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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

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

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

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

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