Seminar/Talk

Marked Length Spectral rigidity of dispersing billiards

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Host: Kaloshin Group

When studying dynamical systems of geometric origin, a fundamental question is whether periodic dataparticularly the length spectrumencodes the underlying geometry of the system. In this talk, I will present several results addressing this question for billiards with hyperbolic behavior. To give more structure to the length spectrum, it is common to augment it with symbolic data, resulting in a marked length spectrum (MLS). I will discuss the MLS-rigidity for two classes of domains: open dispersing billiards satisfying the no-eclipse condition, and Sinai billiards on the two-torus. While the first class exhibits nice symbolic coding, interesting dynamics is confined to a Cantor set, and then analyticity is required to recover the geometry from the MLS. On the contrary, for Sinai billiards with finite horizon, periodic orbits are dense in phase space, but the lack of structural stability complicates the marking of the spectrum. I will describe a CAT(0)-based approach to the MLS-rigidity of Sinai billiards, leveraging the approximation of the billiard flow by Anosov geodesic flows. Joint work with De Simoi-Kaloshin, and Finamore.

Tuesday, December 16, 2025 02:30pm - 03:30pm
Oberbank Ballroom, Central Building