

Final Results for the n3He Parity Violating Asymmetry Measurement

Mark McCrea

University of Winnipeg, Winnipeg, Manitoba, Canada

Abstract: The n3He experiment made the first high precision measurement of the directional parity violating asymmetry in the proton emission direction relative to the initial neutron polarization in the reaction ${}^3\text{He}(\vec{n}, p){}^3\text{H}$. This asymmetry is a result of the weak interaction between nucleons, which remains one of the least well-understood aspects of electroweak theory. Data taking for n3He was completed at the end of 2015 at the SNS of the Oak Ridge National Laboratory, and the asymmetry was measured to be $A_{\text{PV}}=[1.55\pm 0.97(\text{stat})\pm 0.4(\text{sys})]\times 10^{-8}$. I will discuss the n3He experiment, data analysis, methods used to calculate the asymmetry, and compare the result of this experiment and the NPDGamma experiment with theoretical predictions.