

Plenarvortrag

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Ultra-fast Dynamic Imaging with Intense Lasers — ●JONATHAN MARANGOS — Imperial College London

Recent progress towards imaging the structure and dynamics of small molecules using the high order harmonics emitted when a molecule experiences an intense laser field is reported. We illustrate that the essence of high harmonic emission is contained in the recombination amplitude between the continuum portion of the electronic wavefunction, that is formed through field ionization and which is accelerated and driven back to recollide in the laser field, and the bound electronic

state. We briefly review some recent experimental and theoretical work dealing with high harmonic generation (HHG) in molecules and related techniques. Particular attention is paid to two types of experiment recently performed in our group. The first of these types of experiment is the measurement of signatures of molecular electronic structure using HHG from molecules with a fixed orientation in space. The second is the use of HHG to track extremely fast proton rearrangement following ionization in light molecules, using the intrinsic temporal variation of the recolliding electron energy to extract these dynamics from measurements of the high harmonics.