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Variational description of Gibbs-non-Gibbs dynamical transitions for spin-flip systems

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Abstract

We discuss the concept of Gibbs/ non-Gibbs measure in the lattice together with its extension to the mean field / local-mean field context, and the emergence of dynamical Gibbs-non-Gibbs transitions under independent spin-flip ("infinite-temperature") dynamics. We show that these dynamical transitions are equivalent to bifurcations in the set of global minima of the large-deviation rate function describing optimal conditioned trajectories of the empirical density. Possible bifurcation scenarios are fully determined in the mean field case, yielding a full characterization of passages from Gibbs to non-Gibbs -and vice versa- with sharp transition times. Based on joint work with Roberto Fernández and Frank den Hollander.