

Nonlinear electronic response in GaAs-based core-shell nanowires induced by strong THz fields

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Intense THz fields produced by a free-electron laser as well as by tabletop fs laser systems provide unique experimental opportunities for exploring electronic properties in semiconductors. This talk gives an overview of conceivable experiments and describes some recent studies of nonlinear THz dynamics in semiconductor nanostructures. A particular focus will be on investigations of nonlinear transport in semiconducting GaAs/InGaAs core/shell nanowires (NW). Here strong THz fields give rise to a redshift of the plasmon resonance of the NWs, which may be exploited for nanodevices operating at THz frequencies.

The presented work was conducted in collaboration with D. Lang, L. Balaghi, E. Dimakis, M. Helm, R. Hübner, D. Lang, A. Pashkin, S. Winnerl (HZDR), and S.C. Kehr, L.M. Eng (TU Dresden, Germany).



Short Bio:

Harald Schneider has been the head of the Spectroscopy Department at the Institute of Ion Beam Physics and Materials Research, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Germany, and faculty member at the University of Freiburg, Germany. His research interests include optoelectronic properties of semiconductor nanostructures and 2D materials, ultrafast and THz spectroscopy using tabletop laser systems as well as the free-electron laser at HZDR, and infrared detectors and lasers.

