twisting of the automorphism around the boundary. The fractional Dehn twist coefficient is related to the theory of taut foliations, essential laminations, and contact structures on 3-manifolds obtained by performing Dehn surgery on fibered knots. These connections arise by associating to a fibered knot in a 3-manifold the fractional Dehn twist coefficient of the monodromy of the fibration on its complement. I'll describe how the Heegaard Floer homology of a 3-manifold bounds the fractional Dehn twist coefficient of any of its fibered knots, and some consequences this has for contact structures on 3-manifolds. This is joint work with Tom Mark.