DNP20-2020-001012

Abstract for an Invited Paper
for the DNP20 Meeting of
the American Physical Society

Final Results of a Precision Measurement of the Parity Violating Asymmetry in Cold Neutron Capture on ^{3}He

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The hadronic weak interaction (HWI) is one of the least well understood sectors of the Standard Model. While it is in principle described by the Electro-Weak component of the Standard Model as the exchange of W and Z bosons between quarks, the computational difficulties associated with non-perturbative quantum chromodynamics (QCD) prevent first principle calculations of HWI observables. To calculate HWI observables, approaches such as the Desplanques, Donoghue, and Holstein (DDH) model and lately effective field theory (EFT) models have been used, but these models require a number of weak coupling constants to be determined from experiment. The n3He experiment, which ran at the Oak Ridge National Laboratory in 2015, made a high precision measurement of the directional parity vio- lating asymmetry in the direction of proton emission relative to the initial neutron polarization in the reaction n + ^{3}He t + p, with a result A_{PV} = (1.58 0.97(stat) 0.24(sys)) 10^8 . I will briefly discuss the models used to calculate this asymmetry, the n3He experiment itself, the data analysis process that resulted in the asymmetry, and how this result combined with other past and some possible future experiments can be used to set limits on the weak couplings constants.