Abstract Submitted
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Internal transitions of charged excitons in GaAs QWs with monolayer well-width fluctuations[1] ALEXANDER DZYUBENKO, CSU at Bakersfield, CA 93311, CHRISTIAN MEINING, VINCENT WHITESIDE, ATHOS PETROU, BRUCE MCCOMBE, University at Buffalo, SUNY, Buffalo NY 14260, JOSEPH TISCHLER, ALLAN BRACKER, DAN GAMMON, NRL, Washington, D.C. 20375-5347 — We report optically detected resonance (ODR) experiments and theoretical studies of interface fluctuation quantum dots (IFQDs) in GaAs/AlGaAs QWs (widths from 2.8 to 14.1 nm) doped in the barriers with donors to allow creation of both excitons and trions. We observe internal transitions of trions and electron cyclotron resonance (CR) in the wider wells. These spectra are similar to those from samples with smooth interfaces except for an additional feature at fields above CR. Based on theoretical predictions, we assign this feature to bound-to-bound triplet transitions, which are strictly forbidden in translationally invariant systems. The ODR signals from the narrow wells show no CR and are interpreted in terms of inhomogeneously broadened internal transitions of charged excitons in the IFQDs. A theoretical model for optical transitions of excitonic complexes in the presence of lateral and magnetic field confinement will be discussed.

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