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The 1-d Long Range Diluted Heisenberg Spin Glass - A Monte Carlo Study[1] AUDITYA SHARMA, PETER YOUNG, Department of Physics, UC Santa Cruz — We present results from a finite size scaling (FSS) analysis of Monte Carlo simulations on a novel long range diluted 1-d Heisenberg model with power law decay of interactions with distance. The advantage of studying a model like this combined with Heisenberg-like spins is that it allows one to study very large sizes (32000), and therefore reinforces the use of the FSS method to a) Study the existence of a phase transition. b) Extract the critical exponents of the phase transition. Besides allowing large sizes there are other advantages of studying this model: a) Real material spin-glasses are believed to be Heisenberg-like, and this is therefore directly relevant. b) By tuning the power of the decaying interactions we are able to study a range of universality classes from mean-field to short-range. Additionally we also present data to explore the role of Ising-like variables called chiralities which have been argued to be the drivers of the spin-glass transition. We find that our data does not support this spin-chirality decoupling scheme.

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