Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Anomalous Insulating States in Landau Levels $N \geq 1$[1] TALBOT KNIGHTON, JIAN HUANG, ZHE WU, Wayne State Univ, LOREN PFEIFFER, KEN WEST, Princeton Univ — Quantum Hall measurements are performed for a rectangular two-dimensional (2D) hole system confined to a 20 nm quantum well in $\langle 100 \rangle$ GaAs. Quantum oscillations reveal a density of $4.3 \cdot 10^{10}$ cm^{-2} with mobility $\mu = 1.9 \cdot 10^6$ cm^2/V·s. For temperatures less than $\sim$150 mK, anomalous insulating peaks are observed near integer fillings 1,2, and 3 for which both in-phase and out-of-phase signals rise substantially to be near or well above the quantum resistance. They differ from usual re-entrant insulating phases such as that observed before $\nu = 1/3$ where the out-of-phase signal remains less than 3% of the in-phase signal. The relationship between in-phase and out-of-phase signals of the magnetoresistances resembles that of the orthogonal components ρ_{xx} and ρ_{yy} previously observed for collective anisotropic states in $\langle 100 \rangle$ and $\langle 311 \rangle$ GaAs 2D systems. These non-monotonic phase shifts will be discussed in relation to possible stripe phases.

[1]NSF DMR-1105183

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Date submitted: 15 Nov 2013 Electronic form version 1.4