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Abstract for an Invited Paper
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A model wavefunction for the composite Fermi liquid: its geometry and entanglement.[1]

F. D. M. HALDANE, Princeton University

I will describe a model wavefunction for the composite Fermi liquid in a partially-filled Landau level, recently formulated in a torus geometry (Shao et al., Phys. Rev. Lett. 114, 206402 (2015)), that allows a manifold of gapless composite Fermi-liquid states to be characterized, parametrized by an analog of the "occupation number" that defines the Fermi surface in a free-electron gas. Unlike incompressible FQHE states, which only occur in an inversion-symmetric momentum sector, these CFL states occur in each distinct momentum sector allowed by the periodic boundary condition. The fundamental wavefunction of this type describes a system with $\nu = 1/2$, but multiplication by (or division by) a Vandermonde factor describes states at $\nu = 1/m$. The CFL states are characterized by an "intrinsic metric" which determines the shape of the Fermi surface, and corresponds to the shape of the "flux-attachment" that forms the composite fermion. The wavefunction is well-suited for Monte-Carlo calculations, as it is analogous to a determinant form used by Jain in spherical geometry. The violation of "area-law" (perimeter-law) entanglement found in Monte-Carlo calculations will be described.

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