Abstract Submitted for the DNP11 Meeting of The American Physical Society

Monte-Carlo Simulations of Near-Threshold $\gamma + n \rightarrow p + \pi^-$ Measurements at MAX-lab¹ SAMUEL LIPSCHUTZ, The George Washington University, MAX-TAGG COLLABORATION — Unlike classical regimes of physics, nuclear physics does not yet have a complete theoretical description. To scrutinize the validity of theoretical constructions (such as ChPT) accurate experimental data need to be obtained. Currently, a measurement of the total cross section for $\gamma + n \rightarrow p + \pi^-$ is underway at MAX-lab in Lund, Sweden, using a liquid deuterium target. The resulting π^- is detected by its subsequent capture and photoemission by a deuteron through $\pi^- + d \rightarrow 2n + \gamma$. Several large sodium iodide spectrometers detect this emitted photon. Since this experiment deals with an extended target, there are several key quantities that need to be investigated by simulation. The experimental geometry was reproduced in a GEANT simulation where, among other parameters, the fraction of π^-s , which do not undergo recapture in the target and the detector acceptances from the extended target were examined. Preliminary results will be shown.

¹This work was greatly supported by a GWU OVPR undergraduate fellowship and DOE grant #DE-FG02-99ER41110.

Samuel Lipschutz The George Washington University

Date submitted: 01 Aug 2011

Electronic form version 1.4