Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Understanding the electronic, optical, and transport properties of $(LaAlO_3)_n/(SrTiO_3)_n$ multilayers K. HUNTER, N. CREANGE, C. CONSTANTIN, J.T. HARALDSEN, Department of Physics and Astronomy, James Madison University — We examine the evolution of the electronic, optical, and transport properties of $(LaAlO_3)_n/(SrTiO_3)_n$ multilayers (where n denotes the number of unit cells) using density functional theory with local density approximations. Using an increasing supercell, we determine multiple properties for multilayers with increasing layer thickness (n). We show a critical thickness of about n = 4 will produce a shift in the conduction and the transport properties. This is most likely related to the pushing of electrons from the $LaAlO_3$ layer into the $SrTiO_3$ layer.

Jason Haraldsen
James Madison Univ

Date submitted: 13 Nov 2013 Electronic form version 1.4