The Prime geodesic theorem in arithmetic progressions

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Abstract

The Prime geodesic theorem states that the distribution of the lengths of primitive closed geodesics on Riemann surfaces has a similar asymptotic behaviour with the distribution of prime numbers.

In this talk we will discuss an analogue of Dirichlet's theorem in arithmetic progressions for the lengths of primitive closed geodesics on the modular surface. In particular, we prove two conjectures of Golovchanskii and Smotrov from 1999.

This is a joint work with Gergely Harcos and Ikuya Kaneko.