

Abstract Submitted  
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**Spin Order by Frustration in Triangular Lattice  $\text{NaCrO}_2$  : A Neutron Scattering Study** D. HSIEH, D. QIAN, Department of Physics, Princeton University, R.F. BERGER, Department of Chemistry, Princeton University, B. UELAND, P. SCHIFFER, Department of Physics, Pennsylvania State University, R.J. CAVA, Department of Chemistry, Princeton University, J.W. LYNN, Q. HUANG, NIST Center for Neutron Research, M.Z. HASAN, Department of Physics, Princeton University — We report high resolution neutron scattering measurements on the triangular lattice antiferromagnet  $\text{NaCrO}_2$ . In contrast to the host compound of the 2D cobaltate superconductor  $\text{Na}_x\text{CoO}_2$ , no magnetic long-range order is observed down to 1.5K. For  $T > 40\text{K}$  purely 2D quasi-static  $120^\circ$  spin correlations extend to a maximum of 20 lattice constants. For  $T < 30\text{K}$ , a small in-plane incommensuration develops together with short-range  $c$ -axis correlations. Our observation of strong spin fluctuations over an extended temperature range and a long wavelength incommensurate modulation strongly suggest an out-of-plane frustration as the mechanism for stabilizing this rare 2D correlated phase in  $\text{NaCrO}_2$ .

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