Abstract Submitted
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Vortices for K-shell ionization of carbon by electron impact[1] S.J. WARD, University of North Texas, J.H. MACEK, University of Tennessee — Using the Coulomb-Born approximation [1], we obtained a deep minimum in the TDCS for K-shell ionization of carbon by electron impact [2,3]. The minimum is due to a vortex in the velocity field [2,3]. We considered the electron to be ejected in the scattering plane, which we took to be the xz-plane. The minimum was obtained for the kinematics of an incident energy $E_i = 1801.2\,eV$, scattering angle $\theta_f = 4^\circ$, energy of ejected electron $E_k = 5.5\,eV$, and angle of the ejected electron $\theta_k = 239^\circ$. We analyzed the importance of various multipole components in an expansion of the Coulomb-Born T-matrix [1,3]. We also considered the electron ejected out of the scattering plane for $E_i = 1801.2\,eV$ and $\theta_f = 4^\circ$ and located the positions of vortices for small but nonzero values of k_y, the $y-$component of the momentum of the ejected electron [2]. We constructed the vortex line for the kinematics of $E_i = 1801.2\,eV$ and $\theta_f = 4^\circ$.

[1] J. Botero and J. H. Macek, Phys. Rev. A **45**, 154 (1992).
[2] S. J. Ward and J. H. Macek, http://meetings.aps.org/link/BAPS.2011.DAMOP.Q1.63.
[3] S. J. Ward and J. H. Macek, Bull. Am. Phys. Soc. **58**, no. 6, p. 61 (2013), http://meetings.aps.org/link/BAPS.2013.GEC.HW1.19.

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