HAW14 HAW14-2014-000979 McCrea Mark mark.mccrea@gmail.com University of Manitoba oral 2. 01 Jul 2014 The n3He Experiment: Current Status McCrea Mark University of Manitoba Collaboration n3He E

Abstract

The n3He experiment aims to make a high precision measurement of the hadronic weak interaction in the reaction $\vec{n} + {}^3He \rightarrow p + T$ by measuring the parity violating asymmetry in the direction of proton emission relative to the neutron polarization direction. As the weak interaction is the only interaction to violate parity this allows us to extract the much smaller weak interaction effects from the larger strong interaction effects. The range of the asymmetry is estimated to be $(-9.5 \rightarrow 2.5) \times 10^{-8}$. The goal is to measure this asymmetry with an accuracy of 2×10^{-8} to provide a benchmark for modern effective field theory calculations. n3He will run at the SNS Fundamental Neutron Physics Beamline. The combined target and detector is a multiwire ^{3}He ionization chamber. A super mirror polarizer will be used to polarize the incoming cold neutron beam, and a spin flipper will reverse the spin in a sequence to control for systematic effects.