

Department of Physics Seminar

Terahertz time-domain spectroscopy

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Abstract:

The far-infrared portion of the electromagnetic spectrum, having frequencies in the range of 0.1 to 10 THz, is important for many applications ranging from non-destructive evaluation to probing time-resolved dynamics on a sub-picosecond time scale. One of the unique aspects of table-top, lab-based THz systems is that coherent detection is exploited, where the electric field of the THz radiation is measured directly, and the field profile mapped out in time. This has enabled a new regime in spectroscopy, which allows measuring physical parameters of a material system by studying the change in the temporal profile of a THz field as it interacts with the system. This is often referred to as Terahertz time-domain spectroscopy (THz-TDS). In this talk, I will discuss the basic implementation of coherent THz detection, followed by the importance of physical models for the success of this new spectroscopy. In particular, I will discuss gas-phase spectroscopy in the context of molecular rotations which exhibit the interesting phenomena of THz commensurate echoes, and spectroscopy of wood which requires an effective medium theory to extract physical parameters of interest.

+ Date

Wednesday
March 14, 2018

+ Time

2:30 – 4:00 P.M.

+ Location

Library Building
5-175

+ Contact

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Everyone welcome
Light refreshments served