

Zero entropy subgroups of the mapping class group

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Let M be a compact surface with boundary. We are interested in the question of how a group action on M permutes a finite invariant set $X \subset \text{int}(M)$. More precisely, how the algebraic properties of the induced group of permutations of a finite invariant set affects the dynamical properties of the group. Our main result shows that in many circumstances if the induced permutation group is not solvable then among the homeomorphisms in the group there must be one with a pseudo-Anosov component. We formulate this in terms of the mapping class group relative to the finite set and show the stronger result that in many circumstances (e.g. if $\partial M \neq \emptyset$) this mapping class group is itself solvable if it has no elements with pseudo-Anosov components. This is joint work with John Franks.