

16th July 2025 - 2:00 p.m.
CFEL-bldg. 99, seminar room I

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Unraveling interference effects in the post-ionization non-adiabatic dynamics of the fluorobenzene molecule

Controlling matter with light is the exciting idea that already led to the development of the ever-expanding field of photochemistry. However, with the emergence of ultrashort attosecond light pulses [1,2], hope was born to go beyond the possibilities of standard photochemistry. Indeed, thanks to their large energy bandwidth, such pulse can coherently populate multiple electronic states. Exploiting interferences between the components of such wave packet to steer chemical reactivity is the core prospect of attochemistry [3,4].

I will demonstrate that the composition of the cationic wavepacket populated upon ionization of fluorobenzene controls the subsequent dynamics of the molecule [5]. My primary focus will be the identification of the quantum interferences that drive the dynamics and of their signatures in the autocorrelation function, a property accessible through high harmonic spectroscopy. I will also highlight the challenges that one faces when simulating such processes [6].

