

Abstract Submitted  
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**UCNtau: Progress Towards a 0.3 s Measurement of the Neutron Lifetime** ROBERT W. PATTIE JR., East Tennessee State University — High precision measurements of properties of the neutron provide an exciting window into the structure of the standard model of particle physics. A 0.3 s measurement of the neutron lifetime, along with a similarly precise angular correlation measurement, would allow for a determination the CKM matrix element  $V_{ud}$  from neutron observables at a comparable precision as that derived from Superallowed Fermi decays. At the Los Alamos ultracold neutron source the UCNtau collaboration is using a magneto-gravitational trap to measure the neutrons lifetime with a precision below 0.7 s. In situ counting and the asymmetric trap design make UCNtau systematically complementary to other physical bottle and cold-neutron beam experiments. To reach an ultimate precision of  $\tau_n = 0.3$  s several key systematic effects such as phase space evolution, uncleaned quasi-bound neutrons, and pile-up must be controlled or characterized. The status of UCNtaus data collection and effort to characterize leading systematic effects will be presented.

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