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Electron-helium free-free scattering in the presence of a laser field[1] B.A. DEHARAK, Illinois Wesleyan University, L. LADINO, N.L.S. MARTIN, University of Kentucky — We report a series of experiments that examine electron-helium scattering in the presence of an Nd:YAG laser field of 1.17 eV photons. The goal of these experiments is to span the range of incident electron energies from 50 eV to 350 eV, and compare the results to the Kroll-Watson approximation[2] (KWA) calculations. Effects of an intense laser field on the elastic scattering of electrons from argon were first reported by Andrick in 1976[3]. In general, KWA calculations have been adequate to describe experimental results where the photon energy is significantly less than the incident electron energy – a major exception being the case of small scattering angles where large discrepencies have been noted[4]. Our experiments test the KWA over a range of electron incident energies that has not been previously investigated.

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