Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Anti-ferromagnetically driven Mott transition in ultrathin nickelates DEREK MEYERS, Univ of Arkansas-Fayetteville, JIAN LIU, Univ of California-Berkeley, M. KAREEV, S. MIDDEY, Univ of Arkansas-Fayetteville, J.W. FREELAND, Advanced Photon Source, R. AVERITT, Boston University, A.J. MILLIS, Columbia University, P. RYAN, Advanced Photon Source, J. CHAKHALIAN, Univ of Arkansas-Fayetteville — The independent roles of anti-ferromagnetism and charge ordering in the realization of the temperature induced Mott metal-to-insulator transition within heteroepitaxial nickelate films remain to be disentangled hindering true understanding of the nature of the still actively debated ground state. To this end, we have investigated ultra thin, fully epitaxial films of the strongly correlated electron system $NdNiO_3$ by hard and soft resonant x-ray scattering. We find a robust E'-type antiferromagnetic transition, analogous to the bulk ordering, occurs despite the ultra thin nature of the films. Surprisingly, no evidence of a symmetry change was found upon cooling below the metal-to-insulator transition utilizing multiple probes. Supporting theoretical calculations show the anti-ferromagnetic transition corroborates with the opening of the charge excitation gap.

Derek Meyers
Univ of Arkansas-Fayetteville

Date submitted: 15 Nov 2013 Electronic form version 1.4