Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Magnetoresistance of two-dimensional electrons in Si/SiGe quantum wells in in-plane magnet field at 20 mK T.M. LU, L. SUN, D.C. TSUI, S. LYON, Princeton University, W. PAN, Sandia National Laboratories, M. MUHLBERGER, F. SCHAFFLER, Universitat Linz, Austria, J. LIU, Y.H. XIE, University of California at Los Angeles — We have measured the magnetoresistance of two-dimensional electrons in two modulation-doped Si/SiGe quantum wells in an in-plane magnetic field at 20mK. It was found that the ratio of the saturation resistance in high in-plane magnetic field to the zero-magnetic-field resistance is dependent on the electron density. At high electron density, the ratio is approximately 1.8. As the electron density decreases and is close to the metal-insulator transition, the ratio is strongly enhanced and appears diverging at a sample dependent characteristic density. The field at which the magnetoresistance saturates as a function of density is linear at high density. It deviates from this linear dependence and appears to extrapolate to zero when the electron density is below $\sim$0.7x10^{11}/cm^2.

T. M. Lu
Princeton University

Date submitted: 23 Nov 2008 Electronic form version 1.4