==Positions for 10 PhD Candidates==

Graz University of Technology, Austria

Mechanics, Modeling and Simulation of Aortic Dissection
at Graz Center of Computational Engineering – GCCE

Brief Description of the Lead Project

Graz University of Technology (TU Graz) is funding the joint research project ***"Mechanics, Modeling and Simulation of Aortic Dissection"*** as a Lead project of the university. A consortium of scientists from biomechanical-, civil-, electrical-, and mechanical engineering, computer science, mathematics, and physics has been formed to cooperate on refining the scientific profile of TU Graz. Aortic dissection (AD) is a defect of the aortic wall tissue with life-threatening consequential damage. The goal of the project is to develop computational tools and advanced algorithms, to simulate cardiovascular mechanics, and based on noninvasive medical images and novel data analysis techniques, to quantify patient-specific anatomical and fluid-structure interaction models for AD. The computational framework will be capable of investigating wall stresses, the hemodynamics, false lumen propagation, exchange of blood between true and false lumina, thrombus formation and growth, at any stage of the disease. This will help to better understand the mechanobiological event and to finally assist clinicians with the diagnosis, treatment and management of AD patients – computational results will be visualized by advanced virtual reality techniques.

The Lead project finances 10 positions for PhD candidates with focus on the following areas:

(i) Computational biomechanics of aortic tissues (Institute of Biomechanics)
(ii) Modeling of failure initiation and crack propagation (Institute of Structural Analysis)
(iii) Sensitivity analysis of parameters (Institute of Mechanics)
(iv) Tomography method to verify modeling (Institute of Fundamentals and Theory in Electrical Engineering)
(v) Blood flow simulation and material modeling (Institute of Fluid Mechanics and Heat Transfer)
(vi) Modeling of thrombus formation and growth (Institute of Strength of Materials)
(vii) Thrombus mechanics and growth (Institute of Applied Mechanics)
(viii) Parallel space-time finite element methods (Institute of Computational Mathematics)
(ix) Bayesian probability theory (Institute of Theoretical and Computational Physics)
(x) Immersive visualization using virtual reality (Institute of Computer Graphics and Vision)

For more details and special requirements for the individual positions please see the website: www.biomechaorta.tugraz.at

Requirements for the Candidate and Opportunities

Each successful candidate should have a **qualified Masters** in biomedical engineering, biophysics, mechanical, electrical or civil engineering, applied mathematics or mechanics, materials science or physiology. Beside special requirements for each project (see www.biomechaorta.tugraz.at), the ideal candidate should be enthusiastic to work in medical-related research, and in a multidisciplinary team. We offer academic supervision at a high level and a comprehensive education in engineering sciences. Throughout the project, the candidate will gain experience in working with research teams worldwide. Required language is English. The goal for the candidates is to write a Doctoral Thesis.

Employment

Full-time, 40 hours per week, gross salary: € 2.731,- per month (14 times per year)

Starting Date:	January 1, 2018 at the earliest
Duration:	3 years, with a possibility of extension
Location:	Graz University of Technology, Austria
How to apply:	We look forward to receiving your online application at gcce@tugraz.at including a cover letter, CV, a scan of academic transcripts, **two academic reference letters**, and a sample of written work (e.g., Master Thesis, scientific paper). Initial screening of applications will begin on **December 1, 2017**, and applications received after then will also be considered until the positions are filled.
Further information:	For further information please visit our website www.biomechaorta.tugraz.at. If you have any questions please contact Gerhard A. Holzapfel with e-mail holzapfel@tugraz.at