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Transfer operators for ultradifferentiable expanding maps of the circle. (English)
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Summary: Given a \( C^\infty \) expanding map \( T \) of the circle, we construct a Hilbert space \( \mathcal{H} \) of smooth functions on which the transfer operator \( L \) associated to \( T \) acts as a compact operator. This result is made quantitative (in terms of singular values of the operator \( L \) acting on \( \mathcal{H} \)) using the language of Denjoy-Carleman classes. Moreover, the nuclear power decomposition of V. Baladi and M. Tsujii, [Contemp. Math. 469, 29–68 (2008; Zbl 1154.37320)] can be performed on the space \( \mathcal{H} \), providing a bound on the growth of the dynamical determinant associated to \( L \).

MSC:
37C30 Functional analytic techniques in dynamical systems; zeta functions, (Ruelle-Frobenius) transfer operators, etc.
37E10 Dynamical systems involving maps of the circle
37D20 Uniformly hyperbolic systems (expanding, Anosov, Axiom A, etc.)

Keywords: transfer operator; dynamical determinant; Ruelle resonances; Denjoy-Carleman classes

Full Text: DOI arXiv

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