Research in the Theory Department of the MPSD

Dr. Heiko Appel

2h

Up to 1 (in combination with all lectures in Course 1a as well as Course 1b and Course 1c)

The Theory Department of the Max Planck Institute for the Structure and Dynamics of Matter investigates the electronic and structural properties of advanced materials, nanostructures and biomolecules, and is placing a focus on developing novel theoretical tools and computational codes to investigate and control the electronic response of such systems to arbitrary time-dependent external electromagnetic (quantum) fields. The Theory Department aims to providing a detailed, efficient, and at the same time accurate microscopic approach for the ab-initio description and control of the dynamics of decoherence and dissipation in quantum many-body systems. Within recent efforts, the Theory Department seeks to characterize new non-equilibrium states of matter.

The present lecture provides an introduction to time-dependent density functional theory, which is at the heart of most of the work in the department. In addition different spectroscopic aspects will be discussed which provide a direct link to experiment.

Notice: The program is subject to change.