

Abstract Submitted
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Multi-Dimensional Momentum Images of Electron-Impact Induced Ionization of Atoms and Molecules J. ULLRICH, A. DORN, M. DUERR, N. HAAG, CH. DIMOPOULOU, Max-Planck-Institut für Kernphysik, 69117 Saupfercheckweg 1, Heidelberg, Germany — A dedicated Reaction Microscope was developed that enables to measure the complete momentum vectors of electrons and ions emitted in ionizing collisions of electrons with atoms and molecules. Realizing a special geometrical design we are able to access very low projectile energies, to detect the scattered projectile electron in addition to all target fragments, and to observe ionic fragments from molecular dissociation. Selected recent results will be highlighted: For single ionization of He by 1 keV and 105 eV electrons the 3D electron emission patterns show structures outside the scattering plane, so far not been observed in conventional experiments.¹ Studies for double ionization of He close to the threshold provide detailed insight into the behaviour of four strongly interacting continuum particles. Finally, pioneering (e,2e) results for single ionization of oriented H₂ molecules are presented.

¹M. Dürr et al., Phys. Rev. Lett. 96, 243202 (2006)

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