

Doctoral Position

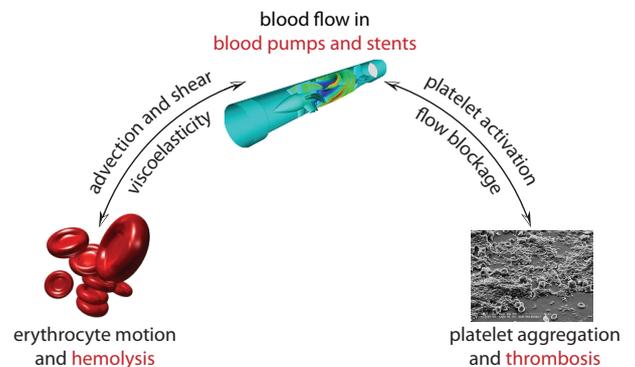
in DFG International Research Training Group 2379 “Modern Inverse Problems”

The DFG International Research Training Group (IRTG) 2379 builds on a unique consortium, at RWTH Aachen University with its JARA Center for Simulation and Data Science, and at the **University of Texas at Austin** with its **Oden Institute for Computational Engineering and Sciences**. The projects are embedded in the field of modern inverse problems and introduce a new innovative perspective into the education of future scientists and engineers.

The position is associated with the project “P1 Novel stabilized finite-element methods for microstructured and complex fluids,” and advised by Prof. Marek Behr in Aachen and Prof. Leszek Demkowicz in Austin. The project advances the state of the art in the computational treatment of viscoelastic (VE) constitutive equations, and similar model equations arising, e.g., in macroscopic blood damage modeling. The applications center on biomedical device design, including blood pumps, arterial stents, and heart valves.

The research goals of this project 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 estimator;
- Interaction of the above discretization schemes with the **sensitivities and adjoints** required for design tasks.



Your profile: Requirement for this position 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: The candidate 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 part of a very social and well-functioning team of currently roughly 20 members. Especially for international students, open doors and regular social events help become acquainted with the German culture quickly. Furthermore, we can assure you that we will support your personal development in all ways possible, thus giving you a good starting point for a future career in both academia or industry. Feel free to contact us for further information!

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Starting date: October 2021