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Stable cohomology of Aut(F_n) with bivariant twisted coefficients

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The stable cohomology of Aut(F_n) has been studied by several authors. Galatius proved that the stable cohomology groups with coefficients in Q are trivial. With coefficients in tensor powers of H=H_1(F_n,Q), or of its dual H, *the stable cohomology groups were independently computed by Djament and Vespa (using functor homology methods) and by Randal-Williams (by extending the methods of Galatius). For mixed tensor powers of H and H* ("bivariant" twisted coefficients), a conjectural description was given by Djament. Furthermore, Kawazumi and Vespa proved that the collection of stable cohomology groups with all different bivariant twisted coefficients has the structure of a so-called "wheeled PROP" and that the wheeled sub-PROP generated by a specific cohomology class, which had been previously introduced by Kawazumi, made the conjectural description of Djament a lower bound for the stable cohomology groups. In this talk, I will review these results and explain how these cohomology groups can be computed, confirming the conjecture of Djament, by extending the methods of Galatius and Randal-Williams a bit further.

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