

Abstract Submitted
for the SES10 Meeting of
The American Physical Society

Cyclotron Resonance in a High Mobility 2DEG¹ JEREMY CURTIS, JON MOORE, University of Alabama at Birmingham, TAKAHISA TOKUMOTO, National High Magnetic Field Lab, JUDY CHERIAN, Florida State University, NATHAN RIDLING, University of Alabama at Birmingham, XIANG FENG WANG, Rice University, JOHN RENO, Sandia National Lab, ALEXEY BELYANIN, Texas A&M University, JUNICHIRO KONO, Rice University, STEPHEN MCGILL, National High Magnetic Field Lab, DAVID HILTON, University of Alabama at Birmingham — We have systematically studied the cyclotron resonance lifetimes of a high mobility ($\mu = 3.4 \times 10^6 \text{cm}^2 \text{V}^{-1} \text{s}^{-1}$) two-dimensional electron gas as a function of temperature (0.38 K-80 K) using ultrafast terahertz spectroscopy. The cyclotron lifetime increases by $\sim 2\times$ from 1.2 to 0.38 K, which results in a concomitant decrease in transmission amplitude due to the saturation effect. The differential amplitude of the time-delayed secondary pulse field is larger than the primary pulse and is not consistent with a Drude free carrier model.

¹We acknowledge support from Department of Education Grant No. P200A090143.

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Date submitted: 22 Sep 2010

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