

Abstract Submitted  
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**Spin dynamics of the  $S=1/2$  kagomé lattice antiferromagnet  $\text{ZnCu}_3(\text{OH})_6\text{Cl}_2$**  J.S. HELTON, K. MATAN, M.P. SHORES, E.A. NYTKO, B.M. BARTLETT, Massachusetts Institute of Technology, Y. YOSHIDA, Y. TAKANO, University of Florida, A. SUSLOV, National High Magnetic Field Laboratory, Y. QIU, J.-H. CHUNG, NIST Center for Neutron Research, D.G. NOCERA, Y.S. LEE, Massachusetts Institute of Technology — An important challenge in condensed matter physics is the search for quantum spin liquid states in two dimensional frustrated systems. We have performed thermodynamic and neutron scattering measurements on the  $S = 1/2$  kagomé lattice antiferromagnet  $\text{ZnCu}_3(\text{OH})_6\text{Cl}_2$ . The susceptibility indicates a Curie-Weiss temperature of  $\theta_{CW} \simeq -300$  K; however, no magnetic order is observed down to 50 mK. Inelastic neutron scattering reveals a spectrum of low energy spin excitations with no observable gap down to 0.1 meV. The specific heat at low- $T$  follows a power law with exponent  $\alpha \leq 1$ . These results suggest that an unusual spin-liquid state with essentially gapless excitations is realized in this kagomé lattice system.

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