

Dynamic Pathways in Multidimensional Landscapes



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Multidimensional Landscapes

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New insights into ultrafast molecular dynamics with femtosecond pulses of a higher harmonic source

Content :

The current status of project P2 “Ultrafast charge transfer and isomerization dynamics of molecules” will be presented. The goal is to resolve the early-stage dynamics of energy relaxation concomitant with structural rearrangements in $\text{Fe}(\text{CO})_5$ in the gas phase. Photoexcitation generates a metal-to-ligand charge transfer in $\text{Fe}(\text{CO})_5$ that launches a sequence of processes on time scales of 20-30 fs before the molecule dissociates after approximately 150 fs. The aim is to resolve these early steps with pump-probe valence-band photoelectron spectroscopy with femtosecond VUV pulses from high-order harmonic generation. The table-top source for this and an outline of the principles of higher harmonic generation and of the $\text{Fe}(\text{CO})_5$ experiments will be presented.

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