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Monte Carlo Simulation for a Future Two-Photon Exchange Experiment at DESY PATRICK MORAN, Massachusetts Institute of Technology MIT, TPEX COLLABORATION COLLABORATION — Recent elastic lepton-proton measurements of the proton form factor ratio, $\mu^p G_E^p/G_M^p$, have yielded dramatically different results using polarized and unpolarized techniques. The most obvious explanation for this discrepancy is the contribution of the hard two-photon exchange corrections. A proposed experiment at DESY aims to measure this contribution by measuring the ratio of positron-proton to electron-proton elastic scattering with lepton energies of 2 and 3 GeV. This talk will focus on the Monte Carlo simulation that has been developed to model the elastic scattering and detector response. The performance of the lead tungstate calorimeter arrays and subsequent analysis will be discussed.

Patrick Moran
Massachusetts Institute of Technology MIT

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