

Abstract Submitted
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Lattice and magnetic excitations in $\text{NdFe}_3(\text{BO}_3)_4$ RICARDO LOBO, ESPCI PSL, CNRS, UPMC — We measured the temperature dependent polarized infrared spectra of multiferroic $\text{NdFe}_3(\text{BO}_3)_4$. The spectra is mostly temperature independent except for the lowest energy phonon in the hexagonal plane. This phonon splits into two at around 60 K, a temperature sensibly larger than the system Néel temperature of 31 K. X-ray scattering indicates that the lattice parameters have an anomaly at the same temperature that the phonon splits. Using inelastic neutron scattering we looked for magnetic excitations that could explain be coupled to phonons. Momentum and energy dispersion curves around the magnetic Bragg peaks show magnetic excitations at energies comparable to the split phonon. We will discuss these results in terms of magnetic fluctuations and activation of Brillouin zone boundary modes.

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