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Spin Transition in a 2DES at $\nu = 1/2$ L.A. TRACY, J.P. EISENSTEIN, Caltech, L.N. PFEIFFER, K.W. WEST, Bell Labs — The transition from partial to complete electron spin polarization as a function of density in a 2DES at $\nu = 1/2$ has been probed using a resistively-detected NMR (RDNMR) technique. Both the nuclear spin lattice relaxation time T_1 of ^{71}Ga and the response in resistance to a change in the nuclear spin polarization appear to reflect this transition. At low densities, where the electron spin polarization is partial, the T_1 time is relatively short, due to the presence of both electron spin states at the Fermi level. In this regime T_1 is density independent and has a Korringa-like temperature dependence. Above a critical density T_1 increases and the RDNMR signal eventually vanishes, consistent with a transition to complete electron spin polarization. In the transition region we observe a non- Korringa T_1 temperature dependence and an unexpected enhancement of the RDNMR signal.

Lisa Tracy
Caltech

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