

IMPACT SPECTROSCOPY AND CHRONOSCOPY OF GAS PHASE ATOMS, MOLECULES AND FULLERENES

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Abstract. Studies of scattering and ionization by the positron/electron and photon impact on matters, the spectroscopy, involve a variety of structures in the reaction cross section as a function of the momentum transfer. These structures originate from hosts of resonant and diffraction processes which happen in ultrafast timescale in attoseconds (as). In fact, the resulting time delay or advancement of the product creation inherits structures but with additional nuances (Figure 1), the study of which is called the chronoscopy. I will present selected results of our computational research across these topics (see Madjet et al. 2021, Shaik et al. 2023, Aiswarya et al. 2024). Support from the US NSF is acknowledged.

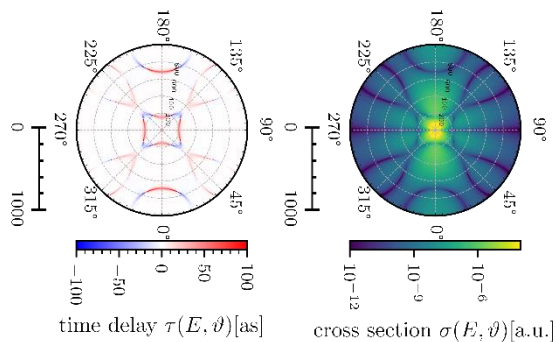


Figure 1: Delay and cross section diffractograms for the photoionization of $C_8F_8^-$.

References

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Madjet, M. E, Ali, E.....Chakraborty, H. S : 2021, *Phys. Rev. Lett.*, **126**, [183002](#).
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