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Local Gating of Nanostructures with a Low-Temperature Scanned Probe Microscope M. JURA, M.A. TOPINKA, L.S. MOORE, D. GOLDBERGER-GORDON, Stanford University, L. URBAN, A. YAZDANI, University of Illinois at Urbana-Champaign, L.N. PFEIFFER, K.W. WEST, Bell Labs, Lucent Technologies — We have recently constructed a low-temperature scanned probe microscope designed to operate down to dilution refrigerator temperatures. There has been increasing interest in gaining spatial information about transport through nanostructures by using scanned probe microscopy^{1–3}. Our microscope incorporates a commercial stick-slip positioner for coarse approach and alignment to nanostructures. Here we present our solutions to some of the challenges faced in designing such an instrument, as well as a first set of low-temperature scanned probe images obtained from several nanostructures fabricated on different high-mobility GaAs/AlGaAs 2DEG heterostructures.

¹ M.A. Topinka et al., Science **289**, 2323 (2000).

² R. Crook et al., Phys. Rev. Lett., **91**, 246803 (2003).

³ A. Pioda et al., Phys. Rev. Lett., **93**, 216801 (2004).

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