

PHYSIKALISCHES KOLLOQUIUM

Mittwoch, 06.06..2012, um 17:15 Uhr

Ort: Reichenhainer Str. 90; Neues Hörsaalgebäude, Raum: 2/N013



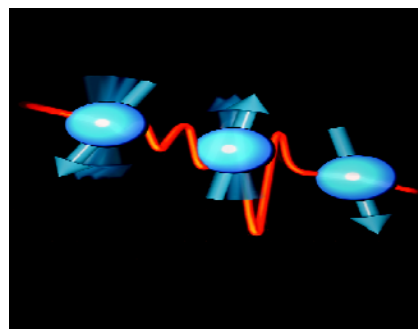
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Beyond body scanners: How to use terahertz pulses to observe and control spin dynamics in solids

Terahertz (THz) electromagnetic radiation has a wavelength of the order of $100\mu\text{m}$ and is located between the realms of electronics and optics. Besides its use in imaging and surveillance, THz radiation can also probe and even control many low-energy excitations such as phonons, excitons or Cooper pairs. This talk presents two applications of THz spectroscopy in the field of spin-based electronics (spintronics).

First, we use the magnetic-field component of an intense THz pulse to start and stop a spin wave in the antiferromagnet NiO for only few precession cycles (corresponding to only few picoseconds). Such control may pave the way to an ultrafast switching of spin states. Second, a femtosecond laser pulse is employed to inject spin-polarized electrons from a ferromagnet into a nonmagnetic metal. The resulting spin current is converted into a charge current through the inverse spin Hall effect, acting as a novel source of broadband THz radiation



Schematic: THz magnetic-field pulse driving spins in an antiferromagnet.

Alle Zuhörer sind ab 17:00 Uhr zum Kaffee vor dem Hörsaal eingeladen.