Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Hybrid STM/AFM study of half-metallic surface states in cobaltates[1] ALEX W. CONTRYMAN, FRANCIS NIESTEMSKI, MING RUE D. THIAN, CAROLINA PARRA, YULIN CHEN, Stanford University, THORSTEN HESJEDAL, Oxford University, Z.X. SHEN, HARI C. MANOHARAN, Stanford University — Na_xCoO_2 is a well-known compound that has been studied at various Na concentrations, and has drawn much attention for its unconventional superconductivity and antiferromagnetic phase. In its stoichiometric concentration, $NaCoO_2$ has has recently been proposed as a system for observing topological superconductivity when mixed with a superconductor's electronic states through the proximity effect. We examine $NaCoO_2$ using an ultrahigh-vacuum low-temperature hybrid scanning tunneling and atomic force microscope at 4 K. We use the tuning-fork AFM mode to study the topography of this bulk insulating material when no tunneling is possible, and utilize a special electrical contact scheme to access the electronic surface states for spectroscopy.

[1]Supported by DOE, Office of Basic Energy Sciences, Division of Materials Sciences and Engineering under contract DE-AC02-76SF00515. Alex W. Contryman is supported by a Dr. Robert M. Noyce Stanford Graduate Fellowship.

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Date submitted: 15 Dec 2011 Electronic form version 1.4