

Advanced statistical properties for dispersing billiards
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Abstract:

A new approach to statistical properties of hyperbolic dynamical systems emerged recently; it was introduced by L.-S. Young and modified by D. Dolgopyat. It is based on coupling method borrowed from probability theory. It also works for one of the most physically interesting models -- Sinai billiards. It leads to a series of new results, as well as significant improvements in the existing results. First we can establish sharp bounds on correlations (including multiple correlations). Then we can use our correlation bounds to obtain the central limit theorem (CLT), the almost sure invariance principle (ASIP), the law of iterated logarithms, and integral tests.