TECHNISCHE UNIVERSITÄT CHEMNITZ

Institut für Physik
Physikalisches Kolloquium

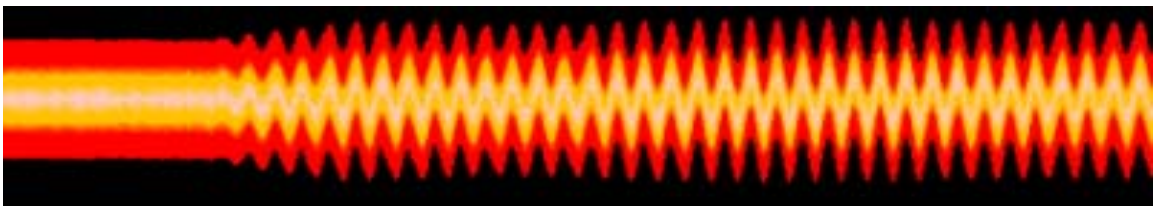
Mittwoch, 18.04.2018, um **16:00 Uhr**
Ort: Reichenhainer Str. 90;
Zentrales Hörsaal- und Seminargebäude,
Raum 2/N013

Dr. Michael Gensch
Helmholtz-Zentrum Dresden-Rossendorf

A terahertz-view on low energy excitations in matter

Recent progress in laser and accelerator technology has made terahertz electric and magnetic fields available of a strength that allows to manipulate order parameters, structural and electronic properties of matter on ultra-fast time-scales. The low quantum energies thereby allows to selectively target low energy degrees of freedom in matter in its electronic groundstate. The evolving transient states can be monitored on femto- to nanosecond timescales by ultra-fast laser spectroscopies. The field strength in the few 10 kV/cm to 1 MV/ cm regime furthermore allows to adress nonlinear dynamics of collective excitations with high dynamic range e.g. in technologically relevant 2D materials. Recent technological breakthroughs such as the control of magnetic order in ferro-, antiferro-, and ferrimagnetic materials, the control of molecular orientation in liquids and the most recent demonstration of high harmonic generation in single layer graphene are presented.
Future directions in the emerging field of THz driven ultra-fast science are discussed with a particular emphasis on arising possibilities at the THz user facility TELBE [1].

[1] B. Green et al, Sci. Rep. 6, 22256 (2016).



Artistic view on a THz driven spin excitation in NiO measured by transient Faraday rotation after resonant excitation of the antiferromagnetic mode by a 1 THz pulse from the TELBE undulator source

Alle Zuhörer sind ab 15:45 zu Kaffee und Tee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:
Prof. Dr. Olav Hellwig, Tel. 0371 531 30521

www.tu-chemnitz.de/physik