

Abstract Submitted  
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**Probing the nanoelectromechanical properties of  $\text{LaAlO}_3/\text{SrTiO}_3$  SketchSETs** A. GAUTHIER, F. BI, Department of Physics and Astronomy, University of Pittsburgh, H. LEE, S. RYU, C. B. EOM, Department of Materials Science and Engineering, University of Wisconsin-Madison, P. IRVIN, J. LEVY, Department of Physics and Astronomy, University of Pittsburgh — The  $\text{LaAlO}_3/\text{SrTiO}_3$  (LAO/STO) interface exhibits a locally-tunable metal-insulator transition. This property can be applied to create nanoscale electronic devices such as sketched single-electron transistors (SketchSETs) at the LAO/STO interface. A SketchSET consists of a quantum dot coupled to source, drain, and gate electrodes. LAO/STO possesses a coupling between lattice distortion and carrier density; mechanical strain applied to the surface can tune the conductance at the interface. Leveraging this property may allow for strain-based control over the electron occupancy of a SketchSET. We use a cryogenic scanning probe microscope to create (at room temperature) and measure (at low temperature) the electronic properties of SketchSET devices and probe their unique nanoelectromechanical properties.

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