

Dynamic spectroscopy of atoms and molecules utilizing VUV and X-FELs

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The possibility of following in detail the dynamics of atomic and molecular species interacting with electromagnetic radiation in the vacuum ultraviolet and X-ray spectral region on their inherent, short time scale (femtoseconds to attoseconds) is a sought-after goal in Physics, Chemistry and Biology. By achieving this, it would be possible to study, for instance, the first stages of photochemical reactions, and identify the intermediate steps of the system evolution, resulting in molecular action movies.

In this presentation, I will review the innovative spectroscopy tools, which we constantly develop and adapt to Free Electron Laser experiments, and give some examples of the results obtained. I will also give an outlook of what is next on our agenda.