

Master / PhD thesis

Ultrafast nanoplasmonics and microscopy

Ultrashort femtosecond laser pulses are able to generate the strongest electrical fields achievable today easily reaching the field strength binding electrons to atoms. The released electrons from nanomaterials in such fields can in turn be utilized as sensitive probes of the nanoscale electromagnetic forces. Combining this approach with optical microscopy enables the probing of ultrafast nanoplasmonic dynamics in nanodevices, which show promise towards increasing the speed of electronics and becoming a key technology for ultrafast quantum computing.

Our team at the Laboratory for Attosecond Physics (LAP) at the Ludwig-Maximilians-Universität Munich and Max Planck Institute of Quantum Optics in Garching is currently looking for a motivated master or PhD student to join our research on ultrafast nanoplasmonics and microscopy. As part of the work, we are developing a novel ultrafast laser source in the mid-infrared with repetition rates reaching 1 MHz and pulse durations of only a few cycles.

The master / PhD student will help with both the laser development and the nanoplasmonics experiments using our new ultrafast microscope. The project is embedded in our larger effort of pushing the frontiers of attosecond nanophysics. Synergies also exist with a project, where nonlinear microscopy is applied on organic samples with the aim to develop imaging technology for the detection and treatment of early stages of cancer.

Experience in nonlinear optics, laser physics, strong field physics, attosecond physics, and medical physics can, depending on the project, be beneficial but are not required.

For more information, please visit our homepage at: <http://www.attosecondimaging.de>

If you are interested in joining our team, please contact: Prof. Dr. Matthias Kling,
E-mail: matthias.kling@lmu.de

