

Tropical curves, graph homology, and cohomology of M_g

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Abstract:

The cohomology ring $H^*(M_g, \mathbb{Q})$ of the moduli space of curves of genus g is not fully understood, even for g small. For example, in the 1980s Harer-Zagier showed that the Euler characteristic (up to sign) grows super-exponentially with g —yet most of this cohomology is not explicitly known. I will explain how we obtained new results on the rational cohomology of moduli spaces of curves of genus g , via Kontsevich’s graph complexes and the moduli space of tropical curves. This is joint work with Søren Galatius and Sam Payne.