ENTROPY RIGIDITY NEAR REAL AND COMPLEX HYPERBOLIC METRICS

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Abstract

Topological entropy is a measure of the complexity of a dynamical system. The variational principle states that topological entropy is the supremum over all invariant probability measures of metric entropies. For an Anosov flow, the supremum is uniquely attained at a measure called the measure of maximal entropy (or Bowen-Margulis measure).

An important example of Anosov flow is given by the geodesic flow on a negatively curved closed manifold. For these systems, another important invariant measure is given by the Liouville measure : the smooth volume form associated to the metric.

A natural question, first raised by Katok is to characterize for which negatively curved metrics the two measures introduced above coincide. The Katok's entropy conjecture states that it is the case if and only if g is a locally symmetric metric. The conjecture was proven by Katok for surfaces but remains open in higher dimensions.

In this talk, I will explain how one can combine microlocal techniques introduced by Guillarmou-Lefeuvre for the study of the marked length spectrum with geometrical methods of Flaminio to obtain Katok's entropy conjecture in neighborhoods of real and complex hyperbolic metrics (in all dimensions).