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Magnetic phase transitions in single crystalline $\mathbf{Mn_{0.68}Ni_{0.32}TiO_3}$[1] SONGXUE CHI, HUIBO CAO, FENG YE, JAIME A. FERNANDEZ-BACA, Oak Ridge National laboratory, HAIDONG ZHOU, National High Magnetic Field Laboratory, Florida State University — The magnetoelectric $MnTiO_3$ has the ilmenite structure and order antiferromagnetically with neighboring Mn^{2+} spins antiparallel to each other both within the ab-plane and along the c-axis. We have observed a magnetic field induced electric polarization in the 32%Ni-doped $MnTiO_3$. To understand the origin of this magnetoelectric effect, we have carried out neutron diffraction study on single crystalline $Mn_{0.68}Ni_{0.32}TiO_3$. The Mn^{2+} spins order below 27 K and arrange in the same antiparallel manner as the parent compound, but with different spin direction. On cooling the magnetic phase goes through a second transition at 15 K, below which the spins lock into a new direction. We have also determined the spin structure under a magnetic field applied along the c-axis.

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