Abstract Submitted
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Nuclear Recoil Cross Sections from Time-dependent Studies of Two-Photon Double Ionization of Helium[1] DAN H. HORNER, Los Alamos National Laboratory, THOMAS N. RESCIGNO, Lawrence Berkeley National Laboratory, C. WILLIAM MCCURDY, U. C. Davis — In preparation for benchmark comparisons with new experimental data from experiments at FLASH, we use accurate triple differential cross sections (TDCS), extracted from non-perturbative solutions of the time-dependent Schrödinger equation, to compute the nuclear recoil cross section at energies a few electron volts below the threshold for sequential double ionization. The nuclear recoil cross sections produced by two-photon double ionization of helium reveal aspects of the underlying TDCS used in their computation – even though the recoil of the He^{++} nucleus reflects an integration over all electron ejection directions and energy sharings. In this range of photon energies, the nuclear recoil patterns prefigure some important aspects of the sequential mechanism that dominates at higher energies, above the sequential ionization threshold.

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