

Abstract Submitted
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aCORN: An Experiment to Measure the Electron-Antineutrino Correlation in Neutron Decay A. LAPTEV, I. STERN, C. TRULL, F.E. WILTFELDT, Tulane University, M. LEUSCHNER, G. NOID, E. STEPHENSON, Indiana University, A. KOMIVES, DePauw University, A. BEYLOR, B. COLLETT, G. JONES, D. SHAPIRO, Hamilton College, F. BATEMAN, M.S. DEWEY, B. FISHER, P. MUMM, J. NICO, A. THOMPSON, National Institute of Standards and Technology, R. WILSON, B. YEROZOLIMSKY, Harvard University, J. BYRNE, University of Sussex, U.K., THE ACORN COLLABORATION — The angular correlation between the beta electron and antineutrino in free neutron beta decay is characterized by the dimensionless parameter a which, when combined with other neutron decay parameters, can be used to determine the g_V and g_A constants and test the validity and self-consistency of the Standard Model. In the new experimental method employed by aCORN, an asymmetry proportional to a is produced in the coincident detection of the electron and recoil proton. This approach has good potential for smaller systematic uncertainties, which are expected to be less than 1% of a . After completion of the detailed design, the component construction and testing is in progress. It is expected that integration and a test run will start at the LENS of the IUCF in 2008. The entire aCORN apparatus will move to NIST for a physics run with a cold neutron beam in fall 2008. This project is supported by the National Science Foundation.

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