



Invitation to a talk

Pure spin currents in thin film heterostructures

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Ort: Lise-Meitner-Lecture Hall
9. Boltzmannngasse 5

Abstract:

Pure spin currents, i.e., the flow of angular momentum without an accompanying charge current, represent a new paradigm in spintronics. Most importantly, pure spin currents can be transported by fermions, i.e., by electrons, in electrical conductors, as well as by bosons, i.e., by magnons, the quantized spin excitations in magnetically ordered systems or phonons, the quantized excitations of the lattice [1]. Thin film heterostructures of spin-orbit coupled metals interfaced with magnetically ordered systems allow us to investigate pure spin current transport via and angular momentum transfer between these different (quasi-) particles in a solid-state environment [2-6]. My talk will highlight our progress regarding pure spin current transport in superconducting thin films interfaced with ferromagnetic metals [7,8].

- [1] M. Althammer, J. Phys. D: Appl. Phys. 51, 313001 (2018).
- [2] T. Wimmer et al., Phys. Rev. Lett. 123, 257201 (2019).
- [3] T. Wimmer et al., Phys. Rev. Lett. 125, 247204 (2020).
- [4] J. Gückelhorn et al., Phys. Rev. Lett. 130, 216703 (2023).
- [5] M. Müller et al., Phys. Rev. B 109, 024430 (2024).
- [6] R. Schlitz et al., arXiv: 2311.05290 (accepted for publication in Phys. Rev. Lett. 2024).
- [7] M. Müller et al., Phys. Rev. Lett. 126, 087201 (2021).
- [8] M. Müller et al., Mater. Quantum. Technol. 1 045001 (2021).

As part of the presentation, there will be a teaching demonstration on the topic
"Perfect conductors vs. superconductors".