

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**Imaging Electron Flow From a Quantum Point Contact** M. P. JURA, M. A. TOPINKA, A. R. SCIAMBI, D. GOLDHABER-GORDON, Stanford University, L. URBAN, University of Illinois at Urbana-Champaign, A. YAZDANI, Princeton University, H. SHTRIKMAN, Weizmann Institute of Science, L. N. PFEIFFER, K. W. WEST, Bell Labs, Lucent Technologies — We image electron flow from a quantum point contact (QPC) into a high-mobility two-dimensional electron gas (2DEG) using scanning gate microscopy (SGM). We note two surprising phenomena, which we compare with results from simulations: 1. The beam of electrons immediately leaving the QPC is unexpectedly narrow and collimated. 2. Under certain conditions, the signal generally associated with current flow density (i.e. the change in differential conductance due to scattering from the scanning gate tip) can change sign from negative to positive.

Michael Jura  
Stanford University

Date submitted: 20 Nov 2006

Electronic form version 1.4