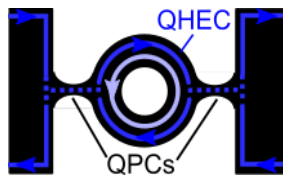


The Paul-Drude-Institut (PDI) performs basic research as a lively symbiosis of materials science and solid state physics. Our activities aim at inspiring and demonstrating new functionalities for future information technologies. As a member of the Leibniz-Gemeinschaft and Forschungsverbund Berlin e. V., we are an independent research institute with about 100 employees and collaborate with all three universities in Berlin. We are located in the very heart of the city near the Gendarmenmarkt. You may find more details at www.pdi-berlin.de.

PhD Position for Quantum Hall Effect-based Phase Switches (m/f/d)

Quantum Hall edge channels (QHECs) are regarded as perfect one-dimensional ballistic conductors in a high magnetic field. A technological application is a very precise resistance standard. We offer a PhD position for investigating phase coherent transport in QHECs. The goal is the realization of quantum switches based on the phase coherent transport through loops of QHECs, related to the Aharonov-Bohm effect. We aim at applications in on-chip quantum technology.



Starting from a high-mobility (Ga,Al)As/GaAs heterostructure containing a two-dimensional conducting layer, you will create nanoscale samples using state-of-the-art technology such as electron beam lithography and the electric field effect. To split the QHECs and create loops, you will include tunable quantum point contacts (QPCs), i.e. narrow constrictions, in the nanostructures. More complex quantum switches might be achieved by combining multiple loops. To perform the electric transport measurements at cryogenic temperatures of about 250 mK, you will run a helium-3 cryostat including a strong superconducting magnet. You also will be able to develop your own ideas for new experiments aiming at a deep level of understanding of the fundamental physics and novel applications in quantum technology.

Are you enthusiastic to work on your individual project embedded in a professional team and to perform challenging experiments in a complex laboratory environment? Are you eager to learn state-of-the-art nanolithography and quantum transport measurements at cryogenic temperatures or have already related experience? Do you have a solid background in basic quantum mechanics and condensed matter physics? Then you will enjoy working in our growing team and should apply for a personal interview.

The position is available for 3 years and requires a master in physics or a related area. Payment is according to TVöD (Treaty for German public service). The Paul-Drude-Institut aims at increasing the quota of female employees. The application of women is therefore encouraged. Among equally qualified applicants, preference will be given to disabled candidates.

Applications including a motivation letter and two references should be sent by **August 23rd, 2020**, to:

Mr. Andreas Hartung, Email: jobs@pdi-berlin.de.
(mention PhD QHEC in the subject)



For scientific or technical questions related to the project, please contact PD Dr. Stefan Ludwig, Email: ludwig@pdi-berlin.de.