

Abstract Submitted
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Critical Behavior of the Pauli Spin Susceptibility in A Strongly Correlated 2d Electron Liquid¹ S. ANISSIMOVA, A.A. SHASHKIN, S.V. KRAVCHENKO, Northeastern University, Boston, M.R. SAKR, UCLA, V.T. DOLGOPOLOV, Institute of Solid State Physics, Chernogolovka, T.M. KLAPWIJK, Kavli Institute of Nanoscience, Delft — We have performed measurements of the thermodynamic magnetization and density of states in a low-disordered, strongly correlated 2D electron system in silicon. We have found that the spin susceptibility of band electrons (Pauli spin susceptibility) grows by almost an order of magnitude as the electron density (n_s) is reduced, behaving critically near $n_s = n_\chi \approx 8 \times 10^{10} \text{ cm}^{-2}$. This provides thermodynamic evidence for the existence of a phase transition. The density n_χ is coincident within the experimental uncertainty with the critical density n_c for the metal-insulator transition in clean samples. The nature of the low-density phase ($n_s < n_\chi$) still remains unclear because in currently available samples, it is masked by the residual disorder in the electron system.

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