Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Spin disordered state of the triangular lattice antiferromagnet $NiGa_2S_4$[1] SATORU NAKATSUJI, YUSUKE NAMBU, HIROSHI TONOMURA, OSAMU SAKAI, Department of Physics, Kyoto University, Kyoto 606-8502, Japan, SETH JONAS, COLLIN BROHOLM, Department of Physics and Astronomy, Johns Hopkins University, Baltimore, MD 21218, USA, HIROKAZU TSUNETSUGU, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto 606-8502, Japan, YIMING QIU, NIST Center for Neutron Research, NIST, Gaithersburg, MD 20899, USA, YOSHITERU MAENO, Department of Physics, Kyoto University, Kyoto 606-8502, Japan — We have recently found a spin disordered state in two dimensions in $NiGa_2S_4$, a bulk insulating antiferromagnet on a triangular lattice.Despite strong antiferromagnetic interactions of $\sim$ 80 K, no magnetic long-range order has been observed down to 0.35 K where we instead find nano-scale quasi-static correlation. The spin disordered state appears on cooling through highly degenerate states with an entropy plateau, and exhibits gapless linearly dispersive modes, suggesting coherence beyond the two-spin correlation length. A possible ground state will be discussed.

[1]This work was supported in part by Grants-in-Aid for Scientific Research from JSPS.

Satoru Nakatsuji
Department of Physics, Kyoto University, Kyoto 606-8502, Japan

Date submitted: 26 Nov 2005 Electronic form version 1.4