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A Study of Hadronic Weak Interaction - The n^{3}He Experiment at SNS LATIFUL KABIR, University of Kentucky — While parity violation (PV) is well-understood at the quark and lepton level, it is much more elusive in hadronic systems, being dominated by several orders of magnitude by the strong interaction. However, studies of PV in hadronic systems offer a unique probe of nucleon structure, complementary to other probes of low-energy non-perturbative QCD. The n^{3}He experiment at the spallation neutron source at ORNL is motivated to probe the Hadronic Weak Interaction (HWI) by measuring the parity violating spin asymmetry of the recoil proton in the reaction n+ ^{3}He $\rightarrow$ p +T+765 KeV. This is sensitive to ΔI = 0 and 1 components of the HWI, and is expected to be extremely small (of the order of 10^{-7}). The experiment aims to determine this PV asymmetry with the statistical sensitivity of the order of 10^{-8}. The experiment is now in the data taking phase and will continue until the end of the year. I will describe the experiment and give its current status.

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