

**Zorich, Anton**

**Square tiled surfaces and Teichmüller volumes of the moduli spaces of Abelian differentials.**  
(English) [Zbl 1038.37015](#)

Burger, Marc (ed.) et al., Rigidity in dynamics and geometry. Contributions from the programme Ergodic theory, geometric rigidity and number theory, Isaac Newton Institute for the Mathematical Sciences, Cambridge, UK, January 5–July 7, 2000. Berlin: Springer (ISBN 3-540-43243-4/hbk). 459–471 (2002).

As introduced by the author, concerning the problem of studying the growth rate of the number of closed trajectories of a rational billiard, or the similar problem of studying the number of geodesic saddle loops or geodesic saddle connections on a translation surface, one needs to determine some constants which can be expressed in terms of the volumes of the corresponding strata in the moduli space of Abel differentials [*A. Eskin* and *H. Masur*, Ergodic Theory Dyn. Syst. 21, 443–478 (2001; [Zbl 1096.37501](#))]. Similarly, one needs to know the volumes of the corresponding strata in the moduli space of Abel differentials when studying the topological dynamics of a generic orientable measured foliation on a Riemann surface [*A. Zorich*, Am. Math. Soc. 197(46), 135–178 (1999; [Zbl 0976.37012](#))].

In the paper under review, the author presents an approach for the calculation of these volumes by means of counting the “integer points” in the corresponding moduli space, in particular, he illustrates his approach by treating two examples.

For the entire collection see [[Zbl 0987.00036](#)].

Reviewer: [Yuliang Shen \(Suzhou\)](#)

**MSC:**

- [37B50](#) Multi-dimensional shifts of finite type, tiling dynamics (MSC2010)
- [32G15](#) Moduli of Riemann surfaces, Teichmüller theory (complex-analytic aspects in several variables)
- [30F30](#) Differentials on Riemann surfaces
- [30F60](#) Teichmüller theory for Riemann surfaces
- [37C85](#) Dynamics induced by group actions other than  $\mathbb{Z}$  and  $\mathbb{R}$ , and  $\mathbb{C}$

Cited in **17** Documents

**Keywords:**

[Abelian differential](#); [moduli space](#); [Teichmüller volume](#)