Physikalisches Institut
Fakultät für Mathematik und Physik
Albert-Ludwigs-Universität Freiburg

IRTG-Seminar

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“Dynamics on the Quantum Scale”

In theoretical soft matter physics the motion of large ensembles of nuclei is simulated. But if light is causing first a local, electronic response in the system, which in turn might affect the nuclear motion, then electron dynamics might be the necessary first step for computations.

Electron dynamics signifies a quantum mechanical calculation in which the deterministic time-dependent Schrödinger equation is solved. I will review in this presentation the respective theory and show two quite orthogonal applications of electron dynamics from the field of quantum dots. One is directed towards larges systems and towards describing the electron transfer from a quantum dot, in this case graphene oxide, to a molecule of its aqueous environment. The other is an energy transfer process, the inter-Coulombic decay, among two neighboring quantum dots, in which excitation energy of one electron becomes available to ionize the other.

Tuesday, November 20, 2018; 6:00 p.m., HS II
Physics high rise, Hermann-Herder-Str. 3

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