Abstract Submitted
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**Out-of-plane $(e, 2e)$ measurements on He autoionizing levels using a novel electron gun**[1] C.M. WEAVER, N.L.S. MARTIN, University of Kentucky, B.A. DEHARAK, Illinois Wesleyan University, K. BARTSCHAT, Drake University — In previous work we reported preliminary out-of-scattering-plane $(e, 2e)$ measurements for helium $2\ell 2\ell'$ autoionizing levels at 150eV incident electron energy and scattering angle $39.2°$.[2] The results were presented as $(e, 2e)$ angular distributions energy-integrated over each level, and were compared with our previous experiments and theory at 488eV incident electron energy and scattering angle $20.5°$.[3] The geometry is the same in both cases: ejected electrons are detected in a plane that contains the momentum transfer direction and is perpendicular to the scattering plane, and the momentum transfer is 2.1 a.u. in both cases. It was found that both experiments gave the same angular distributions, but only if instrument function corrections were ignored for the 150eV experiment. We have now installed a new electron gun with a well controlled and narrow spatial profile. We will present new data with instrument function corrections applied.

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[2]http://meetings.aps.org/link/BAPS.2014.DAMOP.K1.55
[3]B.A. deHarak, K. Bartschat, and N.L.S. Martin, Phys. Rev. Lett. **100**, 063201 (2008)

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