

Abstract Submitted
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Magnetic field effects on charge and magnetic structures in a new multiferroic LuFe_2O_4 ¹ JINSHENG WEN, GUANGYONG XU, GENDAGU, STEVE SHAPIRO, Condensed Matter Physics and Materials Science Department, Brookhaven National Laboratory, Upton, New York 11973, USA — LuFe_2O_4 is a new multiferroic where the ferroelectric polarization originates from valence order of Fe^{2+} and Fe^{3+} ions instead of cation displacements. It evolves from two- to three-dimensional charge ordered state upon cooling, and the bulk polarization appears when the charges order three dimensionally. A ferrimagnetic order appears with further cooling. Bulk polarizations and the charge order are both enhanced when the magnetic order occurs, suggesting a strong coupling between the two orders in the system. We have performed neutron scattering measurements on both the charge and magnetic orders under external magnetic fields. We will discuss the field effects and their implications.

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