

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Experimental study of geometries to characterize spin-dependent reflection J.A. PETERS, HONG CHEN, J.J. HEREMANS, Ohio University, Athens OH 45701, N. GOEL, S.J. CHUNG, M.B. SANTOS, The University of Oklahoma, Norman OK 73019 — Spin-orbit interaction in semiconductor heterostructures can lead to a spin-dependence of the reflection angle of carriers off a barrier. This effect can be exploited to create populations of spin-polarized carriers in ballistic mesoscopic geometries. We will describe experimental progress in developing sample geometries that can be used to characterize and utilize spin-dependent reflection. The geometries are fabricated by electron beam lithography on narrow gap heterostructures, InSb/InAlSb, in which spin-orbit interaction is strong. The geometries consist of an injector aperture that directs the carriers predominantly towards a barrier, and a second aperture in close proximity collecting the carriers as a function of an applied perpendicular magnetic field. We report on progress in optimizing the geometries for given heterostructures, and present a comparative study between heterostructures.

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Date submitted: 22 Dec 2004

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