Numerical studies of the off-equilibrium dynamics in classical Heisenberg spin models

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By means of intensive numerical simulations (using CPU's and GPU's) we study the off-equilibrium dynamics of the (classical) Heisenberg model. In particular, by monitoring the behavior of the magnetic susceptibility and the second-moment correlation length as a function of the Monte Carlo time, we are able to compute the anomalous dimension of the model (η) and the dynamical critical exponent (z), but also to characterize the leading correction-to-scaling exponent.[1, 2]

We compare these out-of-equilibrium values for these critical exponents with the most precise ones computed in numerical simulations at equilibrium.[3, 4, 5, 6]

Finally we report some results about our implementation of the Monte Carlo algorithm in GPUs.

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