Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Evidence for ferromagnetism in $NdTiO_3/SrTiO_3$ heterostructures

YILIKAL AYINO, PENG XU, JUAN TIGER-LAZO, JIN YUE, BHARAT JALAN, VLAD PRIBIAG, University of Minnesota — Complex oxide interfaces are a promising platform for studying a wide array of correlated electron phenomena in low-dimensions, including superconductivity and magnetism. The microscopic origin of these phenomena remains an open question. Evidence for magnetic order at oxide interfaces has been reported using various experimental techniques, including vibrating sample magnetometry, superconducting quantum intereference magnetometry, neutron scattering, and magneto-transport. Hysteresis in magneto-transport can provide evidence for magnetic ordering. Here we investigate electron transport in MBE-grown $NdTiO_3/SrTiO_3$ heterostructures as a function of magnetic field and time, at temperatures down to 150 mK. By studying the time-dependence of magnetoresistance (MR) we observe two types of hysteretic features: 1) persistent features, and 2) transient features with a characteristic timescale of 100 seconds. We attribute the persistent hysteresis to magnetism in the sample. We discuss the importance of time-dependent measurements for distinguishing signatures of magnetism from other effects that can produce hysteretic MR in experiments at low temperatures.

Yilikal Ayino
University of Minnesota

Date submitted: 11 Nov 2016 Electronic form version 1.4