

Abstract Submitted
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Measurement of Systematic effects in the UCN τ neutron lifetime experiment NATHAN CALLAHAN, Indiana Univ - Bloomington, UCNTAU COLLABORATION — The UCN τ experiment at the Los Alamos Neutron Science Center (LANSCE) measures the neutron β decay lifetime (τ_n) by trapping Ultracold Neutrons (UCN) in a magneto-gravitational trap. UCN are confined from below by magnetic fields and above by gravity. UCN are loaded into the trap, held for times on the order of τ_n , and counted. Several systematic effects can potentially shift the measured τ_n including heating and other losses of UCN during storage, insufficient removal of UCN with energies above the trapping potential, and phase space evolution of UCN during storage which can cause changes in detection efficiency. The UCN τ collaboration has put limits on these systematic effects via measurements in the 2016-2017 run cycle at LANSCE. For the first two effects, a limit is placed by searching for high-energy UCN at the end of storage. A limit is placed on the effects of phase space evolution by comparing arrival time distributions for UCN under different conditions. Data from the 2016-2017 run cycle and systematic limits derived from it will be discussed.

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