Contribution ID: **113** Type: **Poster**

【641】Magneto-optical spectroscopy on TaAs

Wednesday 28 August 2019 19:01 (1 minute)

TaAs has been predicted to be a Weyl semimetal with a complex Fermi surface composed of two Weyl and one trivial hole pocket. It is not evident how to describe the low energy excitations. In order to reveal the details of the low energy electronic band structures of TaAs, we performed reflectivity measurements at zero field at various temperatures, as well as magneto-optical spectroscopy up to 34 Tesla at low temperature in the far and mid infrared regions. In a finite magnetic field, Landau level transitions dominate the optical spectra. As the character of the electronic bands determines the splitting of these Landau levels in field, the field dependence of the transitions reveals the electronic ground state of TaAs.

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Session Classification: Poster Session

Track Classification: MaNEP Session: Correlations and topology in quantum matter