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Photoelectron Holography: Exploration of the Multiphoton Ionization and Multiple Rescattering in Intense Laser Fields[1] CHON-TENG CHU, PENG-CHENG LI, National Taiwan University, Center for Quantum Science and Engineering, Taiwan, SHIH-I. CHU, University of Kansas — We perform a fully ab initio investigation of the multiphoton ionization (MPI) and electron multiple rescattering dynamics of atomic H driven by intense ultrashort mid-IR laser fields. The time-dependent Schrödinger equation is solved accurately and efficiently by means of the time-dependent generalized pseudospectral method (TDGPS) in the Kramers-Henneberger (KH) frame. We use the semiclassical approach to analyze and visualize all the trajectories during the atom-laser interaction, unveiling the multiple e-parent ion rescattering processes. In this way, we can identify the dominant behaviors of different parts of photoelectron holography to a particular number of times of the electron's revisits to its parent ion.

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