

Abstract Submitted
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The role of lattice distortions in magnetoelectrics TURAB LOOKMAN, AVADH SAXENA, Los Alamos National Lab — The orthorhombic magnetoelectrics, such as RMnO_3 , $\text{R}=\text{Tb,Dy,Gd}$, exhibit lattice modulations as measured by diffraction. Symmetry analysis predicts a shuffle based transition associated with the magnetoelectric state. We include coupling of the shuffle modes to polarization and incommensurate magnetization within a Landau free energy framework. We explore the possible role of strain in recently observed pressure effects in some of the materials. In addition, using strain we model the orthorhombic to monoclinic structural transition in certain doped materials. We attempt to connect the free energy coefficients to available structural and thermodynamic data.

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