Sonderseminar
Montag, 26. September 2016
14:00 Uhr
ZNN, Seminarraum EG 0.001

“Coherent ultrafast spin-polarization and spin-currents in three dimensional topological insulators and hybrid layers”

Abstract: Coherent effects have been discussed for ferromagnets to occur in presence of a femtosecond laser pulse, our aim is to search for these effects in 3D topological materials. In the first part, we investigate a spin-related signal present only during the laser excitation studying real and imaginary part of the complex Kerr angle by disentangling spin and lattice contributions. We find a magnetic signal is coherent with the laser pulses. Its Raman times allow also insight into effects related to the surface bands that we study as a function of doping in the (BixSb(1-x))2Te3 system from n to p-like doping. We combine the optical spectroscopy, band structure calculations and polarization dependent spin currents generated by dc-lasers in our experiments to get a picture of the spin-dependent transient optical and transport properties connected to the specific electronic properties of the topological insulators. This is discussed in connection with ultrafast optically generated spin currents in the surface and, in an outlook, how this THz currents may be used in future applications.

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