

The Deutsches Geodätisches Forschungsinstitut (German Geodetic Research Institute) of the Technical University of Munich (DGFI-TUM) is accepting applications for a

## PhD student (m/f) in the research topic Regional Gravity Field

The gravity field of the Earth is of great importance for many geodetic applications. It serves, for instance, as a basis for the realization of height systems or for the description of the mass distribution within the system Earth, and temporal changes of the gravity field allow for conclusions with respect to geodynamic processes. At DGFI-TUM, the development of high-resolution regional gravity field models has been a research topic for many years.

Usually, the Earth's gravity field is modelled as a series expansion in spherical harmonics. Since the input data, in particular terrestrial gravity measurements, are distributed rather inhomogeneous, global gravity field models can be complemented or densified by high-resolution regional gravity field models. In the last years, a variety of methods has been proposed and (further) developed, e.g., the Least-Squares-Collocation or the mascon approaches. DGFI-TUM focuses on regional gravity field modelling by means of spherical radial basis functions that can easily be connected to spherical harmonics and allow for the decomposition of the gravity field into spectral components by applying a multi scale analysis (MSA). The parameters of the regional model are computed via parameter estimation from the combination of terrestrial and space-borne observations and allow for the computation of all gravity field functionals, for instance, geoid heights.

In the last years the comprehensive software package RegGRAV was created at DGFI-TUM. It is based on the algorithms developed on regional gravity field modelling using MSA. In the frame of a third-party funded project in cooperation with TUM's Chair of Astronomical and Physical Geodesy, the approach of spherical basis functions shall be applied to the realization of height systems in developing and newly industrializing countries. The work comprehends the creation of suitable basis functions for the analysis of the given input data and the synthesis of the gravity field functionals. Algorithms have to be developed for connecting the spectral detail components of the MSA efficiently.

### Your profile

- University degree (M.Sc./Diploma) in geodesy, geophysics, mathematics or a related discipline
- Advanced computer literacy and programming skills, preferably in Python or Fortran
- Ability for independent research as part of a team, interest in data analysis, mathematical and statistical model development, presentation and publication of scientific results
- Good command of the English language (speaking and writing)

### We offer

- Independent and challenging research in an internationally well connected team
- Flexible and family friendly working hours
- Fixed term contract for a period of 3 years, starting as soon as possible
- Salary according to employment category E13 (75%) of the collective labor contract TV-L
- Attractive office in the Residence of Munich at the Odeonsplatz

All PhD candidates of the TUM are obligated to participate in the TUM Graduate School (<http://www.gs.tum.de>) that offers attractive additional funds for research training, soft-skill programs and international mobility/stays abroad. The TUM aims to increase the number of women employees. Qualified women are therefore especially encouraged to apply. Handicapped applicants will be preferred if applicability and qualification are equivalent

### Interested?

Do not hesitate to contact us for questions regarding the position. We are looking forward to receiving your application with relevant documents per mail or email no later than **January 31, 2018** to:

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