

Abstract Submitted
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Exchange effects on time-resolved photoemission¹ ZAIN KHAN,
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CREOL, University of Central Florida — The $1s2s$ singlet and triplet metastable
states of the helium atom, which have remarkably long lifetimes, can be conveniently
generated in a helium gas sample by discharge currents. In this work, we study
theoretically the effect of exchange parity on the time-resolved photoionization of the
atom from these two metastable states. In particular, we compare the non-resonant
photoemission delays to the $1s\varepsilon_\ell$ and $2\ell\varepsilon_{\ell'}$ channels, as well as the resonant pump-
probe ionization to the $2\ell\varepsilon_{\ell'}$ channels, mediated by the autoionizing doubly-excited
states that converge to the $2s/2p$ He^+ threshold.

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