Abstract Submitted
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Configuration Memory in Patchwork Dynamics for Low-dimensional Spin Glasses[1] JIE YANG, A. ALAN MIDDLETON, Syracuse University — A patchwork dynamics method is used to study the loss and recovery of an initial configuration in spin glass models in dimensions $d = 1$ and $d = 2$. This method is used as a heuristic to accelerate the dynamics and to investigate how these models might reproduce the remarkable memory effects seen in experiment. Starting from a ground state configuration at one choice of couplings, a sample is aged up to a given scale under an independent choice of couplings, leading to the partial erasure of the original state. The memory of the original ground state is then computed when the couplings are reset to the original choice and patchwork coarsening is again applied. Recovery of the original ground state with coarsening is found for two-dimensional Ising spin glasses and one-dimensional Potts models, while one-dimensional Ising glasses neither lose nor gain overlap with coarsening. The recovery curves for the two-dimensional Ising spin glasses are consistent with scaling relations that define a recovery length scale that grows as a power of the aging length scale.

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