

Seminar über Biomedizinische Photonik

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Titel: **Tomography across scales: Knowledge transfer from seismology to imaging breast tissue with ultrasound**

The propagation of waves is widely used to understand the internal structures of media that are inaccessible to direct observations. For instance, seismology uses observations of seismic waves at the Earth's surface to investigate the Earth's interior and increase our understanding of its dynamics and evolution. Similarly, medical ultrasound uses observations of acoustic waves emitted and recorded at the surface of human bodies to visualize internal body structures and improve disease diagnosis. Despite the vastly different scale, seismic and medical ultrasound tomography share fundamental similarities that allow us to transfer knowledge between both fields.

This presentation focuses on Ultrasound Computer Tomography (USCT), an emerging technology with great potential for early-stage breast cancer detection. USCT scanning systems consist of a water tank in which the patient submerges the breast. The sidewalls of the water tank are equipped with ultrasound transducers that emit and record ultrasonic waves propagating through the tissue. The current challenges in USCT mainly consist in improving the accuracy of tomographic images while maintaining the computational and acquisition cost affordable for clinical practice. To address these challenges, I will introduce methods developed in seismic tomography that could benefit USCT.

Zeit: Mittwoch, 03. November 2021, 10:15

Ort: Room A97, Sidlerstrasse 5, 3012 Bern