The polarization sensitivity of GRETINA[1] ANDREAS WIENS,
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94720, USA, FOR THE GRETINA COLLABORATION — The new tracking ar-
ray GRETINA provides position information of the individual interactions of γ rays
within the active Ge detector material. The position knowledge of the first two
interaction points enables the calculation of the Compton scattering angle, which is
sensitive to the linear polarization. Measuring the angular distribution and the lin-
ear polarization can help determine the electromagnetic character of a transition and
its parity. Inelastic proton scattering on Mg ($^{24}Mg(p, p'\gamma)$) provides highly polarized
γ rays which we used to characterize the polarization sensitivity of GRETINA. We
have studied the angular distribution and the azimuthal Compton scattering angle
of the 1368 keV gamma transition after signal-decomposition and tracking, which
were normalized with the unpolarized results derived from ^{60}Co. The a_2 and a_4
coefficients from the Legendre Polynomial fit of the angular distribution confirmed
the high degree of polarization. We will report on the asymmetry in the azimuthal
Compton scattering angle distribution which is in good agreement with a $\cos(2\varphi)$ fit.
We will discuss the energy dependance of the polarization sensitivity and compare
the results with a GEANT4 simulation.

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