Abstract Submitted
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Electron Emission and Angular Anisotropy following the Beta Decay of Helium-6[1] EVA SCHULHOFF, AARON BONDY, GORDON DRAKE, University of Windsor — Probabilities for atomic electron excitation (shake-up) and ionization (shake-off) are studied following the beta-decay process $^6\mathrm{He} \rightarrow {}^6\mathrm{Li}^+ + \mathrm{e}^- + \bar{\nu}_e$, and in particular, recoil corrections to the shake-off probability are calculated within the sudden approximation. A pseudostate expansion method together with Stieltjes imaging is used to represent the complete two-electron spectrum of final $^6\mathrm{Li}^+$, $^6\mathrm{Li}^{++}$, and $^6\mathrm{Li}^{3+}$ states. Previous results [1] for the $1s2s\ ^3S_1$ state of ^{6}He as the initial state are extended to include the $1s2p\ ^3P$ state, and rotational anisotropies in the electron emission spectrum are discussed. A variety of sum rules, including a newly derived TRK oscillator strength sum rule for dipole recoil terms, provides tight constraints on the accuracy of the results. The results are compared with recent experiments [2].

[1] E. E. Schulhoff and G. W. F. Drake, Phys. Rev. A **92**, R050701 (2015).
[2] R. Hong et al., Phys. Rev. A **96**, 053411 (2017).

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Gordon W F Drake
University of Windsor

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