UNIFORM SPECTRAL GAP IN NUMBER THEORY

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I'll begin by discussing Selberg's eigenvalue conjecture. This is an analog of the Riemann hypothesis for a special family of Riemann surfaces that feature heavily in number theory, for example in Wiles' proof of the Taniyama-Shimura conjecture. I'll explain how in the last 10-15 years, number theorists have had to turn to Anosov dynamics to obtain the approximations to Selberg's conjecture that became relevant to emerging "thin groups" questions about Apollonian circle packings and continued fractions. I will explain the spectral gap results I worked on in this area. Then if I have time, I'll explain how I am now looking for analogs of the Selberg conjecture in the setting of Teichmller dynamics with yet more interesting number theory questions in mind.