Abstract Submitted
for the GEC19 Meeting of
The American Physical Society

Free-free experiments: dressed-atom effects during inelastic electron scattering[1] B.N. KIM, C.M. WEAVER, N.L.S. MARTIN, University of Kentucky, B.A. DEHARAK, Illinois Wesleyan University — Free-free experiments investigate the absorption or emission of radiation during the collision of charged particles with atoms and molecules. The first experimental observation of dressed-atom effects – due to the electric field of the laser – during the elastic scattering of electrons by Xe were reported by Morimoto *et al.*[2] Their results were compared with an analytical expression by Zon that contains the electric dipole polarizability α of the target.[3] We are investigating dressing effects for *inelastic* electron scattering in the presence of a Nd:YAG laser; specifically we are investigating electron-impact excitation of the lowest excited states of He and Ar. Zon's expression is not valid for inelastic scattering so we have developed an equivalent inelastic expression. We will give the results of a simple calculation for dressing effects for the excited states of He, and will give a progress report on our experiments.

[1]This work was supported by the National Science Foundation under grants Nos. PHY-1607140 (NLSM), PHY-1708108 (BAd)
[2]Y. Morimoto, R. Kanya, and K. Yamanouchi, Phys. Rev. Lett. **115**, 123201 (2015)
[3]B. A. Zon, Sov. Phys. JETP 46(1), 65 (1977)

Nicholas L S Martin
University of Kentucky

Date submitted: 04 Jun 2019 Electronic form version 1.4