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Title:Terahertz tomography of a photo-induced carrier based on pump-probe spectroscopy using counterpropagation geometry

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Abstract:A novel technique for the terahertz (THz) tomography of a photo-induced carrier that is based on optical-pump THz-probe time-resolved reflection spectroscopy using counterpropagation geometry of the pump and probe pulses has been proposed. Transient reflection due to the photo-induced carrier provides information about the physical properties and spatial distribution separately. We have experimentally demonstrated this method using a silicon wafer. The obtained complex reflection can be reproduced by the exact solution of Maxwell's equations, assuming an exponential distribution of the photo-induced carrier density. © 2012 Optical Society of America.

Number of references:18

Main heading:Optical pumping

Controlled terms:Maxwell equations - Probes - Pumps - Silicon wafers - Tomography

Uncontrolled terms:Complex reflection - Counter propagation - Exact solution - Exponential distributions - Maxwell's equations - Novel techniques - Photo-induced - Pump-and-probe - Pump-probe spectroscopy - Reflection spectroscopy - Terahertz - Time-resolved

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