



Universität der Bundeswehr München

Institut für **Mathematik und  
Computergestützte Simulation**

der Bundeswehr  
**Universität München**

To further strengthen our internationally oriented research team at the [Institute for Mathematics and Computer-Based Simulation \(Prof. Popp\)](#), we are looking for a

### **Research Assistant – PhD Student**

(renumeration according to remuneration group E 13 TVöD)

for the German Research Foundation (DFG) funded project

## **Multi-Scale Algorithms and Simulation for the Patient-Specific Optimization of Endovascular Interventions in Cerebral Aneurysms**

Within the scope of his or her work, the employee is expected to work independently and in close coordination with the institute director on future-oriented research topics within the scope of the project. The research work is embedded into the DFG Priority Program SPP 2311 “*Robustly coupling continuum-biomechanical in silico models to obtain active biological system models for later use in clinical applications – Co-design of modeling, numerics and usability*“ and will be conducted in close collaboration with scientific partners at the Technical University of Munich (TUM) in the fields of neuroradiology (Clinical Center Rechts der Isar) and numerical mathematics.

The (full-time) position is initially limited to *three years*, but an extension is possible. An orientation towards the qualification goal of obtaining a doctorate (Dr.-Ing.) during the time at the institute is supported and explicitly desired. The workplace will be Neubiberg / Munich.

### **About us**

Since 2018, the Institute for Mathematics and Computer-Based Simulation (IMCS) is part of the Faculty of Civil Engineering and Environmental Sciences and offers a unique interdisciplinary environment with bundled competences in the development of numerical methods, solid and structural mechanics, multiphysics modelling and simulation, high performance computing (HPC), machine learning as well as digital twins. Our main research and teaching focus lies in the field of computer-based simulation, in particular based on finite element methods (FEM), challenging problems in nonlinear solid and structural mechanics, contact mechanics, fiber-based materials as well as coupled multi-field and multi-scale problems (e.g. fluid-structure interaction).

Our applications range from civil engineering and environmental sciences (e.g. critical infrastructure) to aerospace engineering, manufacturing technologies (e.g. composite materials), biomechanics and biomedical engineering. In our research projects we cover the entire spectrum from modelling and numerical method / code development to optimization, stochastic methods, machine learning and uncertainty quantification (UQ). For this purpose, the research group co-develops and co-maintains the software package BACI, one of the world's most powerful FEM research codes with massive parallelization for use on computing clusters / supercomputers (together with research partners at TU Munich). Since 2020, the institute has been operating a new *Data Science & Computing Research Laboratory* at the department, which includes its own and exclusive HPC cluster with more than 1,000 computing cores, thus providing an excellent technical framework for top international research.

### Your tasks

- carrying out innovative research projects including their presentation and documentation
- scientific publishing, contributions to new research funding proposals / grants
- support of academic teaching **in German language** (exercises, internships, teaching materials) in the study programs of the department and in Mathematical Engineering
- research-related administrative tasks, e.g. with regard to HPC software development

### Your qualification

- excellent degree in a university engineering course (civil engineering, mechanical engineering, aerospace engineering, electrical engineering) or in applied mathematics, physics or computer science
- for postdocs: very good PhD dissertation in one of the mentioned research fields
- excellent theoretical skills and profound knowledge in the fundamentals (mechanics, mathematics, etc.), in the field of computational mechanics (FEM, etc.) and in programming (C++, etc.)

### We expect

- high commitment and motivation for scientific work on a top international level
- a pronounced degree of independence, team spirit and determination
- high creativity and the ambition to "get things done" in a small team
- strong communication and didactic skills in teaching and, more generally speaking, in the supervision of our students

### We offer

- high creative freedom in research and teaching
- a pleasant working atmosphere in an excellent and committed team within a well-equipped environment
- comprehensive further education opportunities (language center, ProfiLehrePlus)
- a high level of support and interaction with professors / head of the research lab
- the opportunity for scientific qualification (doctorate, habilitation)
- a lively international exchange with numerous leading working groups and the best universities worldwide
- optimal future chances for a career in academia or industry
- attractive full-time contracts with competitive remuneration according to the TVöD collective agreement
- a unique living environment in Munich – one of the most attractive cities in the world with unlimited leisure opportunities and a dynamic job market
- attractive sports and leisure facilities directly on campus

### How to apply

Incoming applications will be screened immediately until the position is filled. Therefore, please send your complete application documents (one PDF file including letter of motivation, curriculum vitae, copies of certificates) **as soon as possible, but no later than *October 31st, 2021***, by e-mail to

**Prof. Dr.-Ing. Alexander Popp**

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