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## The BL2 Experiment: An In-Beam Measurement of the Neutron Lifetime

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Neutron beta decay is the simplest example of semi-leptonic decay. A precise measurement of the neutron lifetime and  $\lambda$ , the ratio of axial vector and vector coupling constants of the weak interaction, allow for a determination of the CKM matrix element  $V_{ud}$  that is free from nuclear structure effects. The neutron lifetime provides an important test of unitarity and consistency of the Standard Model. The neutron lifetime is also the largest uncertainty in Big Bang Nucleosynthesis calculations of light element abundance. A new measurement of the neutron lifetime using the in-beam method is ongoing at the NIST Center for Neutron Research. This method requires the absolute counting of the decay protons in a neutron beam of precisely known flux. Improvements in the neutron and proton detection systems as well as the use of a new analysis technique should allow for a thorough investigation of major systemic effects. The experimental status, systematic tests, analysis techniques and early data will be presented.

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