

Abstract Submitted
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The UCN τ experiment at LANL DANIEL SALVAT, Indiana University and Los Alamos National Laboratory, UCN τ COLLABORATION — A precision measurement of the neutron lifetime, when combined with other neutron beta decay observables, is a sensitive test of the $V - A$ law of the weak interaction, a probe of certain types of beyond standard model interactions, and an input for models of nucleosynthesis in the early universe. There is a difference of 4σ between the two prevalent techniques for measuring the neutron lifetime: the beam measurement technique – an absolute measurement of the decay rate of neutrons in a cold neutron beam, and the bottle technique – a measurement of the disappearance rate of ultracold neutrons (UCN) confined in material traps. Magnetic trapping of polarized UCN has the potential to resolve the discrepancy between these techniques and eliminate certain systematic corrections due to the loss of UCN on the walls of material traps. The UCN τ experiment at the Los Alamos Neutron Science Center uses a ~ 600 liter volume lined with a NdFeB Halbach array to magnetically and gravitationally confine neutrons. The trap exhibits a long storage time for UCN, and we have commissioned a new UCN detection scheme which counts β -decays of a vanadium foil activated by the trapped neutrons. In this talk, I will provide an overview of the experiment.

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