

Abstract Submitted  
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**Compton scattering with low intensity radioactive sources** CARROLL QUARLES, Texas Christian University — Compton scattering experiments with gamma rays typically require a “hot” source ( $\sim 5\text{mCi}$  of  $\text{Cs137}$ ) to observe the scattering as a function of angle. (See Ortec AN34 Experiment #10 Compton Scattering) Here a way is described to investigate Compton scattering with micro Curie level radioactive sources that are more commonly available in the undergraduate laboratory. A vertical-looking 2 inch coaxial hpGe detector, collimated with a 2 inch thick lead shield, was used. Cylindrical Al targets of various thicknesses were placed over the collimator and several available sources were placed around the target so that the average Compton scattering angle into the collimator was 90 deg. A peak could be observed at the expected energy for 90 deg. Compton scattering by doing 24 hour target-in minus target-out runs. The peak was broadened by the spread in the scattering angle due to the variation in the angle of the incoming gamma ray and the angular acceptance of the collimator. A rough analysis can be done by modeling the angular spread due to the geometry and correcting for the gamma ray absorption from the target center. Various target materials and sources can be used and some variation in average Compton scattering angle can be obtained by adjusting the geometry of the source and target.

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