

# Job advertisement : PhD Studentship in Physics

---

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 working group “Frequency Dissemination with Fibres” in the well-equipped department “Quantum Optics and the Unit of Length” <http://www.ptb.de/cms/fachabteilungen/abt4/fb-43.html> in Braunschweig, offers a position for a

## PhD student in Physics.

Funding is for three years. Payment is according to grade E13 of the TVöD Bund (85%).

We are a young working group carrying out research in the areas of fibre based frequency combs, frequency measurements of new optical atomic clocks and, especially, the dissemination of ultra-stable frequencies via optical fibre links. We have been operating, for example, two 900 km long, interferometrically stabilized optical fibre links between PTB and the Max-Planck Institut for Quantum Optics in Garching (near Munich), and between PTB and the Leibniz Universität Hanover. We are internationally leading in this field of research.

We are now designing and implementing a metrological link based on optical fibre between PTB Braunschweig and the LNE-SYRTE in Paris, within a joint French-German project, and are beginning cooperative work within the newly-founded SFB 1128 geo-Q on relativistic geodesy.

### Your task:

The main focus of your work will be researching the fundamental limits of frequency signal transfer via deployed optical telecommunication fibre. Such limits are caused, for example, by asymmetry of noise processes and phase shifts with respect to the direction of propagation of the signals (for example, the Sagnac-effect). Your work is embedded in, and related to, two research projects pursued by post-doctoral researchers:

- International frequency comparison of optical atomic clocks via a French-German fibre link
- Optical fibre links for relativistic geodesy (project A04 in SFB 1128) – <http://www.geoq.uni-hannover.de/> with emphasis on relativistic effects

You will support the development and implementation of new instrumentation and methods for frequency dissemination, such as optical amplifiers and branched fibre links, and support field tests for their characterisation. One goal is the development of highly precise measuring methods for optical frequencies, with a relative frequency resolution of  $10^{-18}$  or below.

### Your profile:

- First class degree in Physics
- Experience in optics or in both servo-electronics and telecommunications
- Experimental ingenuity and practical experience of optical measuring techniques; some programming experience, preferably in C++
- Fluent in English and German, including solid writing skills
- Willingness and physical ability to plan and carry out field tests and experiments at external locations

You enjoy working with others, yet can work independently; you are highly organised, yet know how to improvise; you are enthusiastic, dedicated and reliable. If you also show creativity and have a sound understanding of physics, this PhD position allows you to make a significant contribution in a relatively young research area.

PTB is an equal opportunities employer. Disabled persons will be given priority if they have the same occupational aptitude.

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

Where feasible, PTB offers flexible part-time work schemes in order to support in particular the compatibility of family and work-life. For further information, please see our flyer "Familienfreundliche PTB" (family-friendly PTB) at [www.ptb.de/cms/Jobsausbildung.html](http://www.ptb.de/cms/Jobsausbildung.html).

Are you interested? Then please submit your application using our

[online application form](#) via <http://www.ptb.de/cms/en/jobsausbildung/bms-stellen.html>

or by post to: Physikalisch-Technische Bundesanstalt, Referat "Personal",  
**Reference number 96/14-4**, Bundesallee 100, 38116 Braunschweig, Germany.

The closing date for applications is **16 September 2014**. Unfortunately, we cannot accept applications sent via e-mail.

For further information, please contact

Dr. G. Grosche, phone: +49(0)531 592-4340, e-mail: [gesine.grosche@ptb.de](mailto:gesine.grosche@ptb.de) or

Dr. H. Schnatz, phone: +49(0)531 592-4300, e-mail: [harald.schnatz@ptb.de](mailto:harald.schnatz@ptb.de)

---