Microscopic study of the composite Fermi liquid[1] SCOTT GER-
AEDTS, JIE WANG, F. D. M. HALDANE, Princeton University — We use exact
diagonalization (ED) to study a many-body generalization of the k-space Berry
phase for taking a quasiparticle around the Fermi surface of a $\nu = 1/2$ composite
Fermi liquid (CFL). Composite fermion "occupations" are identified by a large over-
lap between the ED state and an explicit model CFL wavefunction. This model
wavefunction is found to be very accurate, and also nearly particle-hole symmetric,
when the composite fermion quasiparticles are clustered to form a compact Fermi
sea. For a sequence of occupation configurations where excitations stay close to the
Fermi surface, we find a net phase of π, consistent with an anomalous Hall effect
with $\sigma^{xy} = 1/2(e^2/h)$ and with a recent Dirac fermion effective theory.

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