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Probing electron dynamics in the double photoionization process of two-valence electron systems with UV and soft X-ray free-electron laser pulses SAMIRA BARMAKI, MARC-ANDRE ALBERT, STEPHANE LAULAN, Universite de Moncton — We investigate the double photoionization process in the X = He, Li^+, C^{4+}, Be, B^+ and Ne^{6+} targets triggered by the absorption of a single photon of energy in the extreme UV/soft X-ray spectral region. Our theoretical method consists in solving the time-dependent Schrödinger equation with a spectral method of configuration interaction type [1], [2]. The probe of the electron dynamics in the different systems shows that the way the outer electrons will leave their parent X system is systematically dictated by the amount of excess photon energy available to them relative to the ionization potential of the corresponding X^+ ion [3].

[1]S. Barmaki et al., **J. Phys. B** 51, 105002 (2018)
[2]S. Barmaki et al., **Phys. Rev. A** 89, 063406 (2014)
[3]S. Barmaki et al., **Chem. Phys.** 517, 24 (2019)

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