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Strong-field physics using TDCIS[1] PHAY HO, Argonne National Laboratory, LOREN GREENMAN, EUGENE KAMARCHIK, DAVID MAZZIOTTI, University of Chicago, ROBIN SANTRA, Argonne National Laboratory and University of Chicago — We present an implementation of the time-dependent configuration interaction singles (TDCIS) method for treating atomic strong-field processes. In order to remove the photoelectron wave packet at the end of the spatial grid, we add to the nonrelativistic many-electron Hamiltonian a radial complex absorbing potential (CAP). We determine orbitals by diagonalizing the sum of the Fock operator and the CAP using a radial pseudo-spectral grid combined with spherical harmonics. The CAP is chosen such that the occupied orbitals in the Hartree-Fock ground state remain unaffected. The virtual orbitals satisfy non-standard orthogonality relations, which affects the calculation of the dipole and Coulomb matrix elements required. We propagate the TDCIS equations of motion by second-order finite differencing in the interaction picture and transformation to the Schrödinger picture.

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