Abstract Submitted
for the DNP15 Meeting of
The American Physical Society

Measuring the free neutron lifetime to $\leq$ 0.3s via the beam method JONATHAN MULHOLLAND, NADIA FOMIN, University of Tennessee, BL3 COLLABORATION — Neutron beta decay is an archetype for all semi-leptonic charged-current weak processes. A precise value for the neutron lifetime is required for consistency tests of the Standard Model and is needed to predict the primordial ^{4}He abundance from the theory of Big Bang Nucleosynthesis. An effort has begun for an in-beam measurement of the neutron lifetime with an projected $\leq$0.3s uncertainty. This effort is part of a phased campaign of neutron lifetime measurements based at the NIST Center for Neutron Research, using the Sussex-ILL-NIST technique. Recent advances in neutron fluence measurement techniques as well as new large area silicon detector technology address the two largest sources of uncertainty of in-beam measurements, paving the way for a new measurement. The experimental design and projected uncertainties for the 0.3s measurement will be discussed.

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Date submitted: 30 Jun 2015 Electronic form version 1.4