



Seminar “IRTG Soft Matter Science”

Principles and applications of magnetic resonance elastography

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Biological tissue possesses complex structures at multiple scales. By close consideration of the brain white matter, for example, it is possible to recognize hierarchical structures from neurofilaments and microtubules in an extension of a few nanometers up to fiber tracts on the decimeter scale. Diseases affect tissue and organs at all length scales. Consequently, it is desirable to have medical imaging modalities sensitive to wide scales of tissue structure. Magnetic resonance elastography (MRE) is an image based modality capable of measuring the viscoelastic properties of living tissue and thus being sensitive to pathological changes on multiple scales.

The talk reviews principal key points and technical aspects of MRE experiments including: Stimulation of shear waves in the body; acquisition of shear wave fields in soft tissue; modulus recovery from wave maps and analyzing the dispersion of the shear modulus in terms of generalized viscoelastic constants. Furthermore an overview about clinical applications is given including staging of hepatic fibrosis, Multiple Sclerosis, hydrocephalus and diastolic cardiac dysfunction.

Wednesday, March 2nd, 14h15
“Hörsaal FRIAS”, Albert-Ludwigs-Universität Freiburg Albertstraße 19,
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You are welcome to meet Dr. Ingolf Sack, do not hesitate to contact Christelle Vergnat (softmattergraduate@physik.uni-freiburg.de)