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Deep minimum in the Coulomb-Born TDCS for inner-shell ionization of carbon by electron impact[1] S.J. WARD, University of North Texas, J.H. MACEK, University of Tennessee — Recently, a minimum in the TDCS of electron impact ionization of helium has been explained in terms of a vortex [1]. We have determined the kinematics to obtain a deep minimum due to a vortex in the TDCS for K shell ionization of carbon by electron impact using the Coulomb-Born (CB1) approximation [3]. The deep minimum occurs at an angle of the ejected electron of 239° for an incident energy of $1801.2eV$, a scattering angle of 4°, and energy of the ejected electron of $5.5eV$. At the angle of the minimum, both the real and imaginary parts of the T-matrix are zero. The integral of the velocity field around a closed path encircling the vortex position is 2π [2]. Following the treatment of Ref. [3], we decomposed both the Born (B1) and the CB1 T-matrix into their multipole components [4]. The $\ell = 1$, $m = \pm 1$ CB1 multipole components are important in determining the shape of the CB1 angular distribution.

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S.J. Ward
University of North Texas

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