136.021 Attosecond Physics
lecture 2014W, 2.0h, 3.0 ECTS

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location: Sem 138B (Freihaus, 7th floor red area, DC07A15)

With the advent of ultrashort light pulses with durations of less than 100 attoseconds (1as = 10^{-18}s) the direct observation and control of electronic motion in atoms, molecules, and solids has come into reach enabling a whole new field of research called attosecond physics. This lecture provides an introduction into the theoretical and experimental methods of attosecond physics, i.e., the study of ultrafast electronic dynamics.

Content:
Basic processes in the interaction of laser pulses with atoms and molecules, methods to solve the time-dependent Schrödinger equation for atoms and molecules in strong laser fields, introduction to ultrafast laser technology and nonlinear optics, creation and characterization of attosecond pulses, applications of attosecond pulses and key experiments.