



# Allgemeines Physikalisches Kolloquium

Donnerstag, 25.01.2024 - 16 Uhr c.t.



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### Tracing topological states in 2D and 3D quantum materials

Similar to knots in a rope, the electron wave functions in a crystal can be characterized by mathematical tools of topology. The classification of electronic phases of matter via topological invariants now complements the established paradigm of spontaneously broken symmetries. In this colloquium, I will present our efforts to uncover novel topological phases based on angle-resolved photoelectron spectroscopy (ARPES). The first part of the talk will focus on the combination of electronic topology and magnetism in the van der Waals (vdW) magnet  $\text{MnBi}_2\text{Te}_4$ . I will concentrate, especially, on the two-dimensional (2D) limit of a single  $\text{MnBi}_2\text{Te}_4$  vdW layer, interfaced with a non-magnetic topological insulator,  $\text{Bi}_2\text{Te}_3$ . In the second part of the presentation, I will discuss how dichroism in ARPES can enable direct imaging of wave-function topology, focusing on nodal points and lines in the band structure of topological semimetals.