Contribution submission to the conference Erlangen 2018

Investigating Resonant Two-Color Photoionization Processes in Atoms and Molecules — •Rene Wagner, Alexander Achner, Thomas Baumann, Rebecca Boll, Alberto De Fanis, Sascha Deinert, Patrik Grychtol, Markus Ilchen, Tommaso Mazza, Jacobo Montano, Yevheniy Ovcharenko, Nils Rennhack, Pawel Ziolkowski, and Michael Meyer — Small Quantum System Group, European XFEL GmbH, Holzkoppel 4, 22869 Schenefeld

We present an experimental tabletop set-up dedicated to investigations of ultrafast processes in atoms and molecules combining near infrared (NIR) and extreme ultraviolet (EUV) radiation pulses. Our experiments will focus on the study of electron correlations in highly excited auto-ionizing resonances by different pump-probe techniques aiming to obtain novel insights into atomic and molecular dynamics. For this purpose, a femtosecond laser driven EUV source based on high harmonic generation (HHG) is employed in combination with a pulsed molecular jet, a delay-line based velocity map imaging (VMI) detector and a time-of-flight (TOF) spectrometer. We are going to show first results quantifying the performance of our experimental apparatus having captured and analysed the angular electron distributions of the auto- and cross-correlations with our ultrafast NIR and EUV pulses in atomic argon, respectively.

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