

Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Electron shake-off and recoil following ${}^6\text{He}$ beta decay¹ GORDON W.F. DRAKE, EVA SCHULHOFF, University of Windsor — When the helium isotope ${}^6\text{He}$ undergoes beta decay in the process ${}^6\text{He} \rightarrow {}^6\text{Li} + e^- + \bar{\nu}$, the atomic electrons suddenly find themselves in a ${}^6\text{Li}^+$ environment. The electrons subsequently redistribute themselves over all possible states of the ${}^6\text{Li}^+$ ion, including the continuum leading to ${}^6\text{Li}^{++}$ and ${}^6\text{Li}^{3+}$. There is currently considerable interest in studying the recoil ions in connection with experiments to look for evidence of new physics as revealed by angular correlations between the electron and the antineutrino [1]. We will present calculations employing Stieltjes imaging techniques in Hylleraas coordinates to study the probabilities for the shake-up and shake-off mechanisms, and especially the additional recoil accompanying the emission of the shake-off electrons.

[1] C. Couratin et al., Phys. rev. Lett. **108** 243201 (2012).

¹Research supported by the Natural Sciences and Engineering Research Council of Canada

Gordon Drake
University of Windsor

Date submitted: 14 Nov 2014

Electronic form version 1.4