Universität Bielefeld Fakultät für Physik

Physikalisches Kolloquium

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ETH Zürich

Spin-orbitronics: controlling magnets with electric currents

The coupling of spin and orbital angular momenta underlies the magnetoelectric properties of matter. Although small, the spin-orbit interaction determines the equilibrium properties of magnets as well as the possibility to excite the magnetization out of equilibrium while ensuring the conservation of angular momentum. In this talk, I will review prominent mechanisms due to spin-orbit coupling that give rise to spin currents in ferromagnetic and antiferromagnetic heterostructures, showing how unusual magnetoresistance and spin torque phenomena emerge from charge-spin conversion in these materials. Finally, I will present recent results based on pump-probe magneto-optic experiments that allow us to measure the spin Hall effect in nonmagnetic conductors and image current-induced magnetization switching of ferromagnetic dots on a timescale of 100 ps.

Montag, 18.06.2018, 16:15 Uhr
Ort: Hörsaal 6