

## **Candidate for a doctor's degree: Graduated physicist or graduated engineer (Technical University)**

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, economy and science.

For the Working Group "Length Graduation" of our Department "Dimensional Nanometrology" in Braunschweig, we are looking for a

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to join us as soon as possible and to perform research activities in the field of Angle Measuring Techniques. The post is limited to three years. The tasks correspond to the characteristics of Salary Group IIa BAT (85%); the remuneration will be paid in accordance with the TVöD Payment Scheme.

#### **Our profile:**

Through research and development in the field of angle measuring techniques and by the calibration of angle measuring systems, the Working Group creates optimum conditions for the wide use of these systems in industry and in research institutions. Our broad spectrum of diverse and varied tasks covers basic research of new measurement procedures and mathematic algorithms as well as the improvement of the design of measuring instruments and the application-oriented experimental characterization and precise calibration of angle measuring systems. For this purpose, the Working Group has a very good infrastructure at its disposal - as, for example, the high-precision angle comparator in PTB's Clean Room Centre.

#### **Your tasks:**

We are leading in the investigation and calibration of autocollimators, optical probing angle measuring systems. Research cooperations of many years exist both with manufacturers of measuring instruments and with synchrotron metrology laboratories all over the world which use - to an ever increasing extent - autocollimators for the high-precision form measurement of optical functional surfaces. The offered promotion is primarily intended to develop this field of research. This requires independent and team-oriented scientific work. Your specific tasks will be:

- Improvement of the efficiency of autocollimators at small apertures by optimization and experimental testing of innovative phase-shifting reticles in cooperation with a German manufacturer of measuring instruments.
- Characterization of the measurement errors of autocollimators at small apertures (e.g. by lens aberrations, diffraction and interference effects) by means of optics calculations and experimental investigations.
- Improvement of the algorithms for the determination of the displacement of reticle images on CCD detectors.

- Optimization of the use of autocollimators in deflectometric procedures for the precise measurement of optical functional surfaces in cooperation with synchrotron metrology laboratories all over the world.
- Cooperation in the design and realization of a novel, challenging system for the two-dimensional calibration of autocollimators in a limited solid angle range.
- Presentation and publication of the results, also in the English language.

**Requirements:**

The tasks require completed university studies of physics with the grade "good" or "very good". You have advanced knowledge in at least one of the following fields: optics (especially optics calculation), establishment and experimental testing of measuring equipment, numerical procedures for data analysis. You are committed and take pleasure in the creative solution of scientific problems. Domination of software for complex data analyses and English writing and speaking knowledge are assumed.

Fitness for working in a cleanroom centre is required.

Further information can be obtained from:

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or, in technical matters, from:

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or at: [http://www.ptb.de/de/org/5/\\_index.htm](http://www.ptb.de/de/org/5/_index.htm).

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

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 send your detailed application to the address below by 2010-01-04, quoting the reference number 131/09-5.

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