Abstract Submitted
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Korringa-Like Nuclear Spin-Lattice Relaxation in a 2DES at $\nu = 1/2$ L.A. TRACY, I.B. SPIELMAN, J.P. EISENSTEIN, Caltech, L.N. PFEIFFER, K.W. WEST , Bell Labs, Lucent Technologies — Via a resistively-detected NMR technique, the nuclear spin lattice relaxation time T_1 of ^{71}Ga at low temperatures has been measured in a GaAs/AlGaAs heterostructure containing two weakly-coupled 2D electron systems (2DES), each at Landau level filling $\nu = 1/2$. Incomplete electronic spin polarization, which has been reported previously [1,2] for low density 2DESs at $\nu = 1/2$, should facilitate hyperfine- coupled nuclear spin relaxation owing to the presence of both electron spin states at the Fermi level. Within composite fermion theory, a Korringa law temperature dependence: $T_1T = constant$, is expected for temperatures $T < 1$ K. Our measurements made at temperatures in the range 35 mK $< T <$ 200 mK, show that T_1 rises less rapidly with falling temperature than this law predicts. This may suggest the existence of alternate nuclear spin relaxation mechanisms in this system.

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[2] I.B. Spielman, L.A. Tracy, J.P. Eisenstein, L.N. Pfeiffer, K.W. West, condmat/0410092.
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