A new time-dependent ab-initio close-coupling program for atomic ionization\textsuperscript{1} LUCA ARGENTI, Dept. Physics and CREOL, Univ of Central Florida, USA, TOR KJELLSSON LINDBLOM, Stockholm University, Sweden, COLEMAN CARIKER, Univ. Central Florida, USA, THOMAS CARETTE, EVA LINDROTH, Stockholm University, Sweden — We present a time-dependent program to compute the photoionization of polyelectronic atoms by arbitrary light pulses. The program merges the capabilities of the Stock B-spline close-coupling structure code [1] with those of the time-dependent two-active-electron code described in [2]. It builds a close-coupling space in which multi-reference parent ions [3] are augmented with a spherical B-spline basis up to an assigned radius $R$. The initial state is evolved under the influence of external light pulses by solving the time-dependent Schroedinger equation with a second-order split-exponential propagator. Reflection at the box boundary is prevented by channel-specific complex-absorbers. The channel- and energy-resolved photoelectron spectrum is computed by projecting the wavefunction on a complete set of scattering states, after the external pulses are over. The program predictions are benchmarked against test simulations in helium [2], and applied to selected attosecond pump-probe simulations for the argon atom.

\textsuperscript{1} NSF Grant No. 1607588.


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Date submitted: 07 Feb 2018

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