

INSALATE DI MATEMATICA

presents

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Let's play symplectic billiard!



Abstract:

A mathematical billiard is a dynamical system describing the motion of a mass point (the billiard ball) inside a planar region (the billiard table) with –in general– piecewise smooth boundary. The ball moves with constant speed and without friction, following a rectilinear path. The straightforwardness and versatility of this model have made mathematical billiards an object of interest in many different contexts. Indeed, depending on the shape of the billiard table, they show a wide range of dynamical behaviors such as integrability, regularity, and chaoticity. Integrability remains nowadays an unanswered property and the celebrated Birkhoff conjecture is still open. In 2018, P. Albers and S. Tabachnikov introduced a new interesting class of billiards, called symplectic billiards, as a natural variation of Birkhoff billiards with the inner area –instead of the length– as generating function. In this talk, we will present the symplectic billiards dynamics and focus on the recent integrability results.

Talk based on a joint work with L. Baracco and O. Bernardi.

Keywords: Mathematical billiards · Integrability

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*"Obvious" is the most dangerous word in mathematics.
(Eric Temple Bell)*