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Time-dependent local density approximation (TDLDA) studies of quantum phases and time delays in bound-continuum transitions of Kr¹ MAIA MAGRAKVELIDZE, Northwest Missouri State University, GOPAL DIXIT, MBI, Berlin, Germany, MOHAMED MADJET, QEERI, Doha, Qatar, HIMADRI CHAKRABORTY, Northwest Missouri State University — We calculate the phases of photoionization and radiative recombination dipole matrix elements of valence and subvalent levels of atomic Kr. The group delays along these transition channels are determined in the well-known Wigner-Smith approach, involving the energy derivative of the phases. A framework of time-dependent local density approximation is employed that utilizes the Leeuwen and Baerends exchange-correlation functional to produce accurate asymptotic behavior of ground and continuum wavefunctions [1]. Effects of dynamical correlations are found to significantly influence the phase and delay properties over most part of the spectra, particularly, in the vicinity of various Feshbach and shape resonances, as well as near the Cooper minima. Analysis of the TDLDA-derived complex induced potential reveals important insights.

 G. Dixit, H.S. Chakraborty, and M.E. Madjet, Phys. Rev. Lett.111, 203003, (2013).

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