



PADERBORN PHOTONIC LECTURE

WEDNESDAY, 20TH JULY 2022

RUIXIN ZUO

UPB | LECTURE HALL A.1 | 15:30H

Tracking tunnel dynamics in solids using high-harmonic spectroscopy

The generation of high-harmonic radiation is an ultrafast phenomenon initiated by tunneling excitation. It carries information about what the electron has experienced in the classically forbidden region and thereby facilitates the characterization of the tunneling dynamics. In this talk, I will show that in the three-step model of high-harmonic radiation (HHG) from crystalline solids, the conventional classical trajectory analysis which ignores the properties of electron emerging from the barrier usually fails at high intensities and longer wavelength. In addition, I will demonstrate that adiabaticity of the tunneling motion leads to corrections of the initial conditions of the classical propagation in the electron-hole recollision model and which enables us to precisely predict the temporal profile of the emission. Experimentally, the tunneling dynamics can be probed by two-color HHG spectroscopy.



Ruixin Zuo