**University of Stuttgart**
Germany

**mathematik physik** fakultät 8

**Institute of Applied Analysis
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Research Group Numerical Mathematics**

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Univ. Stuttgart · IANS · D 70550 Stuttgart

# PhD/PostDoc-Positions Announcement

We announce several open PhD/PostDoc-positions in the group on "Numerical Mathematics" lead by Prof. B. Haasdonk at the IANS, University of Stuttgart, Germany. We aim at filling the positions as soon as possible.

The university offers an interesting and interdisciplinary research environment in particular by opportunities of collaboration within the Stuttgart Center on Simulation Technology SC SimTech.

All positions are related to developing and analyzing surrogate modelling techniques by either model order reduction (MOR) or machine-learning (ML). The application domains cover various engineering fields.

- **1. Softtissue Robotics:** PhD position, full time, payment scale TV-L E13, initially 2 years: Within the international research training group (IRTG) Softtissue Robotics (https://www.str.uni-stuttgart.de/) together with the University of Auckland, New Zealand, we are interested in surrogate modelling for coupled soft-tissue/elastic/solid mechanical systems. Particular focus is application in feedback control of such systems.

- **2. Certified Coupled MOR (CCMOR):** PhD or PostDoc position, full time, payment scale TV-L E13, initially 2 years: Within this joint project with the Institute of Engineering and Computational Mechanics, we wil develop MOR techniques and algorithms for coupled mechanical systems including certification by error estimation. Of particular interest is coupling of elastic/thermal effects and the development of structure preserving MOR methods, e.g. for Hamiltonian or Port-Hamiltonian systems.

- **3. ML-MORE:** PhD or PostDoc position, full time or part time, payment scale TV-L E13, 3 years: In the frame of a joint project with ITWM Kaiserslautern, Univ. of Münster, and Univ. Darmstadt we want to develop efficient data-based modelling techniques for predicting the effectivity of catalytic filters. We will apply and develop deep convolutional kernel network techniques.

The first two positions are subject to possible extension by 1-2 years for finalizing a PhD thesis.

From prospective applicants we expect a very good preceding degree in Mathematics or a related discipline with strong mathematical focus. The highly motivated candidates should have a background in numerical analysis, scientific computing, machine learning or control theory. Specific knowledge and experience in MOR and/or ML (in particular neural networks or kernel methods) are a plus. Applicants are assumed to have very good programming skills, preferably in Python/MATLAB. A necessity is openness for collaboration with engineering disciplines. We appreciate a goal-oriented working style and effective self-management.

Applications should contain a letter of motivation, a curriculum vitae, certificates and contact information of 2 reference persons. A web-URL or an electronic version of qualifying theses (B.Sc./M.Sc./PhD) are also appreciated.

Please send applications preferable in electronic format (by email with a single pdf or zip attachment to haasdonk@mathematik.uni-stuttgart.de).

Applications are welcome at any time before 29th March 2020, review of applications will start immediately.