



**DynamIST**

# **The Wave Trace and Birkhoff Billiards**

**Amir Vig**

Institute of Science and Technology Austria (ISTA)

Host: Kaloshin Group

A classical inverse problem in mathematical physics is to determine the shape of a membrane from the resonant frequencies at which it vibrates. The problem is very much still open for smooth, strictly convex planar domains and in this case, there is a natural dynamical analogue: can one determine the shape of such a domain from the lengths of periodic billiard trajectories? In fact, these problems are related by the Poisson relation and generalized trace formulae which give asymptotic expansions for the wave trace (a Laplace spectral invariant) near the length of a periodic billiard trajectory. In this talk, I will discuss recent work on both types of inverse problems and describe an ongoing project to further elucidate the connection between them.

**Monday, May 9, 2022 02:00pm - 03:00pm**

Mondi Seminar Room 2, Central Building



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

Please find a schedule of the ISTA Shuttle on our webpage:

<https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.