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**Effects of electron correlation on the time-delay in photoionization of atomic beryllium** LARS BOJER MADSEN, JUAN OMISTE, WEN-LIANG LI, Department of Physics and Astronomy, Aarhus University — We report on the effects of electron correlation on the relative time-delay in photoionization of atomic beryllium in the channels $\mathrm{Be}[(1s^2 2s^2)\ {}^1\mathrm{S}^e] \rightarrow \mathrm{Be}^+[(1s^2 2s)\ {}^2\mathrm{S}^e] + e^-$ ($p$ electron), and $\mathrm{Be}[(1s^2 2s^2)\ {}^1\mathrm{S}^e] \rightarrow \mathrm{Be}^+[(1s^2 2p)\ {}^2\mathrm{P}^o] + e^-$ ($s$ or $d$ electron). We use our recent three-dimensional implementation of the time-dependent restricted-active-space self-consistent-field method and study the changes in the value obtained for the time-delay when including more and more correlation. We find that the mean-field, time-dependent Hartree-Fock theory does not account accurately for the time-delay. A larger active orbital space is needed. We find that the relative time-delay between ionization into $\mathrm{Be}^+[(1s^2 2s)\ {}^2\mathrm{S}^e]$ and $\mathrm{Be}^+[(1s^2 2p)\ {}^2\mathrm{P}^o]$ is around 7-8 attoseconds.

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