

Teichmüller geometry of moduli space

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Abstract

In the 1940's Teichmüller discovered a metric, now called the “Teichmüller metric”, on the moduli space M_g of genus g Riemann surfaces. The Teichmüller metric has a description both in terms of quasiconformal maps and in terms of holomorphic quadratic differentials, resulting in a beautiful and useful geometry.

In this talk I will explain two aspects of the Teichmüller geometry of M_g : the coarse and the fine. A first basic question is: “What does M_g look like from far away?” We'll find an answer by constructing a metric simplicial complex which is almost isometric to M_g .

A more delicate problem is to classify those rays in M_g that eventually minimize distance. Beware: given any $\epsilon > 0$, there are rays spiraling around in M_g that are within ϵ of doing this, but that don't do it! How can we detect the difference?

This is a joint project with Howard Masur.