

**Position and research project (reference number xxxx):**

Research Associate / Ph.D. student (75% TV-L E13 | employment till 31.12.2026)

**Atom-interferometric tests of fundamental quantum-mechanics**

This position is embedded in the research project GAIN (Gravimetric Atom Interferometer), which is carried out by the Optical Metrology group at the Humboldt-Universität zu Berlin. GAIN is a cold atomic fountain interferometer that measures the gravitational acceleration with state-of-the-art sensitivity and accuracy. In cooperation with the Joint Lab of Integrated Quantum sensors, we aim to extend the capabilities of the experiment to allow for high-precision tests of quantum mechanics, specifically the linearity of the Schrödinger equation and experimental tests of wavefunction collapse theories.

**Tasks:**

- Adapt and improve the GAIN setup to allow for high-precision tests of quantum mechanics
- Conduct experiments to test the bounds of the linearity of the Schrödinger equation and collapse models using atom interferometry
- Perform analytical calculations and numerical simulations to support the experimental work
- Work closely with postdoctoral fellows, Ph.D. and Masters students
- Present research results in international journals and at conferences

**Scientific and technical competences:**

## Essential:

- Master's degree in physics (or in related fields with appropriate specialization)
- Good English skills; willingness to acquire the missing language skills
- Interest in fundamental physics and testing the foundations of quantum mechanics

## Desired:

- Practical experience with (ultra-)cold atoms and/or atom interferometry
- Expertise in the development and characterization of laser systems for laser cooling or precision measurement applications
- Programming skills (preferably with substantial experience using Python and Labview)
- General laboratory skills (especially: optics, opto-mechanics, opto-electronics, RF-electronics)
- Good knowledge of analog and digital electronics

**Employment:**

Humboldt-Universität zu Berlin  
Mathematisch-Naturwissenschaftliche Fakultät  
Institut für Physik  
Berlin, Germany

**Application (reference number xxxx) to:**

Prof. Achim Peters, Ph.D.  
Humboldt-Universität zu Berlin  
Institut für Physik  
Newtonstraße 15  
12489 Berlin  
achim.peters@physik.hu-berlin.de

Your application must include a curriculum vitae, copies of certificates and documents, a detailed description of your past or current research projects, a list of publications, a recommendation letter and a motivation letter as well as the contact information of two references.

HU is seeking to increase the proportion of women in research and teaching, and specifically encourages qualified female scholars to apply. Severely disabled applicants with equivalent qualifications will be given preferential consideration. People with an immigration background are specifically encouraged to apply. Since we will not return your documents, please submit copies in the application only.