Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Vital roles of the biquadratic interaction on electromagnon excitations MASAHITO MOCHIZUKI, Dept. of Applied Physics, University of Tokyo, NOBUO FURUKAWA, Aoyama Gakuin University, NAOTO NAGAOSA, Dept. of Applied Physics, University — We have succeeded in solving the long-standing puzzles of electromagnon excitations in the multiferroic Mn perovskites with specific two peak spectra in the THz frequency regime. We first construct a realistic model for these compounds, which includes frustration among the spin exchanges, a conflict between DM interactions and magnetic anisotropies, as well as the biquadratic interaction originating from the spin-phonon coupling. We reproduce the lower peak spectrum around 3 meV in addition to the higher one around 6-8 meV, and show that the very weak biquadratic interaction is crucially important for generation and enhancement of the lower-lying mode.

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Date submitted: 19 Nov 2009 Electronic form version 1.4