



Technische Universität Berlin is currently advertising the following position(s):

## Student assistant 40 hours per month

**Fakultät IV: Elektrotechnik und Informatik - Institut für Hochfrequenz- und Halbleiter-Systemtechnologien - Halbleiterbauelemente und Mikroelektroniksysteme**

**Reference number:** IV-SB-0080-2024 (starting at the earliest possible / limited to two years / closing date for applications 31/12/24)

### Working field:

Working field: "Quantum Sensing for Brain Scanning (Computational + Experimental)"

Quantum sensors utilize the quantum mechanical properties of a system to detect physical variables such as electric fields, magnetic fields, etc. with unprecedented accuracy. Due to their exceptional sensitivity, spatial resolution, and accuracy, quantum sensors can have far-reaching impact in the fields of biotechnology and neuroscience. Quantum sensors can help obtain high-resolution, non-invasive scans of the living brain in previously inaccessible detail, potentially leading to fundamental breakthroughs in neuroscience and helping develop effective treatments for neurological and psychological diseases. This project aims to help realize this transformative potential of quantum sensing for brain scanning.

This project will focus on developing quantum systems such as nitrogen-vacancy (NV) diamond centers and/or point defects in 2D materials. The project will have both computational and experimental aspects.

Supporting activities under supervision for the following tasks:

1. Conduct computational materials design for enhanced quantum sensing (40%)
2. Help design, fabricate and optimize quantum sensor devices for improved performance (40%)
3. Collaborate with an international, multi-disciplinary team to achieve our research agenda (10%)
4. Contribute to high-quality publications and publicly disseminate research results (10%)

### Requirements:

Must Criteria:

1. Very good knowledge of Applied Physics, Electrical Engineering, Material Science, Biophysics or a related field
2. Knowledge of, or exposure to, at least one of the following topics:
  - i) Computational materials science (including tools such as Quantum ATK or VASP etc.)
  - ii) Computational design of nanoscale devices
  - iii) Computational design of quantum devices or quantum sensors
  - iii) Experimental quantum sensing
  - iv) Quantum device fabrication and characterization
- 3) The ability to work in English (very good written and spoken English skills)

Can Criteria:

1. Interest in learning how to conduct independent and high-quality research
2. Deep interest in quantum sensing and curiosity about the workings of the brain
3. Creativity, scientific passion and strong motivation to succeed
4. Strong communication, interpersonal, and organizational skills

**Party responsible for specialist area / point of contact for job posting:** Prof. Dr. Priyamvada Jadaun

**Period of employment:** from now on limited to two years

**Apply to:** [personal@tmp.tu-berlin.de](mailto:personal@tmp.tu-berlin.de)

Please submit your written application including cover letter, your CV, certificate of enrollment, and where applicable, current transcript of records, with the reference number to the place of employment indicated above.

In the interest of promoting equality opportunities for men and women, applications from women with suitable qualifications are particularly encouraged.

The vacancy is also available on the internet at <https://www.personalabteilung.tu-berlin.de/menue/jobs/>

