Abstract Submitted
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Hot Filament Alignment System[1] EDWARD LAMERE, Hamilton College — The "a" Correlation in Neutron Decay (aCORN) collaboration seeks to measure the electron-antineutrino correlation in free neutron decay to within 1% relative uncertainty as a test of the Standard Model. To accomplish this, two regions of the phase space of the decay must be isolated. The correlation parameter, "little a," is proportional to the counting asymmetry between these two groups. Before the final measurement can be performed, an in-situ test of the alignment of the magnetic field and the experimental axis, set by a series of tungsten collimators, must be checked. Any misalignment would introduce an asymmetry in the experiment, resulting in an inaccurate "little a" measurement. To test the alignment a filament can be quickly inserted into the aCORN vacuum tube, which produces low energy electrons when heated. These electrons will travel nearly straight along the magnetic field lines due to their minimal cyclotron radius. A misalignment of the field can be determined from the relative currents detected on the final, segmented collimator. A description of the preliminary work on an in-situ alignment system will be presented.

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