THz Time-Domain Magneto-spectroscopy of GaAs 2DEG in the 25 T Split-Florida Helix

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— We have developed a gas plasma based THz time-domain spectrometer (TTDS) coupled with an air-breakdown coherent detection (ABCD) system, to study Landau quantized 2 DEG samples, in the 25 T Split-Florida Helix magnet at the National High Magnetic Field Laboratory (NHMFL). Through the use of non-linear optics, we achieved a larger bandwidth (approx. 0.1-10 THz) compared to traditional fiber-based experimental techniques. We used this system to perform the first high magnetic field TTDS measurements on a high mobility GaAs 2DEG sample.


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