

Rauzy-Veech groups of flat surfaces

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Abstract: The Rauzy-Veech induction is a powerful renormalization procedure for (half-)translation flows. By tracking the changes it induces in homology, we define the Rauzy-Veech monoid (or group) of a connected component of a stratum of Abelian or quadratic differentials. This monoid was proven to be pinching and twisting by Avila and Viana, which implies the Kontsevich-Zorich conjecture stating the simplicity of the Lyapunov spectrum of almost every translation flow with respect to the Masur-Veech measures.

In this talk, I will present a full classification of the Rauzy-Veech groups of Abelian strata: they are explicit finite-index subgroups of their ambient symplectic groups. This is strictly stronger than pinching and twisting and solves a conjecture of Zorich about the Zariski-density of such groups. Moreover, some techniques can be extended to the quadratic case to prove that the indices of the "plus" and/or "minus" Rauzy-Veech groups of certain connected components of quadratic strata are also finite. This proves that the Lyapunov spectra of such strata are simple, which was not previously known.