Abstract Submitted
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Multi-photon two-color ionization of atoms and ions by femtosecond pulses.[1] NICOLAS DOUGUET, JOEL VENZKE, KLAUS BARTSCHAT, Drake University, ALEXEI N. GRUM-GRZHIMAILO, ELENA GRYZLOVA, EKATERINA STAROSELSKAYA, Moscow State University — We consider several processes related to two-color ionization induced by femtosecond pulses. Using the first and second harmonics of an XUV pulse, one can produce two-pathway interferences, which directly influence the photoelectron angular distribution. We discuss the process with linearly as well as circularly polarized light of various mutual orientations and helicities. Furthermore, combining the XUV light with an optical laser, one can generate sidebands around the main photoelectron line and study a variety of asymmetries in photoelectron emission and their dependencies on the absolute and relative intensities, time delay, and polarization of the light. Calculations for atomic hydrogen, He^+(1s) generated by an initial XUV pulse, and Ne(2p) were performed by directly solving the time-dependent Schrödinger equation as well as employing second-order nonstationary perturbation theory. Our predictions serve as guidelines for experiments at various X-ray Free-Electron Laser facilities, such as LCLS, FERMI, FLASH, and the European XFEL [1,2].
[1] K. Prince *et al.*, Nature Photonics (2016), in press
[2] K. Prince, G. Sansone, and M. Meyer (2016), private communication

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