

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Spin Dynamics and Two-Dimensional Correlations in the FCC Antiferromagnetic Sr_2YRuO_6 STEVEN DISSELER, J. W. LYNN, NIST Center for Neutron Research, Gaithersburg, Maryland 20899, USA, R. F. JARDIM, Instituto de Física, Universidade de Sao Paulo 05315-970, Brazil, M. S. TORIKACHVILI, Department of Physics, San Diego State University, San Diego, California 92182, USA, E. GR, Institute of Physics “Gleb Wataghin,” University of Campinas - UNICAMP, Campinas, São Paulo 13083-859, Brazil — The face-centered cubic lattice of Ru^{5+} spins in the double perovskite Sr_2YRuO_6 shows a delicate three dimensional antiferromagnetic (AFM) ground state composed of stacked square AFM layers. We present new inelastic neutron scattering data taken on this state revealing a gapped low-energy excitation band that may be modeled by a simple $J_1 - J_2$ interaction scheme allowing quantitative comparison of similar materials. At higher temperatures, the low-energy excitation spectrum is dominated by a quasi-elastic component associated with size fluctuations of two-dimensional AFM clusters that exhibit asymmetric correlations even at low temperatures. Thus, the FCC lattice in general and the double perovskite structure in particular emerge as hosts of both two-dimensional and three-dimensional dynamics resulting from frustration.

Steven Disseler
NIST Center for Neutron Research, Gaithersburg, Maryland 20899, USA

Date submitted: 05 Nov 2015

Electronic form version 1.4