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Backgrounds from Neutron Capture in the NPDGamma Experiment SERPIL KUCUKER DOGAN, University of Tennessee, NPDGAMMA COLLABORATION — The NPDGamma experiment, which measures the parity-violating directional gamma asymmetry in neutron-proton capture, completed its second run cycle in May 2013 at the Fundamental Neutron Physics Beamline at the Oak Ridge Spallation Neutron Source. In the experiment an intense polarized low-energy neutron beam interacts with a liquid para-hydrogen target. Gamma rays from the capture reaction are detected by 48 CsI(Tl) current mode detectors with the 3° acceptance angle. The goal of the experiment is to measure the asymmetry with precision of 1×10^{-8}. The polarized neutrons also interact with other materials in beam, such as the beam windows and the walls of the target vessel producing a background to the signal that dilutes the PV gamma asymmetry. These materials could, in principle, have their own PV asymmetries. The Aluminum contribution in the background is the most significant, contributing about 20% of the total signal. We have studied the backgrounds and identified their sources and the strengths. I will discuss the methods to determine the backgrounds and their effect on NPDGamma.

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