



Doctoral Positions

in DFG International Research Training Group 2379 “Modern Inverse Problems”

The DFG International Research Training Group (IRTG) 2379 builds on a unique consortium – RWTH Aachen University and its JARA Center for Simulation and Data Science, and the **University of Texas at Austin** and its **Oden Institute for Computational Engineering and Sciences**. The research field of modern inverse problems is combined with an innovative and interdisciplinary doctoral training approach.

One **PhD position** is advised by Prof. Marek Behr with Prof. Leszek Demkowicz in Austin as co-advisor. Project advances the state of the art in the computational treatment of viscoelastic constitutive laws and similar equations arising, e.g., in biophysical modeling. The applications center on biomedical device design, including heart assist devices and coronary stents. The goals are:

- Study of the **stability and accuracy** properties of new and emerging finite element discretizations;
- Application of **subgrid-scale stabilization** to models such as morphology tensor blood damage model;
- Interaction of discretization schemes with the **sensitivities and adjoints** used for design tasks.

Further **PhD position** in the area of IGA-based optimization is advised by Prof. Stefanie Elgeti with Prof. Thomas J.R. Hughes in Austin as co-advisor. The project explores shape and topology optimization approaches for microstructured geometries. The goals are

- Isogeometric analysis of **microstructured geometries** in manufacturing;
- Development of **optimization schemes** for microstructures;
- Development of **objective functions** in manufacturing.

Your profile: Requirement is a master's degree in computational or mechanical engineering, applied mathematics, or a similar subject with a superior academic record. Practical programming experience in Fortran, C, or C++ as well as with parallelization (MPI or OpenMP) are of advantage. Familiarity with UNIX operating systems would be ideal. We expect you to contribute to general tasks at the institute, such as teaching and advising master or project theses. Language skills in German are beneficial but not required.

Our offer: Candidates will be employed as a regular employee and must meet required personal qualifications. This is a full-time position with salary according to German civil service pay scale TV-L E 13 (ca. 4000 euros/month before taxes). The expected appointment period is **four years**. Full involvement in the IRTG activities, including joint RWTH-UT colloquia, annual workshops and schools, and short courses is expected. A **six-month** stay at University of Texas in Austin is an integral part of the training program.

At our chair, we consider serious and reliable research an important task. At the same time, we can offer you to become a part of a social and well-functioning team of currently ca. 20 members. Especially for international students, open doors and regular social events help become acquainted with the German culture quickly. We will also support your personal development in any way possible, giving you a good starting point for a future career in academia or industry. Feel free to contact us for further information!

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