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Titre de la thèse :

Ultrafast dynamics of double-core-hole states

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Ultrafast nuclear motion happening in double-core-hole (DCH) states of ionized molecules will be studied during this thesis. Selective production of DCH states by sequential two-photon absorption will be examined. Large nuclear motion during the lifetime of the DCH states is expected. The signature of this dynamical effect will be measured by a fine tuning of the photon energy around the resonance, possible thanks to the recently commissioned monochromator at EuXFEL. It will allow manipulating the effective DCH lifetime and the nuclear motion. Two-site (TS) and single-site (SS) hypersatellite Auger decay (KVV1) will be measured in coincidence using a magnetic bottle electron spectrometer. This spectrometer will be commissioned at SOLEIL, where high-resolution reference spectra of the Auger decay patterns can be recorded.

Mots clés : XFEL, Double Core Hole states, electron spectroscopy

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