Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

THz Magneto-photoresponse of an InAs-based Quantum Point Contact Structure in the Region of Cyclotron Resonance MEHDI PAKMEHR, Department of Physics, University at Buffalo (SUNY), VINCENT WHITESIDE, University of Oklahoma, NIKHIL BHANDARI, MARC CAHAY, RICHARD NEWROCK, University of Cincinnati, BRUCE MCCOMBE, Department of Physics, University at Buffalo (SUNY) — We have studied the THz magneto-photoresponse of a 2DEG in an InAs quantum well with an embedded Quantum Point Contact in the frequency/field region where electron cyclotron resonance (CR) dominates the response suing several lines from an optically pumped THz laser. The photoresponse near CR is manifested as an envelope of the amplitude of the Shubnikov-de Haas oscillations of the 2DEG with a peak near the CR field. Clear spin-splitting of the quantum oscillations is observed for B $>$ 4, while the SdH oscillations do not show resolved spin-splitting up to 10 T. Data were simulated by a model of resonant carrier heating (due to CR), and from the simulations the carrier density, the CR effective mass, scattering times and the g-factor were obtained. We find a significantly enhanced g-factor, apparently due to many-electron exchange interaction effects. The g-factor determined from fitting spin-split Landau level peaks increases with magnetic field. Work at UB was supported by NSF DMR 1008138 and the Office of the Provost; work at the University of Cincinnati was supported by NSF ECCE 1028483.

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Date submitted: 19 Nov 2012 Electronic form version 1.4