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Infrared magneto-transmission studies of the 2DEGs in (CdMn)Te and CdTe Quantum wells[1] IMTIAZ TANVEER, University at Buffalo, SUNY, MACIEJ WIATER, GRZEGORZ KARCZEWSKI, TOMASZ WOJTOWICZ, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland, B.D. MCCOMBE, University at Buffalo, SUNY — We are probing quantum hall ferromagnetism (QHF) in the 2DEG of Modulation-doped quantum wells (QWs) in the (CdMn)Te/(CdMg)Te (with 1.5% Mn) heterostructure system by THz cyclotron resonance. Samples with CdTe QWs are also studied. Both structures have the same QW width (30 nm), very similar electron densities in the wells $\sim$3.0 x 10^{11} cm^{-2} and mobilities of 450,000 (CdTe) and 66,000 cm^2/Vs ((CdMn)Te) at 1.6 K. The electron effective masses (m^*/m_0) from cyclotron resonance measurements at 5K are 0.110 $\pm$ 0.001 for CdTe and 0.114 $\pm$ 0.003 for (CdMn)Te . Linear fits to the resonance positions in frequency vs. field give small non-zero intercepts which may result from small non-parabolicity or bound magneto-plasmon effects. The FWHM linewidths from Lorentzian fits of the transmission minima are $\sim$2 cm^{-1}(CdTe) and $\sim$8 cm^{-1}((CdMn)Te). Our present focus is on detailed studies of the CR positions and linewidths in the magnetic field region around the cusp-like behavior in the R_{xx} oscillations, which indicates the presence of the QHF state. The field position of this state is tuned via electron density in the QWs varied incrementally by a photon-dose method with an in-situ green LED.

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