

# Physikalisches Kolloquium

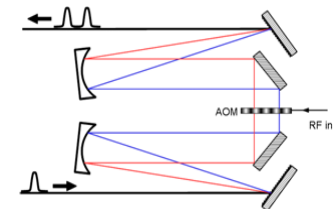
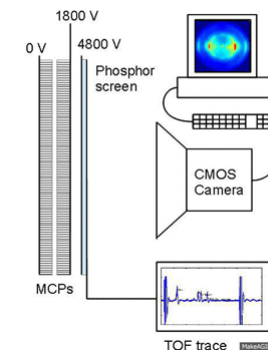
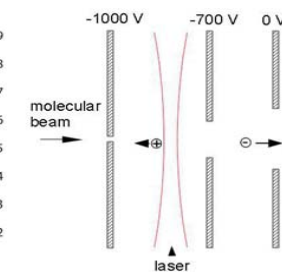
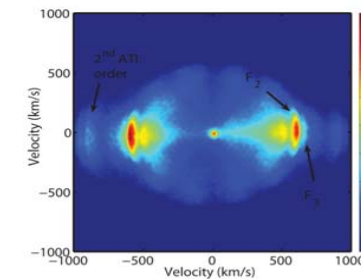
Thursday, 17.07.14, 17:00, HS 100  
Reception with coffee & cookies 16:45

Prof. Thomas Weinacht, Stony Brook University, New York

## *Strong Field Quantum Control: Talking to Molecules with Intense Ultrafast Laser Pulses*

### Abstract

Strong field molecular ionization and control play important roles in the study of ultrafast electron dynamics, both as the first step in attosecond pulse generation and in the launch of electron wave packets in atoms and molecules. However, there are many aspects of strong field ionization and control which are not understood, particularly for the case of polyatomic molecules, where multiple electrons can participate and nuclear motion complicates the dynamics. I will discuss studies of strong field molecular ionization with ultrafast laser pulses whose electric field as a function of time has been tailored using ultrafast pulse shaping techniques. Interpreting the pulse shape dependence of the ionization yield allows for insight into the electron dynamics during ionization. Velocity map imaging of the photoelectrons in coincidence with the fragment ions produced in the ionization process, and close collaboration with theory enables us to determine which states of the molecular cation are produced and examine the role of resonances as well as electron correlation. These are important steps toward characterizing electronic wave packets produced via strong field ionization and to understanding strong field ionization as a probe of molecular structure and dynamics.



All of you interested in physics are cordially invited!