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Thermodynamics for Lebesgue dissipative interval maps

Using inducing schemes (generalised first return maps) to obtain uniform expansion is a standard tool for (smooth) interval maps, in order to prove, among other things, the existence of invariant measures, their mixing rates and stochastic laws. In this talk I would like to present joint work with Mike Todd (St. Andrews) on how this can be applied to maps on the brink of being dissipative. We discuss a family f_λ of Fibonacci maps for which Lebesgue-a.e. point is recurrent or transient depending on the parameter λ.

The main tool is a specific induced Markov map F_λ with countably many branches whose lengths converge to zero. Avoiding the difficulties of distortion control by starting with a countably piecewise linear unimodal map, we can identify the transition from conservative to dissipative exactly, and also describe in great detail the impact of this transition on the thermodynamic formalism of the system (existence and uniqueness of equilibrium states, (non)analyticity of the pressure function and phase transitions).