

MAR11-2010-001075

Abstract for an Invited Paper
for the MAR11 Meeting of
the American Physical Society

Spin Currents in Silicon¹

IAN APPELBAUM, University of Maryland, College Park

I will discuss the results of our recent spin injection experiments using long-distance non-degenerate undoped (and n-type doped) Si devices. We have a unique capability to recover the details of electron transport on a sub-ns timescale through a “Larmor clock” transformation of spin precession data, despite using only quasistatic current measurements. I suggest that this is potentially a new tool for probing non-equilibrium phenomena in semiconductors, revealing both intrinsic and extrinsic materials properties through sensitivity to subtleties of the bandstructure and impurity spectrum.

¹Supported by ONR and NSF.