Contribution ID: **3142** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) A Projection Operator Approach to Charge-State Distributions following the beta-Decay of ^{6}He

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The beta-decay of helium-6 provides a testing ground in searching for physics beyond the Standard Model, which predicts the kinematics of this decay. A large discrepancy between our theory and experiments at U. of Washington [1] has emerged in the amount of double ionization following beta-decay. The theoretical method utilizes correlated Hylleraas wave functions and is not satisfactory in partitioning the charge states since E > 0 states contain an overlap between the single and double continua. We have developed a projection operator formalism using product states that improves the agreement by a factor of four, but still a substantial disagreement remains. We report on our use of delta function matrix elements, using the method pioneered by Drachman [2], to measure the ground-state component of our pseudostates to inform modifications so that E > 0 states are represented more accurately. We propose that boundary conditions at the origin should contain the same information as the asymptotic ones used in collision and photoionization studies.

[1] R. Hong, et al., Phys. Rev. A 96, 053411
[2] R. J. Drachman, J. Phys. B: Atomic and Molecular Physics 14, 2733 (1981).

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