Multifractality of the Feigenbaum attractor and fractional derivatives. (English summary)


The authors give strong phenomenological and numerical evidence for the presence of power-law tails in the distribution of fractional derivatives for the cumulative distribution function of the invariant measure associated to the attractor of a specific dissipative dynamical system, the Feigenbaum map.

It gives a new way of analysing multifractality in this dynamical setup, following a method introduced in [U. Frisch and T. Matsumoto, J. Statist. Phys. 108 (2002), no. 5-6, 1181–1202; MR1933450] which has been applied only to random functions up to now.

Their analysis relies on the connection between the thermodynamic formalism developed in [E. B. Vul, Y. G. Sinaï and K. M. Khanin, Uspekhi Mat. Nauk 39 (1984), no. 3(237), 3–37; MR0747790] for this map and standard multifractal analysis, then on sharp numerical approximations.

References


\textit{Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.}

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