

Master Thesis:

High-speed Super-resolution Imaging

You will be involved in the construction and further development of a fast parallel laser-scanning microscope that uses stimulated emission to overcome the abbe esolution limit and combines fast image acquisition with a large field of view (STED).

We want to image dynamic processes on a nano-meter scale and study biological organization and interactions in great detail. This approach to cellular biology comes with a great deal of physical and technical challenges and is still under active development.

The process of stimulated emission requires intense light exposure to provide a resolution enhancement and the main boundaries of this approach are mainly due to photo-toxicity and bleaching of fluorescent probes due to high laser powers. In this experiment we aim to incorporate mechanisms that will tackle this problem and enable live-cell videos in nano-meter resolution.

Your work will involve optics, hardware development and software development. It will be an opportunity to participate in a state-of-the-art experiment and work on the frontier of biophysics.

If you are interested or have any questions, please write an e-mail to: [jens.michaelis@uni-ulm.de](mailto:jens.michaelis@uni-ulm.de)