

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Temperature Dependent Spin Transport in Silicon Controlled by an Electrostatic Gate**<sup>1</sup> JING LI, IAN APPELBAUM, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, College Park, MD 20742 — Long-distance ( $\sim 500\mu\text{m}$ ) lateral spin polarized electron transport in undoped silicon under the control of an electrostatic gate is studied from 40K to 120K. The temperature dependence of average spin polarization, transport time, and spin dephasing during coherent precession can be largely attributed to reduction of finite spin lifetime at higher temperatures. Measurements on devices with different transport lengths are shown to modify the effect of electrostatic gating.

<sup>1</sup>Support from ONR is acknowledged

Jing Li  
Center for Nanophysics and Advanced Materials, Dept of Physics,  
University of Maryland, College Park, MD 20742

Date submitted: 29 Dec 2010

Electronic form version 1.4