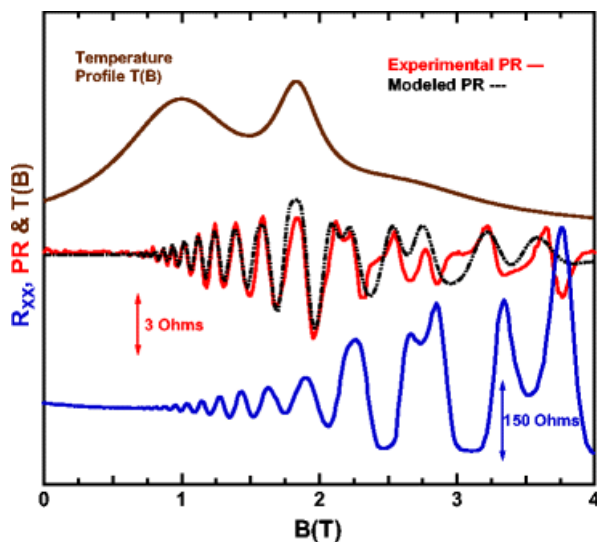


THz magneto-photoresponse spectroscopy of two-dimensional electrons in an InAs/InGaAs/InAlAs inserted-channel

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J. Infrared Milli. Terahz. Waves **36**, 291 (2015).

Short Abstract

We used THz magneto-photoresponse/transmission to measure various electronic parameters of a two-dimensional electron gas (2DEG) located primarily within the InAs/InGaAs/InAlAs channel. We developed an analytical approach to the photoresponse based on resonant heating of the 2DEG by cyclotron resonance (CR) absorption which incorporates a resonant T-profile mimicking the CR absorption. We show that one can extract g-factor, cyclotron effective mass, SdH scattering time, CR scattering time and carrier density from a single measurement. The results show an enhanced g-factor for electrons and large g-factor anisotropy.



Above. Lower trace: Magnetoresistance. Middle traces: magneto-photoresponse (solid curve) at a laser frequency of 1.4 THz and modeled PR (dot-dashed curve). Upper trace: resonant temperature profile for the model with $TP_k=3.4$ K.