



EINLADUNG zum IFP-SEMINAR

Interplanar Magnetic orders and Anomalous Thermal Expansion in Kagome Intermetallic (Zr,Ta)Fe₂

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Host: Andrej Pustogow
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Wiedner Hauptstraße 8-10, 1040 Wien
Seminarraum DC rot 07 (roter Bereich, 7. OG)

Abstract:

The Invar anomaly is a century-old enigma arising from spin-lattice coupling in face-centered cubic lattice. In this talk, the Invar behavior is extended to kagomé analogue (Zr,Ta)Fe₂ with single magnetic element Fe by utilizing thermodynamic phase stability rather than by altering chemical composition. On transforming from hexagonal to cubic symmetry, the magnetic ordering changes from antiferromagnetic to ferromagnetic. Due to resulting lifting of the interplanar magnetic frustration, magnetic ordering is enhanced which enables strong temperature-induced longitudinal spin fluctuations, leading to large magnetic compensation for lattice thermal expansion. The work demonstrates the interplanar spin-lattice correlation in a cubic lattice and will be essential for insight into the nature of Invar.