



EINLADUNG zum IFP-SEMINAR

Probing electronic band topology by magneto-optics

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Host: Andrei Pimenov

Termin: Donnerstag, 14. März 2024, 15:00 Uhr

Ort: TU Wien, Freihausgebäude

Wiedner Hauptstraße 8-10, 1040 Wien

Seminarraum DB gelb 09 (gelber Bereich, 9. OG)

Vor dem Vortrag gibt es ab 14:30 Kaffee und Kekse

Abstract:

Giant anomalous Hall effect (AHE) and magneto-optical activity can emerge in magnets with topologically non-trivial degeneracies. However, identifying the specific band structure features like Weyl points, nodal lines or planes which generate the anomalous response is a challenging issue, requiring reliable spectroscopic techniques. Since the low-energy interband transitions can govern the static AHE, we address this question in prototypical magnetic Weyl semimetals $\text{Co}_3\text{Sn}_2\text{S}_2$ and Fe_3Sn_2 .

We show that magneto-optical spectroscopy, in combination with material-specific theory, can reveal Berry phase hot spots in the Brillouin zone and relate the optical Hall effect to previously predicted nodal lines in these kagome compounds. In $\text{Co}_3\text{Sn}_2\text{S}_2$, we also trace how electronic band topology is varied by changing the orientation of the magnetization.

F. Schilberth et al., Phys. Rev. B **106**, 144404 (2022)

F. Schilberth et al., Phys. Rev. B **107**, 214441 (2023)