

Type of presentation: Oral

IM1-O-4 Spin Resonance Spectroscopy meets Transmission Electron Microscopy

Philipp Haslinger^a

^a*Atominstitut, USTEM, TU Wien*

Contact email: Philipp.haslinger@tuwien.ac.at

Coherent spin resonance methods such as nuclear magnetic resonance and electron spin resonance spectroscopy have led to spectrally highly sensitive, non-invasive quantum imaging techniques. Here, we will present a spin resonance spectroscopy approach developed for transmission electron microscopy [1,2] and will explain different techniques to sense with electrons for microwave manipulated spin states of the sample. This could enable state-selective observation of spin dynamics on the nanoscale and indirect measurement of the environment of the spin systems, providing information on, for example, atomic structure, local chemical composition and neighbouring spins.

- [1] P. Haslinger, S. Nimmrichter, and D. Rätzel, *Spin Resonance Spectroscopy with an Electron Microscope*, Quantum Sci. Technol. **9**, 035051 (2024).
- [2] A. Jaroš, J. Toyfl, A. PupiĆ, B. Czař, G. Boero, I. C. Bicket, and P. Haslinger, *Electron Spin Resonance Spectroscopy in a Transmission Electron Microscope*, arXiv:2408.16492 (2024).