ALBERTO ENCISO

Spectral rigidity of elliptic billiards

Dynamical billiards, which describe the motion of a particle inside a bounded convex domain, are fascinating mathematical objects. They play a central role both in symplectic dynamics and in spectral theory, through their relation with high-frequency Laplace eigenfunctions.

This research project focuses on the study of rigidity properties of elliptic billiards, which boils down to the question of when one can identify an ellipse through knowledge of the lengths of its periodic billiard trajectories. This is a hot research topic at the crossroads between analysis, dynamical systems and PDE.