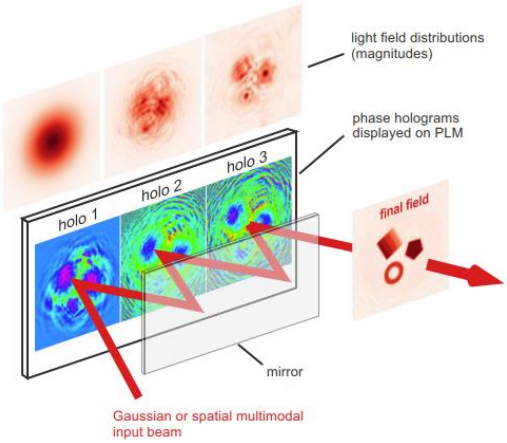
PhD position on dynamic light shaping for single molecule microscopy

MEDIZINISCHE UNIVERSITÄT INNSBRUCK

This is a full time PhD position at the **Institute of Biomedical Physics** at the Medical University of Innsbruck, in the work group of Univ. Prof. Alexander Jesacher. The project will be funded by the Austrian Science Fund (FWF) for 3.5 years.

The project is on the design and formation of optimal laser bleaching patterns to elucidate how proteins talk to each other on cell surfaces.

Many essential processes in our bodies depend on proteins clustering on cell membranes. Yet even with advanced microscopes, it's nearly impossible to follow these interactions at the level of single molecules. Our project develops a new method called **Single Molecule Imaging upon Patterned Photobleaching (SMIPP)**. By shaping laser light with dynamic holograms, we can selectively "switch off" tiny regions of the cell surface and watch how individual proteins move back in. Repeating this with different light patterns gives us unprecedented insights into how proteins organise and interact. This work combines microscopy and holography expertise from Innsbruck with biophysical research from Vienna (collaboration with Prof. Gerhard Schütz from the TU Wien).



Qualifications

- MSc. in Experimental Physics with focus on Optics & Photonics
- Proficiency in programming languages such as Python or MATLAB
- Experience with experimental lab work and data analysis
- Excellent problem-solving and analytical skills
- Strong written and verbal communication skills
- Ability to work independently on problems within a team

Interested? Please contact alexander.jesacher@i-med.ac.at