



Pozvánka na seminár

Ústavu experimentálnej fyziky SAV, v. v. i.



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Ústavu fyzikálnych vied PF UPJŠ

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MnTe bulk properties within its surface and sublattice electronic structure

Dr. Juraj Krempaský

Laboratory of Non-linear Optics, PSI Center of Photon Science, Villigen-PSI, Switzerland
juraj.krempasky@psi.ch

Anotácia:

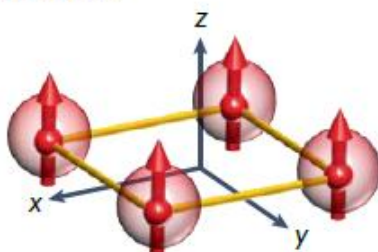
MnTe surfaces display magnetically controlled spin-split bands detectable via Angle-Resolved Photoemission Spectroscopy (ARPES). This spin splitting intensifies with altermagnetic order, and nanoscale domain and termination effects critically shape the surface electronic structure. Although the ARPES spectra mirror the bulk's altermagnetic splitting [1], they are influenced by surface termination, affected by surface magnetism, band hybridization, and domain inhomogeneity. Thus, precise surface characterization is vital for accurate electronic structure mapping. Besides surface termination, the fabrication of few-micron-wide bars, patterned along specific crystallographic directions, enables magnetic state initialization by heating the sample above its Néel temperature and applying an out-of-plane magnetic field during cooling, biasing the system toward a defined Néel vector state [2]. This process enhances understanding of the interplay between termination, domain structure, and surface properties in MnTe. Additionally, we provide theoretical models and ARPES measurements possibly differentiate between MnTe bulk, surface and sublattice signatures.

[1] J. Krempaský et al., *Altermagnetic lifting of Kramers spin degeneracy*, Nature 626, 517 (2024)

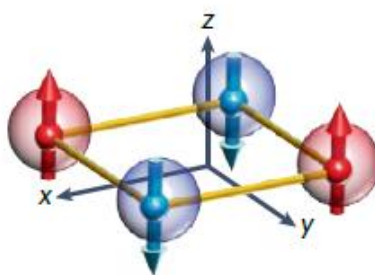
[2] A. Dal Din et al., *Unconventional relativistic spin polarization of electronic bands in an altermagnet*
<https://arxiv.org/pdf/2511.01690v1>

a Ferromagnet

Real space



b Antiferromagnet



c Altermagnet

