

# **SHEAR WAVE PROPAGATION MODELING IN MAGNETIC RESONANCE ELASTOGRAPHY USING THE LOCAL INTERACTION SIMULATION APPROACH**

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Property of the soft biological tissue is increasingly used as a diagnostic parameter, e.g. in liver fibrosis and breast tumours. Magnetic resonance elastography (MRE) measures and visualise, noninvasively the mechanical stiffness of human organs based on the organ response to oscillatory shear stress. The propagation of the shear waves is imaged by applying motion-sensitive gradients. Shear wave displacement patterns are needed to be obtain in order to measure stiffness. The Local Interaction Simulation Approach (LISA) is proposed to study shear wave propagation modeling. The method is implemented using graphical processing units (GPUs). The results are validated using MRE experimental data. These results indicate the capability of the LISA for shear wave propagation modeling in MRE investigations. The major advantage of the approach used is the reduction of the computational effort.