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Fast computation in mapping class groups

The talk will be on a project, joint with Dan Margalit and Oyku Yurttas, whose goal is to give a framework for fast computation in mapping class groups. We show that there is a quadratic-time algorithm that computes the Nielsen-Thurston type of a mapping class (finite order, pseudo-Anosov or reducible). It also finds the reducing curves and the stretch factors and invariant foliations on pseudo-Anosov components.