

Title: Topological Entropy and Pressure for Sinai Billiards

Abstract: For a class of finite horizon dispersing billiards, we review recent results proving the existence and uniqueness of equilibrium states for a family of geometric potentials,  $-\log J^u T$ ,  $t \geq 0$ .

The importance of this family stems from the fact that  $t=1$  corresponds to the smooth invariant (SRB) measure, while  $t=0$  corresponds to the measure of maximal entropy. By constructing anisotropic Banach spaces adapted to the potentials, we are able to prove exponential mixing for  $t>0$  by way of

a spectral gap for the associated transfer operator. Yet the spectral gap vanishes as  $t \rightarrow 0$  and we discuss a possible phase transition for the billiard at  $t=0$ .