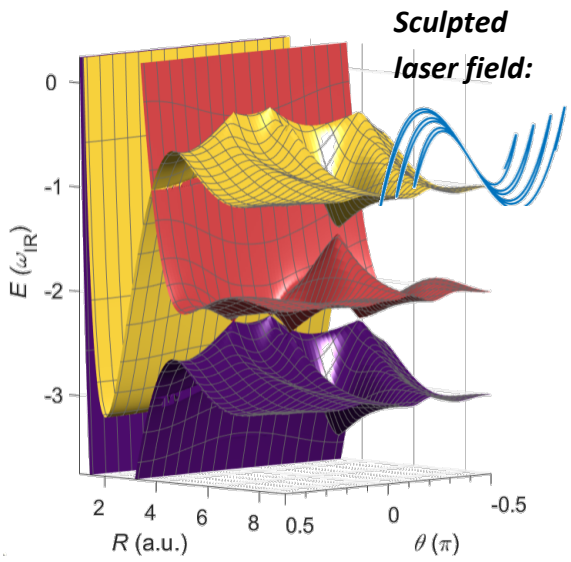
Master thesis

Molecular Movies Group (Dr. Kübel)
Chair of Non-linear Optics (Prof. Paulus)

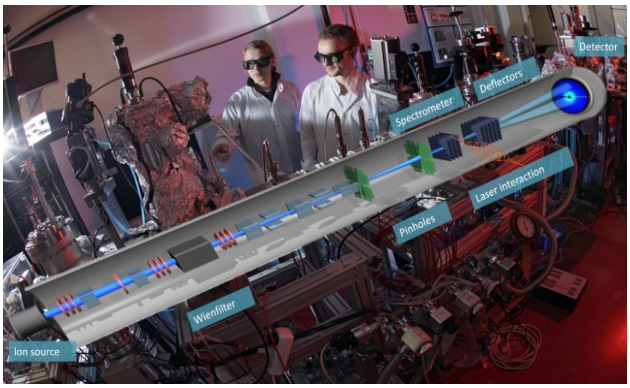
Light-induced molecular potentials



Light-induced potentials of the molecular hydrogen cation (H_2^+) in a

Using femtosecond laser pulses, one can manipulate the forces acting on the constituents of a molecule. This makes it possible to shape the potential energy landscape on which the nuclei of a molecule move and, thus, control chemical reactions.

This project will aim at creating new shapes of sculpted laser fields in order to explore routes to controlling simple chemical reactions. It will utilize a brand new high-repetition rate fiber laser. Data will be acquired with either of two coincidence apparatuses: an ion beam source (see below) with three-dimensional imaging detector or a brand-new COLTRIMS reaction microscope.



We are looking for highly motivated students with an aptitude for research. A background in non-linear optics, lasers, and/or atomic and molecular physics is beneficial. Basic programming skills are expected.

You will learn how to operate a state-of-the-art femtosecond fiber laser system, including the generation of sculpted laser fields by non-linear frequency conversion; and how to perform and analyze a coincidence experiment.

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