

Counting closed geodesics on flat surfaces

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Abstract:

Counting periodic trajectories in polygonal billiards is related in some cases to counting closed geodesics on corresponding flat surfaces. The asymptotics of the number of closed geodesics on a flat surface is quadratic with a multiplicative coefficient called Siegel-Veech constant. For a flat surface defined by a quadratic differential we explain how this constant is related to the volumes of moduli spaces of quadratic differentials, extending the work of Masur-Zorich and Athreya-Eskin-Zorich. Then we review and compare all known ways to evaluate these volumes.