Freie Universität Berlin - Department of Physics



Who We Are Can we build a quantum simulator from excitons in atomically thin semiconductors? Join us to develop the experimental building blocks: electrically tunable traps for individual excitons and arrays in which light mediates their coupling. You will be based in the Bolotin group in Berlin, working with the groups of Prof. Ronen Rapaport and Prof. Hadar Steinberg at the Hebrew University of Jerusalem (HUJI) in the project “Plasmon-Coupled Excitonic Arrays for Quantum Simulation”. You will help develop an experiment that combines nanoscale positioning, electrical control, and optical readout. The Bolotin group brings expertise in strong electric fields and local manipulation of 2D materials; our HUJI partners contribute complementary strengths in dipolar excitons, plasmonics, and device fabrication. The collaboration includes joint scientific exchange and planned research visits to partner laboratories. You will gain hands-on experience in nanofabrication, cryogenic microscopy, and optical spectroscopy, with access to the group’s experimental infrastructure and room to develop your own ideas in Berlin’s international research environment.

Research assistant (praedoc) (f/m/d) (DM-PHY-945) in 2D materials and quantum simulation

Department: Department of Physics contract duration: limited until 31.10.2029 Salary / pay grade: E 13 TV-L FU Working hours: 75 % Requisition ID: 945 Application deadline: 30.11.2026

City: Berlin; Starting date (earliest): At the earliest possible; Duration: limited until 31.10.2029; Remuneration: E 13 TV-L FU; Reference number: 945; Closing date: 30/11/26

Tasks

What You Can Expect in Your New Role

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- Fabricate gated van der Waals heterostructures and combine them with a cryogenic scanning-gate microscope.
- Use optical spectroscopy to search for discrete confined states and investigate exciton transport, interactions, and the influence of defects and moiré potentials.
- Connect single-trap experiments to the joint effort on exciton–plasmon coupling and coherent excitonic arrays.

Requirements

Key Requirements

You hold a Master’s degree in physics or a related field.

Desirable

- You enjoy understanding how experiments work and building new things.
- Hands-on experience with 2D materials and nanofabrication or microscopy is expected.
- Experience with optical spectroscopy, transport, building experimental setups, numerical modelling, or programming in Python or LabVIEW is an advantage.
- We value physical intuition, careful measurements, and the ability to turn a complex problem into a testable idea.

What we offer

Benefits and Other Advantages

- Modern workplace in the leafy suburb of Dahlem
- Salary in line with the collective agreement for the civil service at the state level (TV-L FU), plus additional one-off annual payment
- Thirty days of vacation (based on a five-day working week)
- Office closed on December 24 and December 31
- Numerous training and continuing education options for professional and personal development
- Opportunity to participate in University Sports Center courses and the health promotion program
- Free parking close to the office and good public transportation connections
- Free use of the Freie Universität library system

Application

If you are interested in what we have to offer,
then you can send your application materials to us directly. Simply submit your application exclusively via our career portal by clicking the “Apply now” button. Unfortunately, we cannot consider applications by post or by e-mail.

You can also get in touch with Mr. Bolotin (bolotin@zedat.fu-berlin.de)

Please note
Freie Universität Berlin is an equal opportunity employer.

More information at https://stellenticket.de/208659/BUA/
Offer visible until 30/11/26