What Life Scientists Should Know About Molecular Imaging

Optical Imaging, Ultrasound, Photoacoustics

Advanced Beamforming for Fast 2D and 3D Imaging
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Learning Objectives:

- Various ultrasound imaging schemes and the respective frame rate performance.
- Principles and analysis of plane wave excitation.
- Applications of plane wave imaging including shear wave elasticity imaging and real-time 3D imaging.
- Software beamforming for ultrafast ultrasound imaging.

In this talk, we will cover principles, implementation and applications of high frame rate ultrasound imaging. Specifically, we will start with a general introduction on various imaging schemes, followed by discussion on the respective frame rate performance. Then we will focus on principles and analysis of plane wave excitation. Various applications including shear wave elasticity imaging and real-time 3D imaging will also be elaborated. This talk will conclude with software implementation issues for ultrafast ultrasound imaging.

Selected topics of this talk will include:

- Parallel beam formation
- Plane wave imaging
- Synthetic aperture focusing
- Beamforming in the frequency domain (k-space)
- Applications in shear wave elasticity imaging and 3D imaging