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Geometric complex coordinates for Teichmüller space. (English) Zbl 0678.32014

Mathematical aspects of string theory, Proc. Conf., San Diego/Calif. 1986, Adv. Ser. Math. Phys. 1, 341-354 (1987).

[For the entire collection see [Zbl 0651.00012](#).]

This paper reports on some complex analytic coordinates for Teichmüller space that were found by the author and C. Earle. They are useful for determining asymptotic behavior near Riemann surfaces with nodes.

The coordinates may be described as follows. For S compact of genus $g > 1$, choose a trivial graph with $2g-2$ vertices corresponding to pants and edges corresponding to gluing of two border curves. To define the coordinates, we take two thrice punctured spheres S_1 and S_2 and delete horocyclic neighborhoods of the punctures on each and then the border curves are glued to each other to form a surface Σ . Near the gluing curve, Σ looks like the set $zw = t$ for $0 < |t| < 1$ in \mathbb{C}^2 . Do this for all gluings to obtain a holomorphic parametrization of a neighborhood of the maximally pinched surface. The local parametrization is by $\{t \in \mathbb{C} \mid 0 < |t| < e^\pi\}^{3g-3}$.

Reviewer: W.Abikoff

MSC:

32G15 Moduli of Riemann surfaces, Teichmüller theory (complex-analytic aspects in several variables)

Cited in **9** Documents

Keywords:

[Teichmüller space](#)