



Contribution ID: 308

Type: Poster Presentation

## Computational framework for light-sheet fluorescence image processing.

Light-sheet fluorescence microscopy (LSFM) is a technique in which a thin plane of a sample is illuminated with a focused laser beam and the fluorescence signal is collected perpendicular to the optical axis. LSFM provides high quality images of samples, while reducing photodamage and photobleaching. However, the images generated with LSFM still suffer from aberrations and limited resolution.

A computational framework for processing light-sheet fluorescence images was developed to address this problem. An image can be described as the source convolved with a point spread function. This can be reversed by a process called deconvolution whereby a point spread function is separated from an image to estimate the underlying signal. The framework includes noise reduction and deconvolution algorithms. Methods of determining the point spread function, and subsequent deconvolution applied to prepared images and data will be demonstrated.

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MSc

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