Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Magnetic excitations in magnetic ferroelectrics, RMn_2O_5 (R = Y and Tb) SEUNG-HUN LEE, JUNG HWA KIM, Department of Physics, University of Virginia, JAE-HO CHUNG, Y. QIU, NIST Center for Neutron Research, M. KENZELMANN, ETH/PSI, T.J. SATO, ISSP, University of Tokyo, S. PARK, S-W. CHEONG, Department of Physics, Rutgers University — We report inelastic neutron scattering data obtained from powder and single crystal samples of magnetic ferroelectrics, RMn_2O_5 (R=Y and Tb). In these systems, magnetic moments are lying on the crystalline ab-plane, and the spontaneous electric polarization occurs along the b-axis. Our data shows that there are several different magnetic excitation modes of Mn spin waves upto 15 meV. The lowest energy excitation is the sliding mode of the moments in the ab-plane, called phason. We have performed linear spin wave calculations to reproduce our data including dispersions as well as polarizations of the spin wave excitations. Relation of the spin waves to electric polarization will be discussed.

Seung-Hun Lee
University of Virginia

Date submitted: 18 Nov 2006 Electronic form version 1.4