

Braunschweig, 31 May 2017

VACANCY

No. 17-092-QUEST

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. The QUEST Institute for Experimental Quantum Metrology is a joint institution of Leibniz Universität Hannover and PTB Braunschweig.

At the Quantum Logic Spectroscopy Group of the QUEST Institute we are looking for

2 doctoral candidates in the field of quantum logic spectroscopy

to join us as soon as possible.

The post is initially limited to 3 years; an extension of the contract is possible. You will be employed at our Braunschweig site.

The remuneration will be paid in accordance with remuneration group 13 TVöD Bund (85 %).

The research within the Quantum Logic Spectroscopy Group revolves around precision spectroscopy of trapped and laser-cooled atomic and molecular ions. For this purpose, we develop novel technologies for the coherent manipulation of single ions and their spectroscopy.

Being part of an excellent research environment with access to PTB's unique infrastructure, the working group has excellent connections to other groups at a national and international level and is involved in several coordinated research projects, among other things CRC 1227 "Designed quantum states of matter" (*DQ-mat*) and CRC 1128 "Relativistic geodesy with quantum sensors" (*geo-Q*). The activities are carried out using experiments whose essential parts have already been set up.

Tasks in the field of molecular ions:

- Developing and implementing quantum-logic based state preparations of the internal states of molecular ions
- Use of non-conventional motion states for efficient preparation and detection of internal states
- First-time implementation of spectroscopy using trapped molecules with previously unattained resolution

Tasks in the field of the optical clock:

- Evaluation and operation of a quantum-logic clock based on Al⁺
- Miniaturizing laser systems and optical set-ups for a transportable clock
- Using this clock for clock comparison and applications in geodesy

- Implementing concepts for highly stable references with large ionic crystals
- Developing and implementing quantum algorithms to improve the measurement accuracy

Your profile:

- You have obtained an excellent university degree in physics (Master or German "Diplom")
- You have sound knowledge of atomic physics and experience in the field of quantum optics, laser cooling, laser spectroscopy or related subjects
- You are interested in developing and realizing precision experiments
- You are highly committed and capable of working autonomously in a team and you are willing to improve your skills
- You are a team player and have good communication skills
- You have a very good command of both spoken and written English and German
- You have the physical ability to work in a laboratory and to perform experiments outside the institute

For technical questions, please contact:

Prof. Dr. P. O. Schmidt, phone: +49 (0)531 592-4700,

e-mail: Piet.Schmidt@quantummetrology.de

[Link zum Fachbereich](#)

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 family and profession.

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

Are you interested? Then we are looking forward to hearing from you.

Please use our [application form](#) or send us your application to the following postal address:

Physikalisch-Technische Bundesanstalt

Referat "Personal"

Kennziffer 17-092-QUEST

Bundesallee 100

38116 Braunschweig

Unfortunately, we cannot accept applications sent via e-mail.

The closing date for applications is **12 July 2017**.

