



Dynamical Zeta Functions for Piecewise Monotone Maps of the Interval (Paperback)

By David Ruelle

American Mathematical Society, United States, 2004. Paperback. Condition: New. Language: English . Brand New Book. Consider a space M , a map $f: M \rightarrow M$, and a function $g: M \rightarrow \mathbb{C}$. The formal power series $\zeta(z) = \exp \sum_{n=1}^{\infty} \frac{z^n}{n} \sum_{x \in M} g(f^n(x))$ yields an example of a dynamical zeta function. Such functions have unexpected analytic properties and interesting relations to the theory of dynamical systems, statistical mechanics, and the spectral theory of certain operators (transfer operators). The first part of this monograph presents a general introduction to this subject. The second part is a detailed study of the zeta functions associated with piecewise monotone maps of the interval $[0,1]$. In particular, Ruelle gives a proof of a generalized form of the Baladi-Keller theorem relating the poles of $\zeta(z)$ and the eigenvalues of the transfer operator. He also proves a theorem expressing the largest eigenvalue of the transfer operator in terms of the ergodic properties of (M, f, g) .

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