

Abstract Submitted  
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**The sensitivity of different  $\gamma p$  scattering observables to the protons dipole polarisabilities**<sup>1</sup> HARALD GRIESSHAMMER, George Washington Univ, JUDITH MCGOVERN, University of Manchester, UK, DANIEL PHILLIPS, Ohio University — I present highlights from our recent analysis of 13 observables in Compton scattering on the proton. Cross sections, asymmetries with polarized beam and/or targets, and polarisation-transfer observables are computed in chiral effective field theory and their sensitivity to the protons dipole scalar and spin polarisabilities examined. For photon energies from the pion-production threshold to about 250 MeV multiple asymmetries have significant sensitivity to presently ill-determined combinations of proton spin polarisabilities. We also argue that in this energy range the broad outcomes of our analysis will be replicated in complementary theoretical approaches, e.g., dispersion relations. An interactive Mathematica notebook, including results for the neutron, is available from [judith.mcgovern@manchester.ac.uk](mailto:judith.mcgovern@manchester.ac.uk)

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