Characteristic time scales and overlap distributions in replica exchange Monte Carlo simulations of spin glasses

BURCU YUCESOY, JON MACHTA, University of Massachusetts Amherst, HELMUT G. KATZGRABER, Department of Physics, Texas A & M University & ETH Zurich — We present a large-scale numerical study using replica exchange Monte Carlo (parallel tempering) of time scales of the three-dimensional Ising spin glass. We measure the integrated and exponential autocorrelation times for several observables, as well as the round-trip times for different disorder realizations in order to investigate the relationship between the characteristic time scales of a disorder realization and its overlap distribution.

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