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Mathematics : Dynamical Systems and Ergodic Theory

Baladi, Viviane, Sorbonne Université and CNRS, Paris, France

Dynamical Zeta Functions and Dynamical Determinants for Hyperbolic Maps

A Functional Approach

- Collects recent results on transfer operators, anisotropic Banach spaces, and dynamical determinants of hyperbolic systems
- Gives a self-contained account of proofs (some of them new) starting with the basic case of expanding maps for easier readability
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The spectra of transfer operators associated to dynamical systems, when acting on suitable Banach spaces, contain key information about the ergodic properties of the systems. Focusing on expanding and hyperbolic maps, this book gives a self-contained account on the relation between zeroes of dynamical determinants, poles of dynamical zeta functions, and the discrete spectra of the transfer operators. In the hyperbolic case, the first key step consists in constructing a suitable Banach space of anisotropic distributions. The first part of the book is devoted to the easier case of expanding endomorphisms, showing how the (isotropic) function spaces relevant there can be studied via Paley–Littlewood decompositions, and allowing easier access to the construction of the anisotropic spaces which is performed in the second part. This is the first book describing the use of anisotropic spaces in dynamics. Aimed at researchers and graduate students, it presents results and techniques developed since the beginning of the twenty-first century.

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