

Abstract Submitted
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Magnetic anisotropy and switching in $\text{Pr}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$ using RF transverse susceptibility¹ N.A. FREY, H. SRIKANTH, Physics Department, University of South Florida, D.D. STAUFFER, C. LEIGHTON, Department of Chemical Engineering and Materials Science, University of Minnesota — $\text{Pr}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$ has been a system of current interest that appears very different from manganites or even other cobaltites. It has a ferromagnetic transition at 230 K and an anomalous magnetic transition at 120 K which is manifested in steps in temperature dependent magnetization and coercivity. The origin of this transition is still under investigation and recent experiments have suggested a change in magnetic anisotropy associated with this anomalous transition. In this work, we report systematic investigations of the magnetic anisotropy and switching fields across the 120 K transition in polycrystalline $\text{Pr}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$ using a very sensitive RF transverse susceptibility method based on a tunnel diode oscillator resonant at 12 MHz. Our experiments reveal evidence for a sharp change in the anisotropy at 120 K with the anisotropy field (H_k) dropping from around 1.8 kOe to 750 Oe on cooling. By tracing the evolution of the anisotropy and switching peaks, we are able to discern behavior associated with separate ferromagnetic phases with 120 K signaling the transition between the two.

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