Non-uniform hyperbolicity, symbolic dynamics, and applications

Yuri Lima, University of Paris-Sud

Almost fifty years ago, Sinai developed a program to analyze Gibbs measures for uniformly hyperbolic systems: firstly build a symbolic representation, then push properties of the symbolic model to the uniformly hyperbolic one. Recently this program is being applied to low dimensional non-uniformly hyperbolic systems: for surface diffeomorphisms by Sarig, and for 3-dim flows without fixed points by Sarig and myself.

In this talk we will discuss the main results in this program, and some applications: counting of closed orbits, countability of hyperbolic equilibrium measures, and their ergodic properties. One of the applications is a joint work with Ledrappier and Sarig: the measure of maximal entropy for the geodesic flow on a surface with nonpositive and non-identically zero curvature is Bernoulli.