Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Resonant Subband Landau Level Coupling in GaAs/AlGaAs/GaAs Coupled Quantum Wells LI-CHUN TUNG, University of North Dakota, DMITRY SMIRNOV, National High Magnetic Field Laboratory — Subband energies and intersubband couplings of symmetric GaAs/AlGaAs/GaAs coupled quantum wells have been investigated by magneto-infrared spectroscopy at 4K up to 35T. Most of the proposed quantum well infrared photodetectors consist of coupled quantum wells, and the detection of infrared photons is accomplished via exciting bound electrons of lower subbands to a continuous state via intersubband transitions. With the presence of a small in-plane magnetic field, subbands due to the mixing of wave functions of individual quantum wells are studied by the anti-level crossing resonance of the Landau levels belonging to different subbands. Intersubband coupling between the first subband of the coupled quantum wells (Symmetric mixing of the lowest subbands of the individual quantum wells) to the third subband is observed, while the others are forbidden. The symmetry selection rule for the intersubband transitions of symmetric coupled quantum wells will be discussed in the presentation.

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Date submitted: 14 Nov 2014 Electronic form version 1.4