

Abstract Submitted
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Effect of electron correlation on high harmonic generation of helium atoms in intense laser fields¹ XIAOXU GUAN, Department of Chemistry, University of Kansas, XIAO-MIN TONG, University of Tsukuba, Japan, SHIH-I CHU, Department of Chemistry, University of Kansas — We present a time-dependent generalized pseudospectral (TDGPS) approach in *hyperspherical coordinates* for fully *ab initio* nonperturbative and high-precision treatment of multiphoton electron-correlated dynamics of atomic systems in intense laser fields [1]. The procedure is applied to the investigation of high-order-harmonic generation (HHG) of helium atoms in ultrashort laser pulses at a KrF wavelength of 248.6 nm. The 6D coupled hyperspherical-adiabatic-channel equations are discretized and solved efficiently and accurately by means of the TDGPS method. The effects of electron correlation and doubly excited states on HHG are explored in detail. A HHG peak with Fano line profile is identified which can be attributed to a broad resonance of doubly excited states. Comparison of the HHG spectra of the *ab initio* two-electron and the single- active-electron model calculations is also presented. [1] X. Guan, X.-M. Tong, and S. I. Chu, Phys. Rev. A (in press).

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