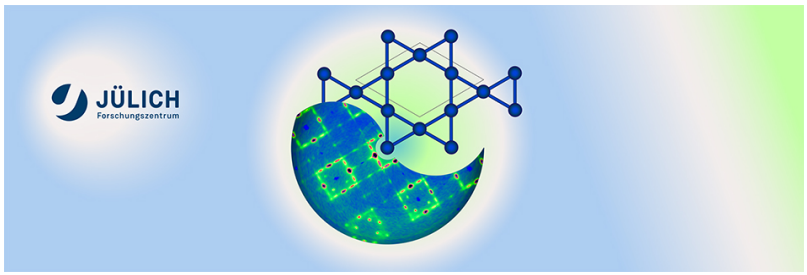

Beitrag ID: **104** Typ: **Talk**

Unconventional non-collinear magnetism in topological kagome metals

Mittwoch, 8. Oktober 2025 14:30 (15 Minuten)

Altermagnets, a new type of unconventional collinear antiferromagnet with spin-splitting arising from non-relativistic symmetry breaking effects, have recently attracted tremendous interests in magnetism and spintronics. Unconventional magnetism actually goes beyond altermagnets, and can also be found in some non-collinear antiferromagnets that possess spin-orbit coupling (SOC). In this talk, we will mainly present our recent neutron scattering and other complementary studies of various topological kagome metals including RV_6Sn_6 (R = rare earth) [1], RMn_6Sn_6 [2], and Mn_3Sn [3], with the focus on the complex temperature and magnetic-field evolution of non-collinear incommensurate magnetic orders. These non-collinear magnetic spiral phases are also found to be strongly linked to the observed topological Hall effects (THE) or anomalous Hall effects (AHE), thus hinting a fascinating interplay between unconventional magnetism and topologically non-trivial states in these kagome metals via intrinsic engineering of Berry curvature in both k-space and real space. Both competing magnetic exchange interactions and antisymmetric Dzyaloshinskii-Moriya interactions (DMI) could lead to the emergence of these non-collinear magnetic spiral phases. We will also discuss this important aspect based on our observations.

[1] Yishui Zhou, et al., Phys. Rev. Research **6**, 043291 (2024).
[2] Yishui Zhou, et al., (in preparation).
[3] Xiao Wang, et al., arXiv:2306.04312 (2023).

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Sitzung Einordnung: Topological magnetism and magnons

Track Klassifizierung: Topological magnetism and magnons