

Abstract Submitted
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Piezoelectric-response of charged 180° ferroelectric domain walls¹ EDWARD LOCHOCKI, Department of Physics and Astronomy and Rutgers Center for Emergent Materials, Rutgers University, Piscataway, New Jersey 08854, USA, SOONYONG PARK, Department of Physics, Chung-Ang University, Seoul 156, Republic of Korea, NARA LEE, S-W. CHEONG, WEIDA WU, Department of Physics and Astronomy and Rutgers Center for Emergent Materials, Rutgers University, Piscataway, New Jersey 08854, USA — We report ambient piezoresponse force microscopy (PFM) studies of the multiferroic hexagonal manganite HoMnO_3 performed on the cleaved (110) surface of a single crystal specimen. By changing the sample orientation with respect to the cantilever, we observed an unexpected out-of-plane PFM signal at domain walls which depends on domain wall orientation, in addition to the expected in-plane PFM signal in domains. Further studies confirmed that the domain wall PFM signal results from an out-of-plane displacement, which can be explained by a simple model of local elastic response with conservation of unit cell volume at head-on domain walls.

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