Abstract Submitted
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Precision neutron flux measurements and applications using the Alpha Gamma device[1] EAMON ANDERSON, Indiana Univ - Bloomington, ALPHA GAMMA AND BL2 COLLABORATION — The Alpha Gamma device [1] is a totally-absorbing ^{10}B neutron detector designed to measure the absolute detection efficiency of a thin-film lithium neutron monitor on a monoenergetic neutron beam. The detector has been shown to measure neutron fluence with an absolute accuracy of 0.06%. [2] This capability has been used to perform the first direct, absolute measurement of the $^{6}Li(n,t)^{4}He$ cross section at sub-thermal energy, improve the neutron fluence determination in a past beam neutron lifetime measurement by a factor of five, and is being used to calibrate the neutron monitors for use in the upcoming beam neutron lifetime measurement BL2 (NIST Beam Lifetime 2) [3]. The principle of the measurement method will presented and the applications will be discussed.

[1] D. M. Gilliam, G. L. Greene, and G. P. Lamaze, Nucl. Instrum. Methods A 284, 220 (1989)
[2] A.T. Yue et al, Phys. Rev. Lett. 111, 222501 (2013)
[3] http://arxiv.org/abs/1410.5311

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