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Subtleties of Quantum Decoherence in Solids: We have studied the Shubnikov-de Haas (SdH) oscillations in ultra-high-mobility Si MOSFETs over a wide range of carrier densities n = (1-50) x 10^{11} cm^{-2}, which includes the vicinity of the apparent metal-insulator transition in two dimensions (2D MIT). Using a novel technique of measuring the SdH oscillations in superimposed and independently controlled parallel and perpendicular magnetic fields, we determined the spin susceptibility χ^*, the effective mass m*, and the g*-factor for mobile electrons. These quantities increase gradually with decreasing density; near the 2D MIT, we observed enhancement of x* by a factor of ~ 4.7. To test the idea of coexistence of the 2D MIT and Stoner instability, we measured the SdH oscillations in weak magnetic fields; the period of oscillations shows that the electron states remain fourfold degenerate down to n = 0.96 n_c. These data rule out spontaneous spin and valley polarization at the 2D MIT, though do not exclude such possibility for lower densities n < 8.34x10^{10} cm^{-2}.