

STATISTICAL PROPERTIES OF SINGULAR HYPERBOLIC ATTRACTORS

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The classical Lorenz attractor (Lorenz 1963) satisfies various statistical properties such as existence of an SRB measure, central limit theorems, and exponential decay of correlations. The main ingredients are that the attractor is singularly hyperbolic with a C^r stable foliation for some $r > 1$.

Certain classes of Lorenz attractors have been obtained analytically by Dumortier, Kokubu & Oka, and more recently by Ovsyannikov & Turaev. These attractors are singularly hyperbolic but do not have a smooth stable foliation.

The aim in this talk (joint work with Vitor Araujo) is to consider statistical properties for singular hyperbolic attractors that do not have a smooth stable foliation. It turns out that existence of an SRB measure, central limit theorems, and mixing hold as in the classical case. But exponential decay of correlations looks currently hopeless. Proving rates of mixing (eg superpolynomial decay) raises interesting open questions.