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Generation and Decay of Spin Flip Waves in a CdMnTe Quantum Well P. JACOBS, R. MERLIN, U. Michigan, Ann Arbor, MI, C. AKU-LEH, F. PEREZ, INSP, UMR 7588, CNR/Paris VI et VII, France, G. KARCZEWSKI, Polish Academy of Sciences, Warsaw, Poland — Recently, two dimensional electron gases (2DEG) embedded in semimagnetic $Cd_{1-x}Mn_xTe$ quantum wells have been introduced as a model for spin-polarized systems. The addition of a small amount of Mn induces a giant Zeeman splitting such that, under moderate magnetic fields, spin effects dominate over orbital quantization, providing the reverse situation to that of GaAs. Using Raman spectroscopy, both collective and single-particle spin excitations have been observed in CdMnTe [1]. We have used ultrafast pump-probe spectroscopy to study collective spin-flip excitations in modulation doped CdMnTe quantum wells. Oscillations due to the zone center spin-flip wave were generated by circularly-polarized 70fs pump pulses and detected by Kerr rotation of linearly-polarized probe pulses. The spin-flip lifetime has a strong dependence on the applied magnetic field and is also affected by weak heating due to laser absorption. The dependence of the lifetime on excitation energy and magnetic field indicate that the optically-excited heavy holes and their spin orientation play an important role in the decay of the collective mode. [1] F. Perez et al., Phys. Rev. Lett. **99**, 026403 (2007)

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