



EINLADUNG zum IFP-SEMINAR

Weyl-nodes and electronic correlations in $\text{Ce}_3\text{Bi}_4\text{Pd}_3$

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Host: Karsten Held

Termin: Mittwoch, 17. Jänner 2024, 16:00 Uhr

Ort: TU Wien, Freihausgebäude

Wiedner Hauptstraße 8-10, 1040 Wien

Seminarraum DC rot 07 (roter Bereich, 7. OG)

Oder via ZOOM

<https://tuwien.zoom.us/j/63020566887?pwd=RmYvRmVwOGU5YVBrOHpodWRKaHFWQT09>

Vor dem Vortrag gibt es ab 15:30 Kaffee und Kekse

Abstract:

The Kondo-Semimetal $\text{Ce}_3\text{Bi}_4\text{Pd}_3$ has been found to exhibit an unusually large spontaneous Hall effect, which in principle can be explained by a non-linear response to the electric field and the presence of Weyl-nodes close to the Fermi-energy [1]. However, first principle calculations within the single particle picture result in such nodes only far below the Fermi-edge [1], thereby indicating the necessity for a more accurate treatment of the electronic correlations of localized Ce-f electrons. I present DFT+DMFT calculations of the electronic structure which show that at low temperatures a single orbital out of the Ce-4f manifold dominates the low-energy physics. Hybridization with the conduction bands leads to a Kondo resonance and a strongly renormalized quasi-particle Hamiltonian which exhibits Type II Weyl-nodes within a few meV of the Fermi-energy. To pin-point these nodes in the Brillouin-zone I present a new numerical algorithm, which is efficient for models with many entangled bands.

References

[1] Sami Dzsaber et al.

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