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**GHz operation of LaAlO$_3$/ SrTiO$_3$-based transistor**

PATRICK IRVIN, MENGCHEN HUANG, JEREMY LEVY, U. Pittsburgh, CHUNG WUNG BARK, CHAD M. FOLKMAN, CHANG-BEOM EOM, U. Wisconsin-Madison — Local modification of the metal-insulator transition of the LaAlO$_3$/SrTiO$_3$ interface with a conducting-atomic force microscope (c-AFM) has resulted in a variety of electrical and photonic devices. Using a heterodyne measurement technique, we show that a sketch-based, nanoscale transistor (“SketchFET”) can operate at frequencies in excess of 1 GHz. This demonstration of GHz functionality opens the door for new applications for oxide-based, rewritable nanoscale devices.

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