Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

High-resolution scanning hall probe microscopy[1] CLIFFORD HICKS, LAN LUAN, J. HENDRIK BLUHM, KATHRYN MOLER, Geballe Laboratory for Advanced Materials, Stanford University, JANICE GUIKEMA, Laboratory of Atomic and Solid State Physics, Cornell University, ELI ZELDOV, HADAS SHTRIKMAN, Department of Condensed Matter Physics, Weizmann Institute of Science — Scanning hall sensors can be used to directly image magnetic fields at surfaces. They offer high resolution, high sensitivity, operability over a broad temperature range, and linearity. We have fabricated hall sensors on GaAs / $Al_{0.35}Ga_{0.65}As$ and GaAs / $Al_{0.3}Ga_{0.7}As$ heterostructures containing 2D electron gases 40, 39 and 140nm beneath the surface. The sensitive areas of our probes range from microns to 85nm on a side. We report on the field sensitivities of probes of various sizes and their spatial resolution in a scanning configuration.

[1]supported by the NSC Center for Probing the Nanoscale

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Date submitted: 29 Dec 2005 Electronic form version 1.4