

Abstract Submitted
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A new $S = 1/2$ frustrated ferromagnetic chain with random exchange CHRISTOPHER LANDEE¹, SUSAN HERRINGER², MARK TURNBULL³, Clark University, JORDI RIBAS⁴, JUAN NOVOA⁵, University of Barcelona — We report on a new frustrated ferromagnetic Heisenberg chain, $\text{CuCl}_2(2\text{-Cl-3-Mepy})$ in which the Cu(II) ions are linked into well-isolated chains via bichloride bridges. The pyridine ligand is two-site disordered, leading to three unique magnetic superexchange pathways occurring at random throughout the chains. Magnetic susceptibility measurements (1.8 – 300 K) show dominant ferromagnetic interactions; a maximum in the χT product is observed near 30 K, but no maximum in χ occurs. *DFT* calculations of the exchange strengths predict ferromagnet exchange strengths of 81(5), 55(5), and 23(3) K occurring at random, but with nearly constant next-nearest-neighbor interactions of -13(2) K. We note that within uncertainties the ratios of the nnn interaction to the smaller two ferromagnetic interactions exceed or equals the quantum critical ratio of 0.25 at which the ground state of the system changes. Comparison of the experimental χT data to simulations of random configurations will be presented.

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