Contribution submission to the conference Dresden 2011

Novel light from high-order harmonic generation manipulated by XUV light — •Christian Buth[1], Markus C. Kohler[1], Joachim Ullrich[1,2], and Christoph H. Keitel[1] — [1]Max-Planck-Institut für Kernphysik, Saupfercheckweg 1, 69117 Heidelberg, Germany — [2]Max-Planck Advanced Study Group at CFEL, 22607 Hamburg, Germany

We theoretically combine high harmonic generation (HHG) with resonant XUV excitation of a core electron into the transient valence vacancy that is created in the course of the HHG process: the first electron performs a HHG three-step process whereas, the second electron Rabi flops between the core and the transient valence vacancy. The modified HHG spectrum due to recombination with the valence and the core is determined and analyzed for krypton on the $3d \rightarrow 4p$ resonance in the ion in the light of the Free Electron Laser in Hamburg (FLASH). Our prediction offers novel prospects for nonlinear XUV physics, attosecond x rays, and tomographic imaging of core orbitals. — arXiv:1012.4930

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