

Pump-probe schemes for attosecond molecular dynamics

Fernando Martín

Universidad Autónoma de Madrid, Spain

Sudden ionization of a molecule by an attosecond pulse is followed by charge redistribution on a time scale from a few-femtoseconds down to hundreds attoseconds, which is usually followed by fragmentation of the remaining molecular cation. This dynamics is the consequence of the coherent superposition of electronic continua associated with the ionization thresholds reached by the broadband attosecond pulse. Thus, a correct theoretical description of the time evolution of the ensuing wave packet requires the knowledge of the actual ionization amplitudes associated with all open ionization channels, as well as of the ensuing nuclear dynamics, a real challenge for large and medium-size molecules. In this talk, I will present the results of the first calculations of this kind, which have allowed us to interpret ultrafast electron dynamics observed in attosecond pump-probe experiments performed on N₂ and the amino acid phenylalanine

References

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