

Abstract Submitted
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Environment overwhelms both nature and nurture in a model spin glass¹ A. ALAN MIDDLETON, JIE YANG, Syracuse University — We are interested in exploring what information determines the particular history of the glassy long term dynamics in a disordered material. We study the effect of initial configurations and the realization of stochastic dynamics on the long time evolution of configurations in a two-dimensional Ising spin glass model. The evolution of nearest neighbor correlations is computed using patchwork dynamics, a coarse-grained numerical heuristic for temporal evolution. The dependence of the nearest neighbor spin correlations at long time on both initial spin configurations and noise histories are studied through cross-correlations of long-time configurations and the spin correlations are found to be independent of both. We investigate how effectively rigid bond clusters coarsen. Scaling laws are used to study the convergence of configurations and the distribution of sizes of nearly rigid clusters. The implications of the computational results on simulations and phenomenological models of spin glasses are discussed.

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