Opportunities for Talente

The Deutsches Geodätisches Forschungsinstitut of the Technical University of Munich (<u>DGFI-TUM</u>) is accepting applications for a

## PhD position (m/f/d) in the research area Reference Systems: Improved ITRF determination

DGFI-TUM is one of the three ITRS Combination Centers, which are in charge of the realization of the International Terrestrial Reference System (ITRS). An accurate ITRS realization, the so-called International Terrestrial Reference Frame (ITRF), is foundational to many scientific and societal applications. The International Association of Geodesy's Global Geodetic Observing System (GGOS) requests an ITRF accuracy of 1 mm and a long-term stability of 0.1 mm/yr. Recent ITRF solutions miss these requirements by about a factor of five. Largest limiting factors are biases between the contributing geodetic space techniques (VLBI, SLR, GNSS, DORIS) and discontinuities in observation time series.

Among the ITRF datum parameters, the scale is of particular relevance for height-related applications, such as the determination of sea level and its changes over time. In previous ITRF solutions, the scale was realized from VLBI and SLR observations over up to 45 years. With the availability of calibration data from the Galileo satellites, now also GNSS – the technique with the largest number of observations and the densest station network – can contribute with independent scale information. At the same time, the scale information from SLR is also improving due to the availability of new satellite calibration estimates (target signatures) and consistently estimated range biases.

A new joint project of DGFI-TUM and the Astronomical Institute of the University of Bern (AIUB), Switzerland, investigates the joint capability of all three techniques (VLBI, SLR, GNSS) for an improved scale realization in future ITRF solutions. To complement the project team, we are looking for a PhD candidate to advance the data analysis and combination of geodetic space observations in close collaboration with colleagues at AIUB. The focus of your research will be on the development of advanced combination strategies. This work is supported by studies on the benefits of ESA's upcoming Genesis mission (2028), which will contribute to an improved combination of the techniques by linking them in space on a well calibrated satellite platform.

DGFI-TUM has long-standing expertise in the analysis, combination and exploitation of geodetic space techniques. In close cooperation with partners worldwide, the institute operates analysis centers that are involved in cutting-edge international research projects. More information about our scientific activities in the research area Reference Systems is available on our website ( $\emptyset$ ).

## Your profile

- University degree (M.Sc.) in geodesy, mathematics, physics, informatics, or a related discipline
- Interest in data analysis and complex mathematical computations
- Advanced computer literacy and programming skills (preferably in Python or FORTRAN)
- Ability for independent research as part of a team, interest in the 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 initially 3 years, starting as soon as possible
- Salary according to employment category E13 (full time) of the collective labor contract TV-L
- · Attractive office in the Residence of Munich at the Odeonsplatz

All PhD candidates of the TUM are required 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. TUM strives to raise the proportion of women in its workforce and explicitly encourages applications from qualified women. Disabled applicants will be preferred in case of equivalent suitability, aptitude and professional performance.

Deutsches Geodätisches Forschungsinstitut (DGFI-TUM) TUM School of Engineering and Design Technical University of Munich

## Interested?

Opportunities for talents

Do not hesitate to contact us for questions regarding the position. We are looking forward to receiving your application with relevant documents ( $\mathscr{P}$ ) per email (one PDF) to:

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As part of your application, you provide personal data to the Technical University of Munich (TUM). Please view our privacy policy on collecting and processing personal data in the course of the application process pursuant to Art. 13 of the General Data Protection Regulation of the European Union (GDPR) at <a href="https://portal.mytum.de/kompass/datenschutz/Bewerbung/">https://portal.mytum.de/kompass/datenschutz/Bewerbung/</a>. By submitting your application you confirm to have read and understood the data protection information provided by TUM.