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## The $n^3\text{He}$ experiment: Hadronic parity violation in cold neutron capture on $^3\text{He}$ .

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The  $n^3\text{He}$  experiment aims to measure the parity violating asymmetry in the direction of proton emission in the reaction  $n + ^3\text{He} \rightarrow ^3\text{H} + p$ , using the capture of polarized cold neutrons in an unpolarized gaseous  $^3\text{He}$  target. Using effective field theory based calculations, the size of the asymmetry is estimated to be in the range of  $(-9.5 \rightarrow 2.5) \times 10^{-8}$ , and our goal measurement accuracy is  $2 \times 10^{-8}$ . The asymmetry is a result of the low energy weak interaction between nucleons and its measurement will provide a benchmark for modern effective field theory calculations. The asymmetry isolates the  $I = 0$  components of the hadronic weak interaction. The experiment uses a  $^3\text{He}$  multiwire ionization chamber as the combined target and detector operated in current mode. The  $n^3\text{He}$  experiment was installed and commissioned in December 2014 on the Fundamental Neutron Physics Beamline at the Spallation Neutron Source at Oak Ridge National Laboratory. The experiment is currently taking production data. I will provide an overview of the experiment and the physics and will discuss some of the data collected to date.

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