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Title: Some new results for open dynamical systems

Open dynamical systems study the statistics of the first hitting time when trajectories escape through a subset, referred to as a "hole," in the phase space. I will discuss my recent work on open hyperbolic systems, addressing three main aspects:

1. For hyperbolic billiard systems, the natural "hole" resides on the boundary of billiard tables, corresponding to a strip-shaped subset in the phase space. We obtain a Poisson limit law for open billiard systems with arbitrarily slow mixing rates.

2. To obtain the convergence rates associated with Poisson limit laws, we prove a maximal-type large deviation result for arbitrarily slowly mixing expanding systems. I will describe how this result can be applied to open billiard systems during this presentation.

3. When the "hole" in the phase space takes the shape of a ball in a Riemann manifold, we established Poisson limit laws for certain dissipative systems. Our conditions are loosely dependent on the Hausdorff dimension of the SRB measure.

This is joint work with Prof. Leonid Bunimovich