Abstract Submitted
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aCORN:-the electron-neutrino correlation coefficient in free neutron decay[1] BRIAN COLLETT, Hamilton College, ACORN COLLABORATION — The decay of the free neutron provides a testing ground for the Standard Model without complications from nuclear structure. The electron-antineutrino angular correlation coefficient, a, is the least well determined of the angular correlation coefficients that have been precisely measured. An improved measurement of a will refine the value of the axial-vector coupling constant. This may help resolve discrepancies left by recent measurements of A and the neutron lifetime. The aCORN experiment aims to measure a to a relative accuracy of $<1\%$ using a novel method that does not depend on precise measurement of proton recoil energy. The apparatus features electron and proton detectors placed at opposite ends of a 3m long vacuum vessel in an axial magnetic field. An electrostatic mirror around the decay region directs protons to the proton detector in two populations, distinguished by time of flight. The value of a is proportional to the asymmetry between the populations. The experiment will run at NIST through March 2011. An overview of the method and experiment design will be presented, followed by three talks on details of the experiment.

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