Mathematics > Algebraic Geometry

Singularities of the moduli space of level curves

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For a fixed integer l>1, we describe the singular locus of the compactification of the moduli space R_{g,l} of curves of genus g paired with an l-torsion point in their Jacobian. Generalizing previous work for l=2, we describe the sublocus of noncanonical singularities for any l. For l<5, and for l=6, this allows us to provide a lifting result on pluricanonical forms playing an essential role in the computation of the Kodaira dimension of R_{g,l}: every pluricanonical form on the smooth locus of the moduli space extends to a desingularisation of the compactified moduli space.

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