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Deep minima in the Coulomb-Born triply differential cross section for electron and positron ionization of hydrogen and helium[1] C. M. DEMARS, S. J. WARD, J. B. KENT, Univ of North Texas — Using the Coulomb-Born (CB1) and modified CB1 approximation we have obtained a deep minimum or minima in the triply differential cross section (TDCS) for e^--H, e^+-H, e^--He and e^+-He ionization [1,2]. At the position of a deep minimum, the CB1 transition matrix element is zero. Corresponding to a zero in the CB1 transition matrix element, there is a vortex in the velocity field associated with this element. Interestingly, we found, for the geometries and the kinematics that we considered, the velocity field rotates in the same direction for e^--H, e^+-H and e^--He ionization, but in an opposite direction for e^+-He ionization. For e^--He ionization, we varied the incident energy from 44.6 eV to 79.6 eV (in steps of 5 eV) and determined the polar and gun angles [3] for a deep minimum in the TDCS at each incident energy [1].

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