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Ionic liquid gating of strontium titanate nanostructures PATRICK GALLAGHER, Department of Physics, Stanford University, Stanford, CA, 94305, USA, SAM STANWYCK, Department of Applied Physics, Stanford University, Stanford, CA, 94305, USA, MENYOUNG LEE, JAMES WILLIAMS, DAVID GOLDHABER-GORDON, Department of Physics, Stanford University, Stanford, CA, 94305, USA — We present electronic transport measurements of two-dimensional electron systems (2DES) induced on strontium titanate surfaces. Using a combination of ionic liquid gates and nanopatterned metallic gates, we demonstrate the ability to isolate a nanoscale puddle of the 2DES and modulate its conductance over several orders of magnitude. Finally, we discuss the apparently gate-tunable superconducting behavior in these devices.

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