Of Neutron polarizabilities and polarization observables in Compton scattering on deuteron and He-3 DEEPSHIKHA CHOUDHURY, DANIEL PHILLIPS, Ohio University — The HIGS upgrade program has motivated us to investigate how sensitive observables involving polarized beam and/or polarized target are to neutron polarizabilities. Thus, we calculate several polarization observables for Compton scattering on deuteron and He-3 using chiral perturbation theory (χPT) up to $O(Q^3)$ at energies of the order of the pion mass. For deuteron we have found that the photon polarization asymmetry, Σ is insensitive to neutron electromagnetic polarizabilities. However, one of the double polarization asymmetries, Σ_x is sensitive to γ_{1n} [1]. In the first part of the talk I will present these results. Thereafter, I will discuss the formalism for similar calculations for He-3 and report some preliminary results.

[1]
http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=PRVCAN00007100000404400

Deepshikha Choudhury
Ohio University