Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

A Microscopic Model of Multiferroics $\mathbf{RMn_2O_5}$ CHEN FANG, JIANGPING HU, Department of Physics, Purdue Univ. — A microscopic model is developed to explain the phase diagram and the mechanism of magnetoelectric coupling in RMn_2O_5. We show that frustrated magnetic structure drives the system to a commensurate-incommensurate phase trasition which can be understood as a competition between a collinear order, which stems from the 'order by disorder' mechanism, and a chiral symmetry order. The magnetoelectric interaction couples the collinear order to the electric polarization. The low energy excitation and the effect of external magnetic field are also analyzed.

Chen Fang
Department of Physics, Purdue Univ.

Date submitted: 01 Dec 2006 Electronic form version 1.4