



PhD Position in Biomedical Engineering for Magnetic Resonance Elastography

Topic: Optimization of actuators for mechanical wave generation into the human liver/prostate and optimization of imaging sequences during magnetic resonance elastography

Duration: 3 years

Place of work: Computer Assisted Clinical Medicine, Heidelberg University, Germany

Starting date: flexible

Project

Magnetic resonance imaging (MRI) can provide valuable morphological and functional information on human tissues which can be incorporated in diagnostics and therapy planning. During magnetic resonance elastography (MRE), low frequency mechanical waves are induced in the body and the shear deformation at a distance can be imaged with MRI. Herein, the mechanical properties of tissues, e.g. elasticity, can be assessed non-invasively. As pathological changes are typically accompanied by changes in tissue elasticity, MRE can be used as an additional diagnostic tool for cancerous tissue.

The objective of this project is to optimize and evaluate an MR-compliant prototype of a pneumatic transducer that induces specific low frequency mechanical waves into the human body.

Research Group

The Medical Faculty Mannheim at Heidelberg University has a strong focus on medical technologies and uses medical imaging for modern diagnostics as well as treatment planning and monitoring. Our research group focuses on developing new MR-techniques for measuring elasticity, perfusion, diffusion, oxygenation, and X-Nuclei (sodium, chlorine, potassium) in the human brain or other organs like lung, liver, or heart. We are composed of scientists from physics, electrical engineering, and computer science and work in close cooperation with the local medical departments. We have know-how and expertise in fundamental MR –physics and its application in in vivo animal/human studies.

Prerequisites:

Candidates should have a sound background in mechatronics, mechanics and electrical engineering as well basic knowledge in CAD and electric circuit design.

Interested?

If you enjoy working in an interdisciplinary, young, creative and open team, we are looking forward to your application! For more information on the project or for application **please contact:**

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