Postdoc position in topological-insulator circuit Quantum Electrodynamics

A postdoc position is available in the group of Yoichi Ando at the University of Cologne. We are researching topological quantum computing based on superconductor/topological-insulator hybrid devices. Our group has successfully demonstrated Josephson junctions based on state-of-the-art topological insulator materials that are synthesized in-house, including exfoliated $BiSbTeSe_2$ flakes, MBE-grown $(Bi,Sb)_2Te_3$ thin films, and VLS-grown $(Bi,Sb)_2Te_3$ nanowires. We are currently focusing on integrating those junctions in devices aimed at realizing Majorana zero modes.

The postdoc will join our circuit quantum electrodynamics (cQED) team within Ando lab. Responsibilities would be design, simulation, fabrication, and measurement of cQED devices at gigahertz frequencies. Devices will integrate topological-insulator Josephson junctions into circuits, including transmon and RF-SQUID type designs. The aim is to measure physical signatures of Majorana fermions in these devices, and ultimately to use Majorana zero modes to store and process quantum information. Thus, the experiments lie at the interface of superconducting qubits and solid-state physics.

We offer a fully funded position financed initially by the ERC Advanced Grant MajoranaTopIn, with the possibility to renew the contract for up to 6 years so that a talented early-career researcher can develop his/her research profile and to complete the German habilitation. Our group is well connected to the Rhineland quantum computing community in the context of the Cluster of Excellence ML4Q (https://ml4q.de/).

A candidate should hold a PhD in experimental solid-state physics or electrical engineering, ideally with experience in a subset of:

- designing cQED devices
- Josephson junctions
- nanofabrication
- time-domain microwave measurements
- solid-state qubit experiments

The position is available from 01.04.2021 on a full-time basis. Please send your convincing application with a proof of required qualifications by email (in one pdf-document) to handels@ph2.uni-koeln.de. The evaluation will start immediately until the position is filled.

The University of Cologne promotes equal opportunities and diversity in its employment relations. Women are expressly encouraged to apply and given priority in accordance with the Equal Opportunities Act of North Rhine-Westphalia. We expressly welcome applications from individuals with severe disabilities or people of equivalent status. Severely disabled applicants of equal merit and qualifications will be given priority.

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