

Abstract Submitted
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The Electron Backscatter Background in the aCORN Experiment¹ G.A. NOID, E.J. STEPHENSON, Indiana University Cyclotron Facility, ACORN COLLABORATION — aCORN is an experiment to measure a , the angular correlation between the anti-neutrino and the electron in neutron beta decay. We will use a row of collimators with a co-linear magnetic field to select events with the protons and electrons emerging from the decay region in opposite directions. A comparison of the relative rates for the two groups with the anti-neutrino momentum parallel or anti-parallel to the electron momentum yields an asymmetry which is easily related to a . Through simulations we discovered a large background associated with electrons backscattering off the proton detector region and then being detected by the beta spectrometer. By moving our proton detector off-axis, we hope to reduce this background to below our goal of less than a 1% relative effect on the asymmetry while preserving 100% collimated proton detection efficiency.

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George Noid
Indiana University Cyclotron Facility

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