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Time-Resolved Far-Infrared Magnetospectroscopy of Electron Relaxation in GaAs[1] S.N. GILBERT[2], Vanderbilt Univ., G.L. CARR[3], Brookhaven National Lab — We report time-resolved magnetospectroscopy results for (S-I) GaAs at T$\sim$10K and fields up to 10T. A pulsed Ti:sapphire laser produces photoelectrons with energy $\sim$10 meV above the conduction band minimum that are subsequently probed by far-infrared transmission spectroscopy. Both free electrons and exciton transitions are observed, including transitions involving Landau levels when the magnetic field is applied. We also observe a time-dependent change in these transitions and discuss a model for the relaxation of a warm (non-equilibrium) distribution of electrons on a $\sim$500 ps time scale.

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