Abstract Submitted
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Enhanced ferroelectric polarization by induced Dy spin-order in multiferroic $DyMnO_3$ O. PROKHNENKO, R. FEYERHERM, E. DUDZIK, S. LANDSGESELL, N. ALIOUANE, Hahn-Meitner-Institut, Glienicker Str. 100, Berlin D-14109, Germany, L.C. CHAPON, ISIS, Rutherford Appleton Laboratory, Chilton, Didcot, OX11, 0QX United Kingdom, D.N. ARGYRIOU[1], Hahn-Meitner-Institut, Glienicker Str. 100, Berlin D-14109, Germany — Neutron powder diffraction and single crystal x-ray resonant magnetic scattering measurements suggest that Dy plays an active role in enhancing the ferroelectric polarization in multiferroic $DyMnO_3$ above T_N^{Dy}= 6.5 K. We observe the evolution of an incommensurate ordering of Dy moments with the same periodicity as the Mn spiral ordering. It closely tracks the evolution of the ferroelectric polarization. Below T_N^{Dy}, where Dy spins order commensurately, the polarization decreases to values similar for those of $TbMnO_3$. The higher P_s found just above T_N^{Dy} arises from the contribution of Dy-spins so as to effectively increase the amplitude of the Mn spin-spiral.

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