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Attosecond dynamics in ionization of atoms and molecules¹

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Recent advances in laser technology regarding the development of atto- and sub-attosecond laser pulses provide the opportunity to study the temporal dynamics of electrons in basic quantum processes, such as photoionization and strong-field ionization of atoms and molecules. Based on the results of numerical simulations and theoretical analysis a few examples of the resolution of attosecond dynamics will be discussed. These include the laser-driven non-adiabatic dynamics of an electron in a chemical bond of a molecule leading to ionization and dissociation, the exchange of energy between electrons and nuclei as well as among electrons following photon absorption from the field and the temporal resolution of a photoionization process.

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