

Abstract Submitted
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Electron-helium laser-assisted free-free scattering for incident energies from 30 - 200 eV: effects of polarization direction¹ B.A. DEHARAK, Illinois Wesleyan University, BENJAMIN NOSARZEWSKI, Cornell University, MAHSA SIAVASHPOURI, N.L.S. MARTIN, University of Kentucky — We report on experiments that examine electron-helium scattering in the presence of an Nd:YAG laser field of 1.17 eV photons. At each incident electron energy (30, 60, and 200 eV), the laser polarization direction is varied within a plane perpendicular to the scattering plane. We compare our results with Kroll-Watson approximation (KWA)² calculations. Of particular interest is the case where the polarization is perpendicular to the scattering plane for which the KWA predicts vanishing cross section; other workers have found that the KWA tends to be inaccurate for those cases where it predicts small cross sections.³ However, the KWA describes our results within the experimental uncertainties.

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²N. M. Kroll and K. M. Watson, Phys. Rev. A 8, 804 (1973)

³M. O. Musa, A. MacDonald, L. Tidswell, J. Holmes, and B. Wallbank, J. Phys. B, 43 (17):175201, 2010

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