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Calibration of the Neutron Lifetime Flux Monitor Through the Absolute Determination of Neutron Flux A. YUE, University of Tennessee, G. GREENE, The University of Tennessee - Knoxville / Oak Ridge National Laboratory, M. DEWEY, D. GILLIAM, J. NICO, National Institute of Standards and Technology, A. LAPTEV, Los Alamos National Laboratory — The measurements of the neutron lifetime using "bottled" ultra-cold neutrons that claim the smallest experimental uncertainties are seriously discrepant with respect to each other. Given that the statistical contribution to their uncertainty is much smaller than the discrepancy, it is likely that one or more of these measurements suffers from a systematic effect yet to be definitively identified. In the most precise cold neutron beam measurement of the lifetime which gives $\tau_n = (886.3 \pm 3.4)$ s, the largest uncertainty was attributed to the absolute determination of the capture flux of the neutron beam. A new direct measurement of the neutron lifetime flux monitor efficiency using an absolute "black" neutron detector could reduce this contribution to the uncertainty. The Alpha-Gamma device is a "black" neutron detector based on the counting of 478 keV gamma rays from a totally absorbing ^{10}B foil. Neutron flux is measured to a statistical precision of 0.1 % in several days of running. The Alpha-Gamma device has been used to calibrate the neutron lifetime flux monitor on a monochromatic beamline at the NIST Center for Neutron Research. The measurement technique and status of this calibration will be presented.

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