

Abstract Submitted
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Position-Space Renormalization-Group Treatment of the Triangular Ising Antiferromagnet with Quenched Disorder MICHAEL E. MIHALCO, SUSAN R. MCKAY, University of Maine — We apply the Niemeijer-van Leeuwen cluster approximation [1] to frustrated Ising models on a triangular lattice. The homogeneous Ising antiferromagnet is fully frustrated and shows no ordered phase. Frustration can be relieved via the addition of quenched randomness through either dilution or the introduction of ferromagnetic bonds. The result is a rich phase diagram with different types of ordering depending upon the details of the quenched disorder. [2] Using a binning procedure to retain the full distribution of interactions under rescaling [3], we are able to calculate the phase diagram of this system, with each phase having its own characteristic attractor. This model system provides a two-dimensional example of the impacts of tunable frustration on short- and long-range order. 1. T. Niemeijer and J.M.J. van Leeuwen, *Phys. Rev. Lett.* **31**, 1411 (1973); *Physica (Utr.)* **71**, 17 (1974). 2. G. S. Grest and E.G. Gahl, *Phys. Rev. Lett.* **43**, 1183 (1979); H. Kaya and A.N. Berker, *Phys. Rev. E* **62**, 1469 (2000).; M. Robinson, M.S. Thesis, University of Maine (2003). 3. E. Hartford and S. McKay, *J. Appl. Phys.* **70**, 6068 (1991); E. Hartford, Ph.D. Thesis, University of Maine (1994); A. Falicov, A.N. Berker, and S.R. McKay, *Phys. Rev. B* **51**, 8266 (1995).

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