

# Active stabilization of a Mach-Zehnder interferometer

*Electron and ion dynamics in molecules are studied on the (sub-)femtosecond time scale using pump-probe experiments. These experiments require a very stable interferometer which introduces the delay between the pump and the probe laser pulse. The aim of this project is to design, implement and test an active interferometer stabilization based on an interfering reference cw laser.*

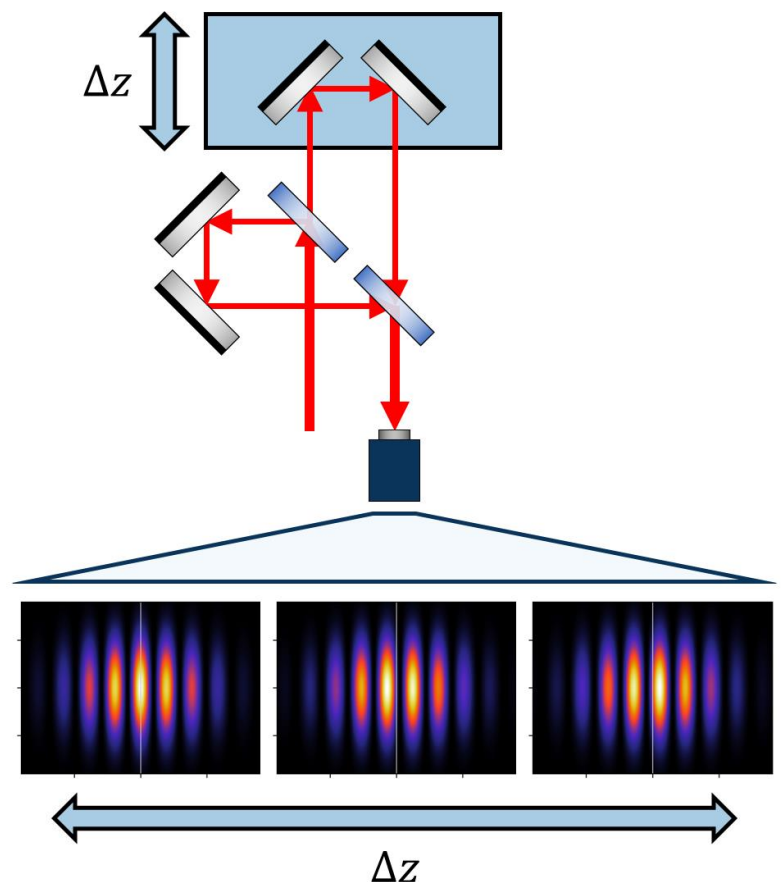
We are looking for highly motivated students with an aptitude for programming and problem-solving.

## You will:

- Strongly improve the precision of pump-probe experiments.
- Work in a state-of-the-art laser lab to build an active interferometer stabilization.
- Develop and test a feedback control loop in matlab/python to stabilize the interferometer.
- Learn how to design and align optical setups and to analyze your data.

## Your profile:

- Basic programming skills are expected.
- Creativity and pleasure in solving complex problems.
- A high degree of initiative and independence.
- A background in optics is beneficial.



**Contact:** Sebastian Hell (room no. 301A, Max-Wien-Platz 1, [sebastian.hell@uni-jena.de](mailto:sebastian.hell@uni-jena.de))