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Temperature Dependence of Cyclotron Decoherance Time in a High Mobility Two-Dimensional Electron Gas J.A. CURTIS, J.D. MOORE, Department of Physics, University of Alabama, Birmingham, Alabama 35294, T.T. TOKUMOTO, National High Magnetic Field Lab, Florida State University, Tallahassee, Florida 32310, J.G. CHERIAN, Department of Physics, Florida State University, Tallahassee, Florida 32310, X. WANG, Department of Electrical Engineering, Rice University, Houston, Texas 77005, J.L. RENO, Sandia National Laboratories, Albuquerque, New Mexico 87185, A. BELYANIN, Department of Physics, Texas A&M University, College Station, Texas 77843, J. KONO, Department of Electrical Engineering, Rice University, Houston, Texas 77005, S.A. MCGILL, National High Magnetic Field Lab, Florida State University, Tallahassee, Florida 32310, D.J. HILTON, Department of Physics, University of Alabama, Birmingham, Alabama 35294 — Using time-domain THz magneto-spectroscopy, we studied the dynamics of a 2DEG ($\mu = 3.4 \times 10^6 \mathrm{cm}^2\,\mathrm{V}^{-1}\,\mathrm{s}^{-1}$) as a function of temperature (0.4K-100K).The decoherence lifetimes increase monotonically as temperature decreases below 1 K, which we have fit to a power law ($\tau \sim T^{0.29}$). We will discuss the mechanisms that contribute to the lifetimes. The transmitted pulse amplitude increases from 0.4K-1.2K, saturates from 1.5K-25K, and decreases from 50K-100K. J. A. Curtis is supported by a US Dept. Education GAANN Fellowship (P200A090143).

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