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Positive Liapunov exponents and absolute continuity for maps of the interval. (English)

Zbl 0532.28014

Ergodic Theory Dyn. Syst. 3, 13-46 (1983).

The following theorem is proven. Let f be a unimodal map of the interval with negative Schwarzian derivative satisfying $xf'(x) < 0 \forall x \neq 0$ and non-degenerate critical point at 0. Assume there are constants $C > 0, \theta > 0$ so that

$$\left| \left(\frac{d}{dx} f^n \right) (f(0)) \right| \geq \exp(n\theta) \quad \text{and} \quad \left| \left(\frac{d}{dx} f^m \right) (z) \right| \geq C \exp(m\theta),$$

for all z, m for which $f^m(z) = 0$. Then f has an invariant measure which is absolutely continuous with respect to Lebesgue measure

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MSC:

37D20 Uniformly hyperbolic systems (expanding, Anosov, Axiom A, etc.)

37E05 Dynamical systems involving maps of the interval

28D05 Measure-preserving transformations

37A05 Dynamical aspects of measure-preserving transformations

Cited in 4 Reviews
Cited in 52 Documents

Keywords:

positivity of the forward and backward Lyapunov exponent of the critical point; invariant measure; absolute continuity with respect to Lebesgue measure

Full Text: DOI

References:

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