

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Investigations of possible Landau level anticrossings in p-type (110) GaAs square wells¹ NEBILE ISIK, S.F. ROTH, M. BICHLER, A. FONTCUBERTA I MORRAL, G. ABSTREITER, Tech. Univ. Muenchen, M. GRAYSON, Northwestern University — In p-type (110) quantum wells, a single anomalous magnetoresistance peak is observed within the lowest Landau level ($\nu = 1$) of a two-dimensional hole system when the confinement is a triangular potential well [1]. This peak is interpreted as the transport signature of a $\pm 3/2$ spin-reversal level-anticrossing in the lowest Landau level. In recently fabricated 400 Å wide square quantum wells, we observe peaks within several Landau levels, for example, at both $\nu = 1$ and $\nu = 2$. The peak positions in magnetic field B are observed shift with top gate bias and the peak magnitudes are observed to increase with increasing temperature. At a critical top gate bias, however, both original peaks disappear, just as new features appear at higher fields within both the $\nu = 1$ and $\nu = 2$ minima. Dependence of feature position on front and back gate bias will be shown, and temperature dependences will be studied in terms of activated energy gaps. The cause of these peaks will be discussed in terms of possible multiple Landau level anticrossings.

[1] F. Fischer, R. Winkler, D. Schuh, M. Bichler, G. Abstreiter and M. Grayson Phys. Rev. B 75, 073303 (2007).

¹Supported by DFG Grant GR-2618/1-1

Nebile Isik
Tech. Univ. Muenchen

Date submitted: 12 Dec 2007

Electronic form version 1.4