ERGODIC PROPERTIES OF THE ANGLE-EXPANDING BILLIARDS

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Abstract. We consider a variation of classic mathematical billiard problem where the angle of rebound is determined from the angle of incidence via linearly expanding map. Informally, if φ_{in} is the angle between the normal and the incoming segment of trajectory then $\varphi_{\text{out}} = \lambda\varphi_{\text{in}}$ where λ is some constant.
For $\lambda = 1$ the above mapping corresponds to the classical case, while for $\lambda = 0$ one recover the so-called slap-map.
We will describe some local ergodic properties of the above mapping for $\lambda > 1$. We present complete analysis for the case of circular domain and provide some partial results for the general case for the curves with bounded curvature.

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