

Abstract Submitted
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Evidence of Composite Fermion interactions in the Fermi sea at $\nu \rightarrow 1/2$ IRENE DUJOVNE, A. PINCZUK, Columbia Univ. and Bell Labs, B. S. DENNIS, L. N. PFEIFFER, K. W. WEST, Bell Labs — Interactions between composite fermions with two attached flux quanta (2 CFs) are explored at filling factors of the fractional quantum Hall effect $\nu \rightarrow 1/2$. Low-lying ($\omega < 1\text{meV}$) spin flip excitations modes, in which spin orientation and Landau level index of composite fermions change simultaneously, are measured in resonant inelastic light scattering experiments. The measurements uncover a delicate balance between spin reversal and Fermi energies in the Fermi sea of composite fermions that emerges in the limit of $\nu \rightarrow 1/2$. A collapse of the spin-flip excitation gap as $\nu \rightarrow 1/2$ is linked with vanishing quasiparticle energy level spacings and loss of full spin polarization. This work is supported by the NSF under Award Number DMR-03-52738 and by the DoE award DE-AIO2-04ER46133. It is also supported by a research grant of the W. M. Keck Foundation.

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