

Equilibrium states and large deviation principles for one-dimensional maps under a weak hyperbolicity assumption

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Abstract:

For a real or complex one-dimensional map satisfying a weak hyperbolicity assumption, we describe the thermodynamic formalism for Holder continuous potentials. We show that, rather unexpectedly, such a map has no phase transitions: The pressure function is real analytic on the space of Holder continuous potentials, and every Holder continuous potential has a unique equilibrium state. This last fact, together with various formulas to compute the pressure function, allows us to apply Kifer's method to obtain a full level-2 large deviation principle for periodic points, iterated preimages, and Birkhoff averages. This is a joint work with Huaibin Li.