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Title: Non-conservative billiards. Dominated splitting

Abstract:

A particle moves along straight lines inside a billiard table and when it hits one of the walls with angle A with respect to the normal line, it is reflected with angle L A (with L small than or equal to 1).

We give formulas for a general class of these {\em pinball billiards}. Then we restrict the analysis: the reflection angle only depends on incidence angle (not on the boundary position).

We prove that in many of billiard tables (in particular some in which classical billiard map is not hyperbolic) the dynamics has a weak form of hyperbolicity called dominated splitting (the tangent bundle splits into two invariant directions, the contractive behavior on one of them dominates the other one by a uniform factor).

Joint work with Enrique Pujals and Martín Sambarino.