

Abstract Submitted  
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**Radiative corrections for the OLYMPUS experiment** REBECCA RUSSELL, Massachusetts Institute of Technology, OLYMPUS COLLABORATION — A leading but untested explanation of the proton form factor discrepancy between Rosenbluth separation and polarization measurements is the unaccounted contribution of hard two-photon exchange to elastic  $ep$  radiative corrections. The OLYMPUS experiment at DESY has collected  $e^+p$  and  $e^-p$  elastic scattering data to make a definitive measurement of the size of this effect. Additional corrections to the elastic cross sections beyond what can be eliminated using opposite-lepton-charge data must be carefully applied. The most important and challenging of these arise from bremsstrahlung processes. Radiative corrections are sensitive to detector geometries, efficiencies, resolutions, and experimental cuts, making an analytic application of them too crude for this measurement. The OLYMPUS experiment will use a custom radiative event generator with a Geant4-based Monte Carlo and simulated detector response to produce models that can be analyzed exactly like data. This new generator and its application to the experiment will be described.

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