

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Simultaneous breaking of lattice symmetry and spin frustration in triangular lattice antiferromagnet CuFeO_2 Y. REN, XFD/XOR, Argonne National Laboratory, F. YE, Center for Neutron Scattering, Oak Ridge National Laboratory, Q. HUANG, NIST Center for Neutron Research, NIST, J.A. FERNANDEZ-BACA, Center for Neutron Scattering, Oak Ridge National Laboratory & Dept of Physics and Astronomy, Univ. of Tennessee, PENGCHENG DAI, Dept of Physics and Astronomy, Univ. of Tennessee & Center for Neutron Scattering, Oak Ridge National Laboratory, J.W. LYNN, NIST Center for Neutron Research, NIST, T. KIMURA, Los Alamos National Laboratory — We use high resolution synchrotron X-ray and neutron diffraction to study the geometrically frustrated triangular lattice antiferromagnet (TLA) CuFeO_2 . We show that the occurrence of the two magnetic transitions, at 14 K and 11 K, respectively is accompanied simultaneously by a second- and first- order structural phase transitions from a hexagonal structure to a monoclinic form. This is the first observation of two successive spin-driven structural transitions directly coupled with incommensurate and commensurate magnetic orderings in frustrated TLA systems.

This work is supported by the U. S. NSF DMR-0453804 and DOE Nos. DE-FG02-05ER46202 and DE-AC05-00OR22725 with UT/Battelle LLC. Use of the Advanced Photon Source was supported by the U. S. Department of Energy, Office of Science, Office of Basic Energy Sciences, under Contract No. W-31-109-Eng-38.

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Date submitted: 06 Jan 2006

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