

Graphs and Riemann surfaces

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Riemann's moduli space M_g is the space of isomorphism classes of genus g Riemann surfaces. It is a complex variety of dimension $3g - 3$. I will discuss a connection between its rational homology groups $H_*(M_g)$ and the graph complexes introduced by Kontsevich in the 1990's, discovered in recent joint work with Chan and Payne (arXiv:1805.10186). In particular we show that the dimension of $H_{4g-6}(M_g)$ grows exponentially with g . It was known previously that $H_i(M_g) = 0$ for $i > 4g - 6$.