Abstract Submitted
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Monitoring Excitations of the N=1 Landau Level by Optical Emission at mK Temperatures[1] ANTONIO LEVY, URSULA WURSTBAUER, DOV FIELDS, ARON PINCZUK, Columbia University, JOHN WATSON, SUMIT MONDAL, MICHAEL J. MANFRA, Purdue University, KEN W. WEST, LOREN N. PFEIFFER, Princeton University — Optical emission experiments have proven to be powerful contactless probe of collective states of electrons in the second (N=1) Landau Level (LL) [1,2]. We report the emission spectrum from optical recombination in the N=0 and N=1 LL's the second LL. The 2DEG is confined in ultra-high-mobility GaAs quantum well structures. Optical emission red-shifted from the main luminescence of the N=0 and N=1 LL are interpreted as shakeup processes of quasiparticles in the N=1 LL. Results of two samples with different carrier densities measured in the temperature range of 42mK$\leq$T$\leq$650mK will be compared. The experimental observations will be discussed taking into account the striking quantum phases dominating the second LL. [1] Manfra, M. J. et al. Phys. Rev. B 57, R9467 (1998) [2] Gravier, L. et al. Phys. Rev. Lett. 80, 3344 (1998).

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