

Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

A Measurement of the Electron-Antineutrino Correlation in Free Neutron Beta Decay¹ ALEXANDER KOMIVES, DePauw University, ACORN COLLABORATION — The aCORN Collaboration has analyzed data taken on the NG-6 beamline at the NIST (National Institute of Standards and Technology) Center for Neutron Research and achieved the most precise measurement to date of the angular correlation (a-coefficient) between the electron and antineutrino emitted in free neutron beta decay. Such a measurement provides a test of the Electroweak Standard Model and, with the neutron lifetime, a determination of the weak vector and axial vector coupling constants that does not require a precise determination of the neutron polarization. aCORN employs a novel asymmetry method that leads to smaller systematic uncertainties compared to previous experiments that obtained the a-coefficient from the shape of the recoil proton energy spectrum. A brief description of the aCORN method, apparatus, result, and systematic effects will be presented.

¹This work supported by NSF, NIST and DOE.

Alexander Komives
DePauw University

Date submitted: 01 Jul 2016

Electronic form version 1.4