

Abstract Submitted
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New Results from the UCN τ Experiment EVAN ADAMEK, UCN-tau Collaboration — A precise measurement of the free neutron beta decay lifetime provides a test of the weak interaction and is a significant input for the prediction of primordial light element abundances. The UCN τ experiment at the Los Alamos Neutron Science Center employs an open-top 600L volume lined by a NdFeB Halbach array to magnetically and gravitationally trap polarized ultracold neutrons (UCN). The decay constant is calculated by measuring the activity of a vanadium foil which is activated by absorbing trapped UCN. The UCN flux is monitored during loading using a newly developed boron-coated ZnS scintillator. Magneto-gravitational trapping mitigates systematic effects that can occur in material and other magnetic storage experiments, while in situ UCN detection mitigates those induced by the draining of UCN into external detectors for counting. Here we provide an overview of the experiment, discuss recent improvements in neutron transport and detection methods, and present new results from the 2014/2015 run cycle.

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