Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Thermodynamic Magnetization of Strongly Correlated 2d Electrons in Perpendicular Magnetic Fields[1] ANANTH VENKATESAN, S. ANISSIMOVA, S.V. KRAVCHENKO, Northeastern University, Boston, A.A. SHASHKIN, V.T. DOLGOPOLOV, Institute of Solid State Physics, Chernogolovka, M.R. SAKR, UCLA, T.M. KLAPWIJK, Kavli Institute of Nanoscience, Delft — We will report measurements of thermodynamic magnetization (M) of strongly correlated 2D electrons in silicon in perpendicular magnetic fields. We see sawtooth oscillations of the magnetization as a function of the electron density, n_s. Near the integer filling factors, the slope $\partial M/\partial n_s$ exceeds the maximum possible non-interacting value pointing to the existence of the regions with the negative thermodynamic compressibility. Comparing $\partial M/\partial n_s$ on both sides of the spin gaps, we deduce the g-factor. The latter is found to be close to its bare value $g = 2$ even at low electron densities, where the critical behavior of the spin susceptibility has been observed in similar systems. This indicates that it is the effective mass, rather than the g-factor, that is responsible for the giant enhancement of the spin susceptibility near the metal-insulator transition.

[1]Supported by NSF grant DMR-0403026

Sergey Kravchenko
Northeastern University

Date submitted: 22 Dec 2004 Electronic form version 1.4