Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Magnetic Field Driven Phase Transitions in S = $\frac{1}{2}$ Kagome Lattice Antiferromagnet $ZnCU_3(OH)_6Cl_2$[1] LU LI, T. ASABA, University of Michigan, T. HAN, Argonne National Laboratory, B.J. LAWSON, F. YU, C. TINSMAN, Z. XIANG[2], G. LI, University of Michigan, Y.S. LEE, Massachusetts Institute of Technology — Herbertsmithite $ZnCu_3(OH)_6Cl_2$ is a kagome lattice antiferromagnet with 1/2 spin and has been demonstrated to be a likely candidate of spin liquid by recent neutron scattering measurements. The high magnetic field response of the kagome lattice sample is hard to separate from the magnetic signals from Cu impurities sitting between the kagome planes. To separate these two contributions, we measured the magnetization of a single crystalline $ZnCu_3(OH)_6Cl_2$ using torque magnetometry at temperatures from 20mK to 15K in intense magnetic field as high as 31 T. Below 2 K, several phase transitions are observed in field near 8 T - 16 T, and the transition fields do not show significant dependence on the temperature in the range of 20 mK $\leq T \leq$ 2 K. Moreover, the transition fields are independent of the magnetic field orientation.

[1]This work is supported Research supported by the U.S. Department of Energy, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering under Award DE-SC0008110.
[2]Current address: University of Science and Technology of China, Hefei, China

Lu Li
University of MIchigan

Date submitted: 14 Nov 2013 Electronic form version 1.4