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Two- and Three-Photon Double Ionization of Lithium at FLASH ALEXANDER DORN, MICHAEL SCHURICKE, GOPI VEERAVALLI, GAN-JUN ZHU, CHRISTIAN DORNES, KATHARINA JOACHIMSMEYER, JOACHIM ULLRICH, Max Planck Institute for Nuclear Physics, Heidelberg, Germany — With the advent of free electron lasers studies on non-linear few-photon - few-electron reactions in the VUV and EUV regime have become possible. Here we investigate how two or three photons interact with the three electrons in lithium. Therefore, a dedicated apparatus was built combining a many-particle momentum spectrometer (reaction microscope, REMI) and a cold and dense lithium gas target which is provided by magneto-optically trap (MOT). The recoil ion momentum distributions obtained reveal detailed information on the different single and multiple ionization reaction pathways. During beam times at the Hamburg Free electron Laser FLASH a number of resonant and non-resonant, basic two- and three-photon, single and double ionization reactions have been investigated at different photon energies.

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