A SEARCH FOR SECOND CLASS CURRENTS IN THE A=8 SYSTEM

Abstract

by

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Probing for second-class induced weak currents is one method of testing select predictions of the Standard Model. Although the current limits are not inconsistent with zero, shrinking these limits will provide more information as to the accuracy of the Standard Model's predictions. This work measures the β-delayed coincident α particles resulting from the decay of ^{8}Li and ^{8}B. Coupling these measurements with a detailed simulation of the experiment was intended to improve the limits on the second-class induced tensor component of the weak current. Although unsuccessful, the experiment in this work greatly improved the number of coincident statistics over the previous measurement. This work explores several possible explanations for the disagreement between simulation and experiment and suggests a myriad of future improvements to be applied the next time the experiment is attempted.