Spin-Polarization of \( \nu = 3/2 \) Composite Fermions\(^1\) INSUN JO, DOBROMIR KAMBUROV, M.A. MUEED, YANG LIU, MANSOUR SHAYEGAN, LOREN PFEIFFER, KEN WEST, KIRK BALDWIN, JERRY LEE, Department of Electrical Engineering, Princeton University, Princeton, New Jersey 08544, USA — We report the observation of ballistic transport commensurability minima in the magnetoresistance of \( \nu = 3/2 \) composite fermions (CFs) in high-quality two-dimensional electron systems confined to wide GaAs quantum wells and subjected to a unidirectional periodic potential modulation. The positions of the minima are consistent with the magnetic commensurability condition implying the commensurability features originate from a periodic magnetic field. Their distance away from \( \nu = 3/2 \) yields the size and shape of the CF Fermi contour. At a fixed electron density of \( n \approx 1.8 \times 10^{11} \, \text{cm}^{-2} \), as the quantum well width increases from 30 to 60 nm, the CFs become fully spin-polarized. The application of an additional parallel magnetic field (\( B_\parallel \)) leads to a significant distortion of the CF Fermi contour. The distortion is much more severe compared to the \( \nu = 1/2 \) CF case at comparable \( B_\parallel \). Furthermore, the applied \( B_\parallel \) spin-polarizes the \( \nu = 3/2 \) CFs as evinced from the size of the CF Fermi contour.

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