Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Optical spectroscopy of the metallic $Nd_{1-x}TiO_3$ system NATHAN ARMSTRONG, McMaster University, ATHENA SEFAT, Materials Science and Technology Division, Oak Ridge National Laboratory, JING YANG, Tianjin University, JOHN GREEDAN, THOMAS TIMUSK, McMaster University — The neodymium titanate system, $Nd_{1-x}TiO_3$, exhibits two metal-to-insulator transitions at $x = 0.08$ and $x = 0.24$. The n-type metallic regime between the two transitions exhibits the Fermi liquid T^2 DC resistivity over a large range of temperatures. We have measured the reflectivity of the $x = 0.15$ and $x = 0.2$ samples from 4 meV to 5.5 eV at temperature from 15 K to 300 K. Previous optical work by Yang *et al.* measured an insulating, a semiconducting, and a metallic sample. The metallic sample was found to have the Fermi liquid ω^2dependence in the scattering rate. We reevaluate the Yang *et al.* data for the $x = 0.095$ metallic sample, just inside the MIT, and compare it to our samples deeper in the metallic regime that have T^2 coefficients an order of magnitude smaller.

Nathan Armstrong
McMaster University

Date submitted: 14 Nov 2014 Electronic form version 1.4