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Photoionization microscopy: experiment and theory CHRISTIAN BORDAS, CNRS & University Lyon 1, France, MAHDI HARB, University Lyon 1, France, SAMUEL COHEN, University of Ioannina, Greece, FRANCK LEPINE, CNRS & University Lyon 1, France, FRANCIS ROBICHEAUX, Auburn University, MARC J.J. VRAKKING, FOM Amsterdam, NL — Photoelectron imaging spectroscopy has emerged as a powerful tool capable of giving increasing insight into microscopic properties of matter. In standard velocity map imaging the recorded image allows a direct reconstruction of the initial 3D velocity distribution of the electrons. When this technique is improved to study meV electrons quantum interferences become visible in the image. When ionization of hydrogenic atoms occurs via a Stark resonance in the continuum, the observed image represents a direct macroscopic projection of the bound component of the electronic wavefunction. This fully justifies the designation of photoionization microscope given to this experiment. Experimental results on xenon and lithium atoms will be presented at the conference. More specifically the high sensitivity to the resonant character of the excitation in lithium, as opposed to xenon, will be illustrated and discussed within the framework of wavepacket propagation calculations.

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