Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Atomic-Scale Electronic Spectra across $BiFeO_3/La_{0.7}Sr_{0.3}MnO_3$ Complex Oxide Heterointerfaces YA-PING CHIU, BO-CHAO HUANG, Department of Physics, National Sun Yat-sen University, Kaohsiung, 80424, Taiwan, PU YU[1], RAMAMOORTHY RAMESH[2], Department of Physics, University of California, Berkeley, Berkeley, CA 94720,USA, YING-HAO CHU, Institute of Physics, National Chiao Tung University, Hsinchu 30010, Taiwan — Atomic-scale evolution of electronic structures across $BiFeO_3/La_{0.7}Sr_{0.3}MnO_3$ complex oxide heterointerfaces has been revealed using cross-sectional scanning tunneling microscopy and spectroscopy. Analysis of scanning tunneling spectroscopy results exploits the interfacial valence mismatch to influence the electrostatic configurations across the $BiFeO_3/La_{0.7}Sr_{0.3}MnO_{0.3}$ heterointerfaces. Spatially unit-cell-by-unit-cell resolved electronic states at the atomic level reveal how the control of material interfaces at the atomic level to determine the ferroelectric polarization in $BiFeO_3$.

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Date submitted: 14 Nov 2013 Electronic form version 1.4