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A measurement of the parity violating asymmetry in the neutron capture on ^{3}He at the SNS. LATIFUL KABIR, University of Kentucky, THE N-3HE COLLABORATION — Studies of parity violating (PV) observables 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 the ORNL measures the PV asymmetry of the recoil proton momentum $\vec{k}_p$ with respect to the neutron spin $\vec{\sigma}_n$ in the reaction $\mathrm{n} + {}^3\mathrm{He} \rightarrow \mathrm{p} + \mathrm{T} + 764\,\mathrm{keV}$. This asymmetry is sensitive to the isospin-conserving and isospin-changing ($\Delta\mathrm{I} = 0,\ 1$) channels of the Hadronic Weak Interaction, and is expected to be extremely small ($\sim 10^{-7}$). The experiment will determine this PV asymmetry with the statistical sensitivity of the order of 10^{-8}. Challenges like beam fluctuation, pedestal and background subtraction, instrumental interference, detector correlations and many others must be considered very carefully in the analysis to achieve this precision. I will discuss the data analysis and a method to extract the value for the PV asymmetry.

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