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Measure of Maximal Entropy for Finite Horizon Sinai Billiards

While the existence and properties of the SRB measure for the billiard map associated with a periodic Lorentz gas are well understood, there are few results regarding other types of measures for dispersing billiards. We begin by proposing a naive definition of topological entropy for the billiard map, and show that it is equivalent to several classical definitions. We then prove a variational principle for the topological entropy and proceed to construct a measure which achieves the maximum. This measure is Bernoulli and positive on open sets. An essential ingredient is a proof of the absolute continuity of the unstable foliation with respect to the measure of maximal entropy. This is joint work with Viviane Baladi.