Lyapunov exponents and Chern classes

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Lyapunov exponents were introduced for the Teichmüller geodesic flow by Zorich in order to measure the deviation of ergodic averages for billard trajectories. Meanwhile, they are studied as key characteristic quantities with their own right. A guiding questions is when Lyapunov exponents are determined as intersection numbers of chern classes and when they are beyond the scope of algebraic geometry, i.e., transcendental objects.

We will explain instances of this problem, such as non-varying phenomena for the Teichmüller geodesic flow and Lyapunov exponents for ball quotients in connection with commensurability questions.