Abstract Submitted
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**Low-temperature behavior of the spin overlap distribution in one-dimensional long-range diluted spin glasses**[1] MATTHEW WITTMANN, Department of Physics, University of California Santa Cruz, HELMUT G. KATZGRABER, Department of Physics and Astronomy, Texas A&M University, J. MACHTA, Department of Physics, University of Massachusetts Amherst, A. P. YOUNG, Department of Physics, University of California Santa Cruz — Computer simulations of the spin glass state find that the *average* order parameter distribution $P(q)$ has a weight in the region of small overlap $q$ which does not appear to decrease with size for the range of sizes that can be studied. This is in agreement with the "Replica Symmetry Breaking" (RSB) picture as opposed to the droplet picture which predicts $P(0) = 0$ in the thermodynamic limit. Recently, a detailed study [1] has been made of peaks in $P(q)$ for *individual samples* of a three-dimensional spin glass to gain more understanding of the situation. Here we pursue a similar approach but for long-range models in one dimension for which the interactions fall off with a power of the distance. Varying the power is analogous to varying the space dimension of a short-range model, so we can conveniently study models which are proxies for a *range* of space dimensions. We will present results on the nature of the peaks in $P(q)$ for individual samples for several such models, and interpret them in terms of the RSB and droplet pictures. References: [1] Phys. Rev. Lett. 109, 177204 (2012)

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