Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Spin Injection, Manipulation, and Detection, in InAs Nanodevices[1] G.M. JONES, B.T. JONKER, B.R. BENNETT, J.R. MEYER, M.E. TWIGG, T.L. REINECKE, D. PARK, S.V. PEREVERZEV, C.S. BADESCU, C.H. LI, A.T. HANBICKI, O. VAN'TERVE, I. VURGAFTMAN, Naval Research Laboratory — In this talk the authors will discuss their progress using InAs heterostructures to produce spin-polarized injection and detection, as well as manipulation of coherent spin-polarized electrons for a spin-based FET (Spin-FET). High-quality n-type InAs heterostructures demonstrate many favorable characteristics necessary to the study of spin dynamics, including 2DEG's with small effective mass ($m^* = 0.023$) and large g-factor ($g = -15$). Previously, high-mobility InAs heterostructures have been demonstrated in which electrons pass ballistically over hundreds of nanometers up to room temperature. Our devices seek to exploit the strong Spin-Orbit effect present in InAs to manipulate coherent spin-polarized electrons during transport, by producing perpendicular electric field using isolated top-gates fabricated over the electron transport region.

[1]This work was supported by ONR.

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Date submitted: 27 Nov 2007 Electronic form version 1.4