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Deep minimum in the triple differential cross sections for the electron-impact ionization of He[1] JAMES COLGAN, Los Alamos National Laboratory, JAMES FEAGIN, California State University Fullerton, MICHAEL PINDZOLA, Auburn University — We further explore the unusual deep minimum found in the triple differential cross sections for the electron-impact ionization of helium. This feature has been observed experimentally more than 15 years ago [1] and confirmed via close-coupling calculations [2]. A recent study [3] identified the minimum with a vortex in the two-electron continuum, and an analytic expansion of the electron pair about the vortex has recently been derived [4]. The imaging theorem [3] is invoked to compute the TDCS from the radial wavefunctions propagated in time via solution of the time-dependent Schrödinger equation for the electron helium system. This allows us to more easily visualize the portion of the wavefunction that contributes to the TDCS at the specific ejected electron angles where the deep minimum is observed. Interesting features in the radial wavefunction as a function of time are found, which appear to be consistent with the prediction [3] that a vortex in the two-electron wavefunction is responsible for the observed deep minimum. [1] A. J. Murray and F. H. Read, J. Phys. B **26**, L359 (1993). [2] J. Colgan et al, J. Phys. B. **42**, 171001 2009. [3] J. H. Macek, et al, Phys. Rev. Letts. **104**, 033201 (2010). [4] J. M. F Feagin, J. Phys. B **44**, 011001 (2011).

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