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On the road to the ergodic limit while heating a system of plane rotators. Gibbsianness and non-Gibbsianness as the presence or absence of effective Hamiltonians

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Abstract

When fast heating a two-dimensional infinite system of classical plane rotators, which starts at some finite initial temperature, there is a fast convergence to a limit distribution. A statistical description of the infinite-volume distribution after a finite time in terms of an "effective Hamiltonian" (as a Gibbsian distribution) turns out to be not always possible. In particular, after some finite time, the system can change from a regime in which such a description is possible into a non-Gibbsian regime.