

The Physikalisch-Technische Bundesanstalt (PTB) is the national metrology institute of the Federal Republic of Germany with scientific and technical service tasks. It furthers progress and reliability in metrology for society, the economy and science.

Department 4.4, Time and Frequency, is looking for a candidate to fill the following position at our Braunschweig site for a duration of three years starting at the earliest possible date:

Doctoral candidate or postdoc specializing in physics

Remuneration Group 14 [TVöD Bund](#) ◦ fixed-term contract

— For doctoral candidates (PhD students), the remuneration will be paid in accordance with Remuneration group 13 TVöD Bund (85 %).

Working Group 4.43 develops optical clocks with trapped ions. The ion used for this purpose is an Yb⁺ ion as it is well-suited both for realizing an optical clock of the highest accuracy and for applications in the field of quantum technologies. Furthermore, Yb⁺ clocks are ideal for investigating issues pertaining to fundamental physics such as the search for dark matter or for a possible time dependence of the fine-structure constant. Our working group is the world leader for several of these tests. Within the scope of this project, we offer the possibility to do experimental research in an absolutely fascinating area at the internationally renowned time laboratory of PTB.

Your tasks:

— A new generation of optical single-ion clocks exploiting the electric octupole transition of Yb⁺ is to be realized within the scope of the position. This clock is to be used for comparisons and combined operation with other optical clocks. The activities include in particular:

- Enhancing the experimental setup, in particular the lasers and laser optics
- Extending the existing experiment control system with Artiq
- Evaluating systematic frequency shifts
- Investigating new procedures for interrogating the reference transition
- Implementing efficient state detection and laser cooling to increase the effective measuring time of the optical clock
- Investigating coherence-limiting effects
- Implementing, evaluating and analyzing comparison measurements with other optical clocks, among other things in search of violations of the equivalence principle

Your profile:

- You have completed your university degree (German *Diplom* or Master's) in physics. For postdocs: You have additionally obtained a PhD in experimental physics.
- Knowledge of and experience in the following fields would be an advantage: nuclear physics, laser spectroscopy, laser stabilization, analog and digital electronics, automated data acquisition and programming.

- You are highly committed and capable of working autonomously.
- You are a strong team player with excellent communication skills.
- You are highly interested in experimental activities and have experimental skills.

We offer:

- A position at one of the world's leading research institutions with an excellent infrastructure
- Intensive PhD supervision in an interdisciplinary team
- Extensive support through participation in international conferences
- Remuneration in accordance with the Collective Bargaining Agreement for the Public Service covering federal employees (*Tarifvertrag öffentlicher Dienst Bund – TVöD*)
- Various workplace health and wellness options
- Good transport connections (bus and bike); free parking

You will find further information related to this position in [Department 4.4](#) by contacting:

Dr. E. Peik, phone: +49 531 592-4400, email: ekkehard.peik@ptb.de or

Dr. N. Huntemann, phone: +49 531 592-4430, email: nils.huntemann@ptb.de.

PTB promotes the professional equality of women and men and is thus especially interested in applications from women.

Within the scope of the official feasibilities, PTB offers flexible part-time work schemes in order to support in particular the compatibility of work and family life.

Disabled persons will be given priority if they have the same occupational aptitude.

Please use our [online application form](#). Alternatively, you can send your application to the following postal address:

Physikalisch-Technische Bundesanstalt

Referat "Personal"

Reference number 22-241-4

Bundesallee 100

38116 Braunschweig

Germany

Unfortunately, we cannot accept applications sent via email.

Applications can be submitted from 25 February 2022 until 21 March 2022.



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