

Abstract Submitted
for the DAMOP14 Meeting of
The American Physical Society

Laser assisted free-free scattering: a test of the Kroll-Watson approximation for different targets¹ B.A. DEHARAK, Illinois Wesleyan University, N.L.S. MARTIN, University of Kentucky — In previous work we reported on experiments that examined electron-helium scattering in the presence of an Nd:YAG laser field of 1.17 eV photons. We tested the Kroll-Watson approximation (KWA)² for one photon emission, over a range of incident electron energies 50 eV \rightarrow 350 eV at fixed laser polarization,³ and also the for the effect of varying the laser polarization direction within a plane perpendicular to the scattering plane.⁴ Both these experiments were in good agreement with the KWA. We are currently carrying out measurements of one, two, and three photon absorption, in three different targets, He, Ar, and N₂. The KWA predicts that the results should be target independent, since the approximation assumes negligible photon-target interaction. We will present the results of experiments carried out at different incident electron energies.

¹This work was supported by the National Science Foundation under grant No. PHY-0855040

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

³B. A. deHarak, L. Ladino, K. B. MacAdam and N. L. S. Martin, Phys. Rev. A **83**, 022706 (2011)

⁴<http://meetings.aps.org/link/BAPS.2013.DAMOP.D1.150>

B.A. deHarak
Illinois Wesleyan University

Date submitted: 28 Jan 2014

Electronic form version 1.4