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Fermi Contour Anisotropy of GaAs Electron-Flux Composite Fermions in Parallel Magnetic Fields[1] DOBROMIR KAMBUROV, M.A. MUEED, MANSOUR SHAYEGAN, LOREN PFEIFFER, KENNETH WEST, KIRK BALDWIN, J.J.D. LEE, Department of Electrical Engineering, Princeton University, Princeton, New Jersey 08544, USA, ROLAND WINKLER, Department of Physics, Northern Illinois University, DeKalb, Illinois 60115, USA — In high-quality two-dimensional electrons confined to GaAs quantum wells, near Landau level filling factors ν =1/2 and 1/4, we observe signatures of the commensurability of the electron-flux composite fermion cyclotron orbits with a unidirectional periodic density modulation. Focusing on the data near ν =1/2, we directly and quantitatively probe the shape of the composite fermions' cyclotron orbit, and therefore their Fermi contour, as a function of magnetic field ($B_{||}$) applied parallel to the sample plane. The composite fermion Fermi contour becomes severely distorted with increasing $B_{||}$ and appears to be elliptical, in sharp contrast to the electron Fermi contour which splits as the system becomes bilayer-like at high $B_{||}$. We present a simple, qualitative model to interpret our findings.

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Dobromir Kamburov
Princeton University

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