Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

**Determination of a Magnetic Component to the Superconducting Condensation Energy for $Fe_{1+\delta}Se_xTe_{1-x}$**[1] JONATHAN LEINER, Oak Ridge National Lab, VIVEK THAMPY, Brookhaven National Lab, MARK LUMSDEN, ANDREW CHRISTIANSON, DOUGLAS ABERNATHY, BRIAN SALES, ATHENA SEFAT, Oak Ridge National Lab, ZHIQIANG MAO, JIN HU, Tulane University, WEI BAO, Renmin University of China , COLLIN BROHOLM, Johns Hopkins University — A quantitative method to extract a magnetic component of the superconducting condensation energy from inelastic neutron scattering data is described and applied to $Fe_{1+\delta}Se_{0.4}Te_{0.6}$. Based on the first moment sum-rule for the dynamic correlation function, the method is sensitive to changes in the inter-site magnetic correlation energy, $\Delta E_{ij}$, associated with superconductivity. We find the length scale over which $\Delta E_{ij}$ is appreciable coincides with the superconducting coherence length as determined by Scanning Tunneling Microscopy. The overall change in inter-site magnetic correlation energy is compared to the superconducting condensation energy determined through specific heat measurements.

[1]Supported by ORNL LDRD funding

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Date submitted: 15 Nov 2013 Electronic form version 1.4