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Power-law Griffiths singularities in a randomly layered Heisenberg magnet FAWAZ HRAHSHEH, THOMAS VOJTA, Department of Physics, Missouri University of Science and Technology, Rolla MO 65409, USA — We study the ferromagnetic phase transition in a randomly layered Heisenberg model using Monte-Carlo simulations. A recent strong-disorder renormalization group approach [Phys. Rev. B 81, 144407 (2010)] predicted that the critical point in this system is of exotic infinite-randomness type and is accompanied by strong power-law Griffiths singularities. Here, we show the results of simulations that provide numerical evidence in support of these predictions. Specifically, we investigate the finite-size scaling behavior of the magnetic susceptibility which is characterized by a non-universal power-law divergence in the Griffiths phase. In addition, we calculate the spin-wave stiffnesses both parallel and perpendicular to the layers. We find that the perpendicular stiffness decays to zero at lower temperatures than the parallel stiffness which vanishes at the critical point.

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