

# Two PhD Positions in Experimental Nanomagnetism

Technical University of Munich | Munich, Germany

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We are seeking motivated PhD candidates to join our newly forming Junior Start Fellow group at the Chair of Experimental Physics of Functional Spin Systems at the Technical University of Munich. Our group studies the static and dynamic properties of magnetic systems at the nanoscale, from magnetic skyrmions and higher-order spin textures to curved and three-dimensional magnetic nanostructures.

You will fabricate your own samples in the clean room (thin-film deposition, electron-beam and photolithography, and SEM/FIB-based 3D nanostructuring) and probe their static and dynamic response with a broad toolkit: magneto-transport, ferromagnetic resonance and propagating spin-wave spectroscopy, and synchrotron-based scanning transmission X-ray microscopy (STXM) for direct, time-resolved imaging of the magnetization. Experiments are tightly coupled to micromagnetic simulations, which form a central part of the daily work, guiding sample design and underpinning the interpretation of every measurement.

Two PhD positions are available, each centered on one of the following topics:

## Topic 1: Dynamic Properties of Higher-Order Spin Textures

Experimental realization, control, and dynamic investigation of higher-order spin textures (skyrmions) in magnetic multilayers, combining patterned-device fabrication with magneto-transport, resonance, and X-ray imaging of their static and dynamic response.

## Topic 2: Magnetization Dynamics and Spin Waves in Curved & 3D Systems

Fabrication, characterization, and dynamic investigation of three-dimensional magnetic nanostructures, with emphasis on magnetization dynamics and spin waves in curved and 3D geometries, combining advanced nanofabrication with spin-wave spectroscopy and X-ray microscopy.

### Must have

- MSc (or equivalent) in Physics, Materials Science, or related field
- Background in magnetism and magnetic materials
- Hands-on experience in at least one of:
  - Clean-room processing / device fabrication
  - Scanning Electron Microscopy / Focused Ion Beam
  - Magneto-transport measurements
  - Ferromagnetic resonance or propagating spin-wave spectroscopy
- Programming experience in Python
- Fluency in English

### Nice to have

- Experience with micromagnetic simulations
- Prior synchrotron / X-ray microscopy (e.g. STXM) experience
- Prior work on skyrmions or other chiral / topological spin textures, spin waves / 3D nanomagnetism

### We offer

3-year positions (TV-L E13, 75 %) starting October 2026 in a new young dynamic and growing group with access to state-of-the-art fabrication and characterization facilities, regular beamtimes at international synchrotron sources, and a collaborative international environment.

### Application

Please send a complete application package containing a CV, study transcripts, and a cover letter including a statement of research interests (indicating which topic is of interest; applications to both are welcome) to [sabri.koraltan@tum.de](mailto:sabri.koraltan@tum.de). Suitable candidates will be invited to an online interview. *Incomplete applications will not be considered.*