A pro-p curve complex and residual properties of the mapping class group

Gareth Wilkes (Oxford)

1 June 2017

Abstract: To study the finite quotient groups of the mapping class group it is natural to consider the outer automorphism groups of finite quotients of a surface group. Rather than study these individually, a better approach is to package the finite quotients together into a 'profinite group' which contains all the information of the finite groups in a potentially more tractable form. A more readily manipulated object is the 'pro-p completion', where one only considers finite groups with orders a prime power. In this talk, I will discuss the ways in which the pro-p completion of a surface group may 'split over a cyclic subgroup' in a certain sense, and the techniques by which such a classification is proved. This in turn allows the construction of a pro-p analogue of a curve complex, on which the outer automorphisms of the pro-p group act. From this action we may deduce a non-trivial residual property of the mapping class group.