A Farrell-Jones theorem for scissors congruence K-theory

Mona B Merling
University of Pennsylvania
`mmerling@upenn.edu`

The classical scissors congruence group for a geometry X (Euclidean, spherical or hyperbolic) classifies polytopes in X up to "scissors congruence," more precisely up to cutting into subpolytopes and moving pieces by isometries. It is known that this group can be computed as group homology of the isometry group. The scissors congruence K-theory spectrum is a homotopical lift of this construction. We show that the K-theory spectrum of polyhedra is a homotopy orbit spectrum, so that it satisfies a Farrel-Jones type isomorphism. This allows us to define a trace map from scissors congruence K-theory of polyhedra to group homology.
(joint work with Anna Marie Bohmann, Teena Gerhardt, Cary Malkiewich, Inna Zakharevich)