

Master's Thesis:

Integration of an Spatial Light Modulator into a 6-Axis Ultrashort Pulse Laser System

Your Mission:

Ultrashort pulse lasers enable highly precise material processing. By integrating a Spatial Light Modulator (SLM), the laser beam can be tailored to different processing tasks through controlled phase modulation, significantly enhancing process flexibility. In this master's thesis, you will design, implement, and evaluate the integration of an SLM into the beam path of an existing 6-axis USP laser system. You will work at the interface of optical system design, laser technology, and experimental characterization.

Your tasks:

- Design and develop the optical beam path, including the integration of a Spatial Light Modulator (SLM) into an existing optical system
- Assemble the required optomechanical components
- Integrate, align, and commission the extended optical system
- Experimentally characterize the system with respect to beam quality, functionality, and overall performance
- Analyze and evaluate the experimental results and identify opportunities for further optimization

Your Qualifications:

- Currently enrolled in a Master's program in Photonics, Optical Technologies, or a related field
- Basic knowledge of optics, laser technology, or optical system design
- Initial experience in assembling and aligning optical systems is an advantage
- Ability to work independently in a structured and meticulous manner
- Strong analytical thinking, initiative, and enthusiasm for experimental research

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