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## aCORN: A Precision Measurement of the Neutron Decay a-Coefficient<sup>1</sup>

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The experimental parameters of neutron beta decay can be used to measure the weak coupling constants  $g_A$  and  $g_V$ , determine the CKM matrix element  $V_{ud}$ , and search for hints of non-Standard Model physics. The aCORN experiment will make a precision (< 1%) measurement of the electron-antineutrino angular correlation (*a*-coefficient). It uses a new method in which the *a*-coefficient is proportional to an asymmetry in beta-proton coincidence count rates. Precision spectroscopy of recoil protons, which has systematically limited previous experiments at the 5% level, is not necessary in aCORN. The apparatus is currently under construction. It will be integrated and tested at the new LENS facility at Indiana University and then moved to the NIST Center for Neutron Research in 2008 for the initial physics run.

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