

Abstract Submitted
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High-resolution scanning hall probe microscopy C.W. HICKS, M.A. TOPINKA, J.H. BLUHM, K.A. MOLER, Geballe Laboratory for Advanced Materials, Stanford University, J.W. GUIKEMA, Laboratory of Atomic and Solid State Physics, Cornell University, E. ZELDOV, H. 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 from cryogenic to room temperature, 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, one containing a 2D electron gas 40 nanometers below the surface and another 140nm below the surface, as well as an In_{0.5}Al_{0.5}As / GaSb / AlSb / InAs heterostructure containing a 2DEG 21nm below the surface. The sensitive areas of our probes range from microns to 60nm on a side. We report on the field sensitivities of the probes and their spatial resolution in a scanning configuration.

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