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## Progress toward a Measurement of Hadronic Parity Violation in the Capture of Cold Neutrons on Helium-3

*Tuesday 17 June 2014 09:15 (15 minutes)*

The n<sup>3</sup>He experiment aims to measure the parity violating asymmetry in the direction of proton emission from longitudinally polarized cold neutrons capturing on an unpolarized <sup>3</sup>He target in the reaction  $\vec{n} + {}^3\text{He} \rightarrow p + T$ . The size of the asymmetry is estimated at  $(-9.5) - 2.5 \times 10^{-8}$ . The goal is to measure this asymmetry with an accuracy of  $2 \times 10^{-8}$  to provide a benchmark for modern effective field theory calculations. The nHe-3 target is also an ion chamber and it will be used to measure the direction of the protons from the break up reaction. It consists of 16 signal wire planes with 144 sense wires, and 17 high voltage planes. Each signal wire will be read out individually to accurately measure the forward-backward shift in the ionization cloud, produced by the protons and tritons, as a function of longitudinal neutron polarization. The cold neutrons are polarized using a supermirror polarizer and guided through the experiment by a 10 Gauss magnetic holding field. The neutron polarization will be reversed using a RF adiabatic spin flipper. In this talk I will present an overview of the experiment, including a detailed description of the target-detector chamber and the measurement concept.

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**Session Classification:** (T1-2) Testing Fundamental Symmetries III - DNP-DTP-PPD-DIMP / Tests de symétries fondamentales session III - DPN-DPT-PPD-DPIM

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