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Efficient computation of topological entropy, pressure, conformal measures, and equilibrium states in one dimension. (English summary)

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Summary: "We describe a fast and accurate method to compute the pressure and equilibrium states for maps of the interval $T\colon [0,1] \to [0,1]$ with respect to potentials $\varphi\colon [0,1] \to \mathbb{R}$. An approximate Ruelle-Perron-Frobenius operator is constructed and the pressure read off as the logarithm of the leading eigenvalue of this operator. By setting $\varphi \equiv 0$, we recover the topological entropy. The conformal measure and the equilibrium state are computed as eigenvectors. Our approach is extremely efficient and very simple to implement. Rigorous convergence results are stated for piecewise expanding maps."