

Abstract Submitted
for the APR14 Meeting of
The American Physical Society

A Radiative Event Generator for OLYMPUS¹ AXEL SCHMIDT, MIT, OLYMPUS COLLABORATION — The OLYMPUS Experiment, which completed data taking in 2013, will determine the ratio of positron-proton to electron-proton elastic scattering cross sections over a range of momentum transfer from 0.4 to 2.2 (GeV/ c)². A deviation in this ratio from unity is evidence of two-photon exchange, which is a possible explanation for the discrepancy in measurements of the proton's electromagnetic form factors. However, the ratio is also sensitive to other radiative effects, such as the interference of lepton and proton bremsstrahlung. To isolate the contribution of hard two-photon exchange, the OLYMPUS MIT group has developed a Monte Carlo radiative generator, so that the various contributions to the cross section ratio can be studied by simulation. With this method, radiative effects can be properly convolved with detector-specific properties such as acceptance and efficiency. It is a goal of the collaboration to make this generator publicly available so that unbiased comparisons can be made between OLYMPUS and other two-photon exchange experiments. The MIT generator will be presented in detail along with a description of radiative corrections in the OLYMPUS analysis.

¹This work is supported by DOE Grant DE-FG02-94ER40818.

Axel Schmidt
MIT

Date submitted: 08 Jan 2014

Electronic form version 1.4