



Postdoctoral position in mesoscopic physics of topological insulator hybrid devices(f/m/x)

at the Institute of Physics II



We are one of the largest and oldest universities in Europe and one of the most important employers in our region. Our broad range of subjects, the dynamic development of our main research areas and our central location in Cologne make us attractive for students and researchers from around the world. We offer a wide range of career opportunities in science, technology, and administration.

The research group led by Prof. Yoichi Ando at the University of Cologne's Institute of Physics II is attempting to elucidate the non-Abelian nature of the Majorana zero modes generated in a topological insulator (TI) platform. The successful candidate will develop and characterize TI-superconductor (SC) hybrid devices to detect and manipulate emerging Majorana zero modes using quantum transport and/or circuit-QED techniques, so that the confirmation of non-Abelian statistics via braiding becomes possible in the next few years.

YOUR TASKS

- » Ultra-low-temperature quantum transport and/or circuit-QED measurements of TI-SC hybrid devices
- » Installation and optimization of the wirings in dilution refrigerators for such measurements
- » Nanofabrication of relevant devices in the clean room and associated characterizations
- » Modelling and analyses of experimental data and collaboration with external theory groups
- » Joint responsibility for third-party-funded projects
- » Presentation of results at conferences and publishing in peer-reviewed journals
- » Co-supervision of 1-2 PhD students, assistance in teaching/experimental courses

YOUR PROFILE

A PhD in experimental solid-state physics, material science, or nano-science is required. You must have solid experience in at least four of the following:

- » Hands-on experience with device nanofabrication using electron-beam lithography, metal/dielectric deposition, wet/dry etching, and analyzing tools (AFM, SEM and EDX)
- » Hands-on experience with circuit-QED, superconducting qubits, or high-frequency measurements of quantum devices
- » Low-noise quantum transport experiments in a dilution refrigerator
- » Advanced knowledge on mesoscopic physics, superconductivity, and electronic circuits
- » Operation and optimization of dilution refrigerators

WE OFFER

- » Participation in large-scale collaborative research projects in an international team
- » A diverse working environment with equal opportunities
- » Support in balancing work and family life
- » Flexible working time models
- » Extensive advanced training opportunities
- » Occupational health management offers

The University of Cologne promotes equal opportunities and diversity. Women will be considered preferentially in accordance with the Equal Opportunities Act of North Rhine-Westphalia (Landesgleichstellungsgesetz – LGG NRW). We also expressly welcome applications from all suitable candidates regardless of their gender, nationality, ethnic and social origin, religion, disability, age, sexual orientation and identity.

The position is available from 1 November 2026 on a full-time basis (39,83 hours per week). The position is to be filled for a fixed term until 31 October 2028, with the possibility of an extension. If the applicant meets the relevant wage requirements and personal qualifications, the salary is based on remuneration group 13 TV-L of the pay scale for the German public sector.

Please apply online with proof of the required qualifications (without a photo) under <https://jobportal.uni-koeln.de>. The reference number is Wiss2606-II. The application deadline is 30 July 2026.

For further inquiries, please contact Dr Harald Kierspel at (kierspel@ph2.uni-koeln.de) and take a look at our [FAQs](#).