

Ergodicity of branching billiards

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Abstract: If coefficients of the Laplace operator have a jump discontinuity on a surface of codimension one then a geodesic hitting the surface admits two possible continuations called the reflected and retracted rays. In this situation, instead of the usual geodesic flow, one has to deal with the branching (ray-splitting) billiard dynamics. It is not immediately clear how to describe it in 'proper' terms. We introduce a one-parameter family of operators acting on functions on the phase space, which plays the role of classical dynamics, and discuss its relation to ergodic properties of eigenfunctions.

This is a joint work with D. Jakobson and A. Strohmaier.