



TRR 80 Sonderseminar

Am Freitag, den 22. Februar um 10:30 Uhr

spricht

Prof. Dr. Andrei Pimenov

Institut für Festkörperphysik, TU Wien

über das Thema

***Topological insulators:
quantized Faraday rotation and the band structure***

Topological insulators are materials which are insulating in the bulk and which reveal conducting surface states. The electrodynamics of topological insulators is described by modified Maxwell's equations, which contain additional terms that couple an electric field to a magnetization, such that the coupling coefficient is quantized in odd multiples of $e^2/2hc$ per surface. The new term leads to universal values of Faraday rotation angle equal to the fine structure constant $\alpha \approx 1/137$ radian when a linearly polarized terahertz radiation passes through a topological insulator. This regime is obtained in high magnetic field and in the quantum regime.

In weak external magnetic fields the quasi-classical approximation is realized and a series of cyclotron resonances is observed in the terahertz frequency range. From the analysis of these experiments the band structure of topological insulator HgTe can be obtained both for 2D and 3D configurations. Therefore, the magneto-optical technique provide an experimental method to test the band structure calculations of topological insulators based on quantum wells.

Gäste sind herzlich willkommen.

Der Vortrag findet im Seminarraum S-288, Institut für Physik,
Universität Augsburg statt.

Gastgeber: Prof. Dr. István Kézsmárki
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