The global geometry of the moduli space of curves

The moduli space of curves M_g is the universal parameter space for Riemann surfaces of given genus. Its study has been initiated by Riemann in 1857 and it has been a long-standing problem to describe the nature of the moduli space as an algebraic variety. I will survey the history of the problem starting with Severi's conjecture from 1915 predicting that M_g is always unirational, continuing with the work of Harris and Mumford spectacularly disproving Severi's conjecture and finally discussing recent results which settle this problem in one of the most interesting remaining cases, that of genus 22.

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