

COHOMOLOGY OF THE STABLE MAPPING CLASS GROUP

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The stable mapping class group is the group of automorphisms of a connected oriented surface of “large” genus. The Mumford conjecture postulates that its rational cohomology is a polynomial ring generated by certain classes of dimension $2i$, one for each i greater than 0. Tillmann’s insight that the plus construction makes the classifying space of the stable mapping class group into an infinite loop space led Ib Madsen to a stable homotopy theory version of Mumford’s conjecture, stronger than the original. This stronger form of the conjecture was recently proved by Madsen and myself. In the second half of my talk, I will outline the strategy of the proof, which is in part a reduction to a result from singularity theory. The first half of the talk will be more historical.