

Abstract Submitted
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**Parity Violating Gamma-Ray Asymmetries in Compound Nuclei
from Polarized Cold Neutron Capture in the NPDGamma Experiment¹**

MICHAEL GERICKE, Jefferson National Laboratory and the University of Manitoba, NPDGAMMA COLLABORATION — In an effort to measure the strength of the neutral weak hadronic N-N coupling the NPDGamma collaboration has completed constructing and commissioning an experiment to measure the parity violating up-down asymmetry in the angular distribution of gamma rays with respect to the neutron spin direction in the reaction $n + p \rightarrow d + \text{gamma}$. The asymmetry has a predicted size of 5×10^{-8} and we will measure it to 10%. The small size of the asymmetry requires the precise determination of effects from neutron capture on all other materials found in the experiment. We introduce a statistical approach to estimate the expected root mean square (RMS) of the asymmetry in the integrated gamma spectrum from the capture of cold polarized neutrons on various medium A targets. Parity-odd asymmetries in the electromagnetic decays of compound nuclei can sometimes be amplified above values expected from simple dimensional estimates by the complexity of compound nuclear states and it is important to verify that this effect will not produce a large background asymmetry in the hydrogen signal.

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