

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Probing the Almeida-Thouless line away from the mean-field model HELMUT G. KATZGRABER, Theoretische Physik, ETH Zurich, A. PETER YOUNG, University of California Santa Cruz — In order to test the existence of a spin-glass phase in a field at finite temperatures, results of Monte Carlo simulations of the one-dimensional long-range Ising spin glass with power-law interactions in the presence of a (random) field are presented. By tuning the exponent of the power-law interactions, we are able to scan the full range of possible behaviors from the infinite-range (Sherrington-Kirkpatrick) model to the short-range model. A finite-size scaling analysis of the correlation length indicates that there is no transition in a field with non-mean field critical behavior at zero field. This suggests that there is no Almeida-Thouless line for short-range Ising spin glasses away from the mean-field regime.

Helmut G. Katzgraber
ETH Zurich

Date submitted: 10 Nov 2005

Electronic form version 1.4