

Time-resolved three-dimensional imaging studies at the atto and femtosecond time scales

Atoms and molecules excited with short intense laser pulses are ionized by single or multiphoton processes. By using two laser pulses with a time delay we can study the temporal behavior of photoionization to specific electronic states, and the fragmentation of molecules can be probed in the time domain. Time-resolved laser photoionization experiments which provide access to the wave like nature of the particles in the system. The experimental method is a three-dimensional imaging technique using a time-of-flight spectroscopy with multiparticle position sensitive detection. The goal of the project is to understand the fundamental interaction between light and matter. This exciting nonlinear photoionization study is carried out in collaboration with the attosecond laser group at the Lund Laser Center.

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Previous diploma projects within this theme:

Majd Salman, **Autofocus for electrons**, 2011:
<http://www.lu.se/o.o.i.s?id=19464&postid=2018819>