Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Electronic Mechanism for the Coexistence of Ferroelectricity and Ferromagnetism[1] JAMES GUBERNATIS, CRISTIAN BATISTA, Los Alamos National Laboratory, WEI-GUO YIN, Brookhaven National Laboratory — We study the strong coupling limit of a two-band Hubbard Hamiltonian that also includes an inter-orbital on-site repulsive interaction U_{ab}. When the two bands have opposite parity and are quarter filled, we prove that the ground state is simultaneously ferromagnetic and ferroelectric for infinite intra-orbital Coulomb interactions U_{aa} and U_{bb}. We also show that this coexistence leads to a singular magnetoelectric effect.

[1]Work supported by the Department of Energy

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Date submitted: 12 Jan 2006 Electronic form version 1.4