

Precision Measurements in Neutron Decay: Status of the UCNA Experiment and Interpretation of Future Observables

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Precision measurements of neutron beta-decay observables determine fundamental parameters of the weak interaction and contribute to tests of the Standard Model. This talk will, time permitting, explore two related topics. First, we will report on the status of the UCNA Experiment at the Los Alamos National Laboratory. The UCNA Experiment was designed to perform a measurement of the neutron beta-asymmetry, the parity-violating angular correlation between the neutron spin and the decay electron momentum, with ultracold neutrons; to date the experiment has reported a sub-1% result for the beta-asymmetry. Measurements of the beta-asymmetry determine the weak axial-vector coupling constant g_A , an important input parameter to tests of the Standard Model and numerous weak interaction processes. Second, time permitting, we will discuss the sensitivity of various neutron beta-decay observables to new physics, and assess the impact that theoretical uncertainties (e.g., from second-class currents) may have on the interpretation of future measurements of such observables in terms of new physics.