

# Spin Splitting in antiferromagnetic MnTe: One-Step Model

## ARPES study

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*Kramers spin degeneracy in antiferromagnets has been a topic of intense research in condensed matter physics. We have attempted to explore this electronic spin degeneracy by investigating the spin-polarized electronic structure of Centrosymmetric MnTe by means of one-step model Angle Resolved photoemission (ARPES) calculations within the fully relativistic multiple scattering Korringa-Kohn-Rostoker–Green function approach. The spectral weight distribution in photon energy dependent calculations clearly establishes a non-symmorphic symmetry between magnetic sublattices in MnTe. The results are also used to discuss surface effects and to identify clear signatures corresponding to the surface resonance contributions from Te and Mn states at respective binding energies. The spin-resolved ARPES (SARPES) band structure calculations reveals that the Weak (relativistic origin) and Strong (non-relativistic origin) spin splitting with sizable spin-polarization signal stems from the local crystal symmetries without requiring strong electronic correlations [1] which should be detectable and has been observed in SARPES experiments.*

## References

[1]J. Krempaský *et al*, Nature **626**, 517–522 (2024)