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Neel ordering and the stability of the spin 1/2 kagome lattice antiferromagnet in Zn-Paratacamite MICHAEL J. LAWLER, Binghamton University, Cornell University, ERIK S. SORENSEN, McMaster University, YONG BAEK KIM, University of Toronto — Zn-Paratacamite is a rare spin 1/2 antiferromagnetic insulator with an ideal kagome lattice structure in part of its phase diagram. As a function of Zn doping, this material undergoes a structural distortion which relieves the frustration and introduces magnetic order in the ground state, though the precise nature of the order is not clear at this point. In this talk, I will present strong evidence for Neel ordering in the distorted phase of Zn-Paratacamite through the application of quantum monte-carlo and exact diagonalization methods to the appropriate Heisenberg model. These numerical results strongly support a recent Schwinger-boson mean field theory of Zn-Paratacamite. Furthermore, our results indicate a large basin of stability of the ideal kagome lattice ground state in the presence of this type of distortion. This suggests that the ideal kagome ground state may be stable towards weak doping-induced distortion, though further studies of local effects may be necessary to make a firm conclusion.

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