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Title:Terahertz spectroscopy: System and sensitivity considerations

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Abstract:Terahertz spectroscopy is a backbone method in many areas of research. We have analyzed typically employed THz spectroscopy systems and their sensitivity in a general comparative approach. Recent progress to reduce the data acquisition time by frequency multiplexing using a spectrometer with a THz quantum cascade laser is described. The performance of a spectrometer using a pulsed Ge THz laser with a few μ s long integration time and recent progress to modulate the laser current within such a short pulse are presented. We also investigate the origin of random errors in intensity spectra of a THz TDS with the goal to identify common error sources in TDS systems to allow reduction of the total measurement time.

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