

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Electron transport in confined oxide nanowires¹ GUANGLEI CHENG, MICHELLE TOMCZYK, SHICHENG LU, MENGCHEN HUANG, JOSH VEAZEY, PATRICK IRVIN, Department of Physics and Astronomy, University of Pittsburgh, CHANG-BEOM EOM, Department of Materials Sciences and Engineering, University of Wisconsin-Madison, JEREMY LEVY, Department of Physics and Astronomy, University of Pittsburgh — The invention of conductive AFM lithography at the $\text{LaAlO}_3/\text{SrTiO}_3$ interface enables the creation of clean inter-connected oxide nanowires and artificially engineered tunnel barriers. Here we create an oxide nanowire that is confined by two tunnel barriers using this technique. Two terminal and four terminal transport studies reveal transitions among Cooper pair tunneling, Coulomb blockade and Fabry-Perot interference that can be tuned by side gate voltages and external magnetic field. Our results indicate the presence of long-range coherence in $\text{LaAlO}_3/\text{SrTiO}_3$ nanowires.

¹This work is supported by AFSOR FA9550-10-1-0524 (J.L and C.B.E) and DMR-0906443 (C.B.E).

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Date submitted: 09 Nov 2012

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