

Abstract Submitted
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New Results from UCNA's Effort to use Ultracold Neutrons in a $<0.5\%$ Measurement of the Neutron Beta-Asymmetry A.T. HOLLEY¹, North Carolina State University — The goal of the UCNA experiment is to determine the angular correlation between the electron momentum and the neutron spin (the beta-asymmetry) in free neutron decay using polarized ultracold neutrons (UCN). The beta-asymmetry is one of several experimentally accessible values whose precise determination allows for stringent Standard Model tests, and UCN-based angular correlation experiments have the innate advantages of essentially 100% initial neutron polarization and small neutron-generated backgrounds, both of which allow for good control over two of the typically important systematics in free neutron angular correlation measurements. The practical advantages and challenges of using UCN in such an experiment as well as the features of our beta spectrometer which provide the capability for high-precision work will be discussed in light of our completed analysis of data taken during 2008 and 2009, which led to a 1.4% measurement of the beta-asymmetry.

¹for the UCNA collaboration

Adam Holley
North Carolina State University

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