Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

The low temperature magnetic structure of superconducting $FeTeO_x$ films[1] L.K. NARANGAMMANA, J.I. BUDNICK, W.A. HINES, University of Connecticut, Storrs, CT 06269, C. NIEDERMAYER, Paul Scherrer Institut Villigen, PSI, Switzerland, E.E. ALP, W. BI, D.G. HINKS, D.E. BROWN, Argonne National Laboratory, Argonne, IL 60439, B.O. WELLS, University of Connecticut, Storrs, CT 06269 — We compare the temperature dependent magnetic structure of superconducting $FeTeO_x$ and non-superconducting FeTe films using neutron diffraction. Both show an antiferromagnetic transition below 70 K. The major difference between the two is that the superconducting $FeTeO_x$ film shows a distinct reduction in magnetic order around the superconducting transition temperature (13 K) while the non-superconducting FeTe film shows a smoothly developing magnetic order as a function of temperature. Preliminary Mössbauer spectroscopy studies done on the superconducting $FeTeO_x$ indicate that film undergoes an antiferromagnetic transition below 50 K and magnetic order still exists in superconducting state.

[1]Supported by DOE/BES through contract DE-FG02-00ER45801 (Uconn).

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Date submitted: 15 Nov 2013 Electronic form version 1.4