

Abstract Submitted
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An Alpha-Gamma Counter for Absolute Neutron Flux Measurement A. YUE, University of Maryland / University of Tennessee / National Institute of Standards and Technology, G. GREENE, University of Tennessee / Oak Ridge National Laboratory, M. DEWEY, D. GILLIAM, J. NICO, National Institute of Standards and Technology, A. LAPTEV, Tulane University / Los Alamos National Laboratory — An alpha-gamma counter was used to measure the absolute neutron flux of a monochromatic cold neutron beam to sub-0.1 % precision. Simultaneously, the counter was used to calibrate a thin neutron flux monitor based on neutron absorption on ^6Li to the same precision. This monitor was used in the most precise beam-based measurement of the neutron lifetime, where the limiting systematic effect was the uncertainty in the neutron counting efficiency (0.3 %). The counter uses a thick target of ^{10}B -enriched boron carbide to completely absorb the beam. The rate of absorbed neutrons is determined by counting 478 keV gamma rays from neutron capture on ^{10}B with calibrated high-purity germanium detectors. The calibration results and the implications for the neutron lifetime will be discussed.

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