

Abstract Submitted
for the APR13 Meeting of
The American Physical Society

The OLYMPUS Experiment Simulation AXEL SCHMIDT, MIT, OLYMPUS COLLABORATION — The OLYMPUS Experiment aims to measure the ratio of electron-proton to positron-proton elastic scattering cross-sections to better than 1% systematic uncertainty. Achieving this goal requires a precise understanding of a wide range of systematic effects, such as the radiative corrections internal to the reaction, the varying acceptance of the detector apparatus, and efficiency of the tracking algorithms. A detailed Geant4 simulation of the OLYMPUS experiment has been developed to study these effects, and using the Monte Carlo method, properly account for their convolution. Radiative corrections are applied by the event generator, whose events are propagated through the simulation. Simulated detector signals are produced with identical format to the raw OLYMPUS data, so that simulated data can be processed using the same analysis software. The simulation, therefore, serves as a benchmark for comparison with the final OLYMPUS results. A discussion of the radiative corrections procedure and an overview of the simulation will be presented. This work is supported by DOE Grant DE-FG02-94ER40818.

Axel Schmidt
MIT

Date submitted: 11 Jan 2013

Electronic form version 1.4