Abstract Submitted
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Non-local piezoresponse in 3 u.c. $LaAlO_3/SrTiO_3$ MENGCHEN HUANG, FENG BI, University of Pittsburgh, CHUNGWUNG BARK, SANGWOO RYU, CHANGBEOM EOM, University of Wisconsin, JEREMY LEVY, University of Pittsburgh — Nanoscale control of the metal-insulator transition in 3 unit cell (u.c.) $LaAlO_3/SrTiO_3$ heterostructures can be achieved by the conducting AFM lithography,[1] however the mechanism behind this transition is still not well understood. One proposed mechanism invokes ionic transport through the $LaAlO_3$ layer.[2] We have performed a variety of local and non-local piezoforce measurements on 3 u.c. $LaAlO_3/SrTiO_3$ heterostructures. The existence and nature of the non-local piezoelectric effect places strong constraints on the origin of the piezoelectric response. This work is supported by NSF DMR-1104191.

[1]C. Cen, S. Thiel, G. Hammerl, C. W. Schneider, K. E. Andersen, C. S. Hellberg, J. Mannhart, and J. Levy, Nat. Mater. **7**, 2136 (2008)
[2]A. Kumar, S. Jesse, A. Gruverman, C. B. Eom, S.V.Kalinin, unpublished

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