Abstract Submitted
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Computing Barriers in Spin Glasses A. ALAN MIDDLETON, Syracuse University — The energy barriers E_B between low-lying states in spin glasses are expected to scale as a power of the system size: $E_B \sim N^{\psi/d}$ for N spins in a d-dimensional spin glass. Whether the barrier exponent ψ is equal to the stiffness exponent θ (where the cost of minimal large scale excitations scales as $N^{\theta/d}$) is an unsolved question in general. In an attempt to solve this question with some rigor in large theoretical spin glass samples, numerical simulations for barriers in spin glasses on a hierarchical lattice have been carried out, using an exact algorithm for computing the barrier to the monotone growth of connected domains. The resulting ψ is sensitive to the distribution of weights on the bonds between spins. These distributions give different weights to bonds that appear at different stages of the hierarchical generation of the lattice. Results for ψ and θ will be presented for various lattices, including variations of Cayley trees and lattices that satisfy Migdal-Kadanoff approximations, and distributions that plausibly emulate finite-dimensional spin glasses.

A. Alan Middleton
Syracuse University

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