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Second-order calculations of the transfer-ionization process: multiple differential cross sections ALEXANDER GODUNOV, Old Dominion University, Norfolk, VA, COLM T. WHELAN, Old Dominion University, Norfolk VA, H.R.J. WALTERS, The Queen's University of Belfast, Belfast, UK — In a recent set of papers we considered the transfer ionization process:

$$p + He \rightarrow H^0 + He^{2+} + e^-$$

in different geometries where the collision fragments were detected in coincidence. We demonstrated that the triple differential cross section was sensitive to both radial and angular correlation in the target. The theoretical predictions have been confirmed by experiment. Our model was a first order one in the proton-helium interaction. In this work we extend the previous model to the 2^{nd} order in the projectile target interaction. The result of our calculations demonstrate that the 2^{nd} order effects do not destroy the effects of angular and radial correlation in the target atom for the kinematics and dynamics explored in the previous papers. We present results in both the first order and second order model. The theoretical results are in sensible agreement with the latest experimental data.

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