

Physikalisches Kolloquium

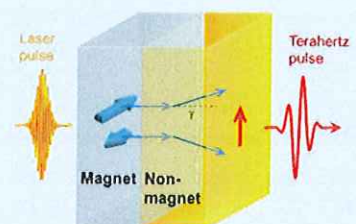
Ultrafast terahertz spectroscopy: probing and controlling fundamental motions of electrons, spins and ions

Dr. Tobias Kampfrath

Freie Universität Berlin and Fritz-Haber-Institut, Berlin

The terahertz (THz) frequency range is attracting increasing interest for both applied and fundamental reasons. On one hand, bit rates in current information technology may soon approach the THz range. Therefore, it is warranted to study the behavior of materials at THz frequencies. This goal is also highly interesting from a scientific viewpoint because its low photon energy (4.1 meV at 1 THz) makes THz radiation an excellent probe of many elementary excitations of solids, for instance lattice vibrations (phonons), conduction electrons, excitons and spin waves.

This talk is supposed to provide an introduction to THz spectroscopy of solids. The goal is to illustrate how ultrashort THz electromagnetic pulses (duration <1 ps) can be used as ultrafast Ohmmeters and Amperemeters to gain insight into elementary motions of electrons and spins, including the recently discovered spin Hall and the spin Seebeck effect. Some of these results have paved the way to a new class of broadband THz radiation sources. Finally, recent works will be discussed to show that strong THz electric and magnetic fields (\sim MV/cm and \sim T) can even be used to gain control over magnetic order.



Der Gast wird betreut von Herrn Prof. Dr. von Freymann

Gäste sind herzlich willkommen

Kaffeeauschank ab 17:00 Uhr

Montag, 17.07.2017, 17:15 Uhr

Gebäude 46, Hörsaal 270