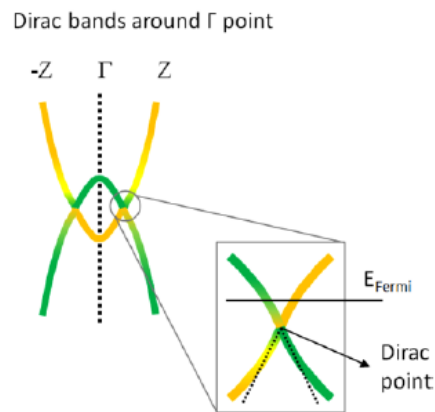


Master project at the chair Experimental physics II, AG Kuntscher:

Temperature-dependent optical properties of Dirac semimetals

Recently, three-dimensional (3D) Dirac materials, such as Dirac semimetals and Weyl semimetals, have attracted significant attention in condensed-matter research area. The 3D Dirac semimetals are considered to be the 3D bulk analogue of some other known 2D counterparts like graphene. Therefore, these materials are good candidates to extend the various applications of graphene to 3D. They are predicted to be a unique parent compounds to the other exotic phases and show peculiar properties.



Schematic of the Dirac bands in the 3D Dirac semimetal Cd_3As_2 , from E. Uykur, R. Sankar, D. Schmitz, and C. A. Kuntscher, Phys. Rev. B 97, 195134 (2018).

This Master project will focus on the characterization of the optical properties related to the exotic electronic states in novel Dirac semimetals at low temperature. Optical spectra will be analyzed in terms of the existence of Dirac fermions. Reflectivity measurements in a wide energy range (from far-infrared to visible energy region) on Dirac semimetal samples will be carried out as a function of temperature.

Contact: [Prof. Dr. Christine Kuntscher](#), Room 361 (Physics North Building),
Phone: (0821) 598-3315