TECHNISCHE UNIVERSITÄT WIEN

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EINLADUNG zum IFP-SEMINAR

Scalar spin chirality from thermal fluctuations

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Host: Herwig Michor

Termin: Mittwoch, 13. Dezember 2023, 16:00 Uhr

Ort: TU Wien, Freihausgebäude
Wiedner Hauptstraße 8-10, 1040 Wien
Seminarraum DC rot 07 (roter Bereich, 7. OG)

Vor dem Vortrag gibt es ab 15:30 Kaffee und Kekse

Abstract:

The scalar spin chirality is defined as the triple product $\chi = \boldsymbol{S}_i \cdot (\boldsymbol{S}_j \times \boldsymbol{S}_k)$ of three neighboring spins. This quantity translates details of magnetic structure to the language of quantum-mechanical electrons. Via the coupling between local magnetic moments and itinerary carriers, non-vanishing chirality leads to geometrical or topological transport responses. While finite χ is known to describe static spin textures, such as magnetic skyrmions, we show that it can be produced also by fluctuating spins already in the paramagnetic state giving rise to strong geometrical Hall and Nernst effect responses [1]. We also emphasize the crucial role played by lattice geometry in stabilization or cancelling of net chirality in the entire crystal [2].

References:

[1] K. K.Kolincio et al. Proc. Natl. Acad. Sci. USA (PNAS) 118 e2023588118 (2021),
[2] K. K. Kolincio et al. Phys. Rev. Lett. 130, 136701 (2023)