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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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