

Abstract Submitted
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Ferroelectricity induced by acentric spin-density waves in YMn₂O₅ GRAEME R. BLAKE, ISIS Facility, Rutherford Appleton Laboratory, LAURENT C. CHAPON, ISIS Facility, Rutherford Appleton Laboratory, UK, PAOLO G. RADAELLI, ISIS Facility, Rutherford Appleton Laboratory, UK, S. PARK, Rutgers University, USA, S-W. CHEONG, Rutgers University, USA — The commensurate and incommensurate magnetic structures of the magnetoelectric system YMn₂O₅, as determined from neutron diffraction, were found to be spin-density waves lacking a global center of symmetry. We propose a model, based on a simple magneto-elastic coupling to the lattice, which enables us to predict the polarization based entirely on the observed magnetic structure. Our data accurately reproduce the temperature-dependence of the spontaneous polarization, in particular its sign reversal at the commensurate-incommensurate transition.

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