

Compton Scattering Experiment

In this experiment γ rays of energy .66 MeV, from a ^{137}Cs source, are incident on an aluminum target. The scattered photons are detected by a NaI scintillator which is viewed by a photomultiplier.

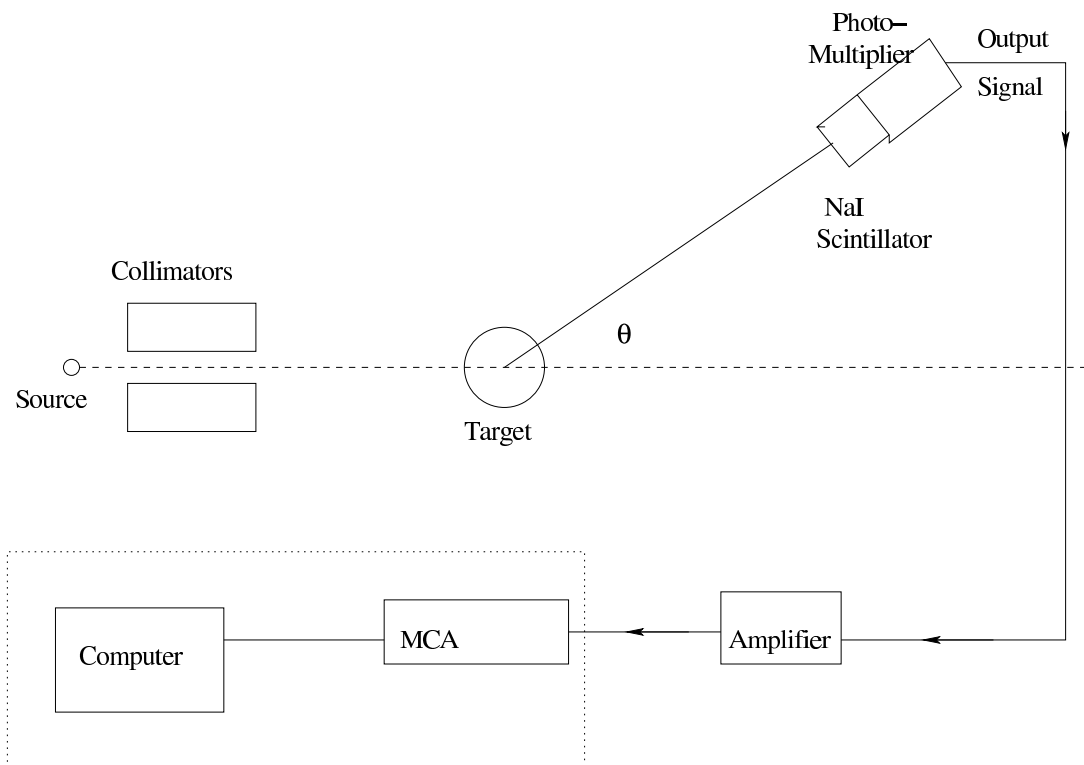


Figure 1: Block diagram of the Compton scattering experiment. The MCA is a card in the computer.

The photomultiplier signal is amplified, and sent to a **Multi-channel analyzer** (MCA), which produces a histogram which is proportional to the energy spectrum. The MCA data may be written out as a text file.

The MCA is **calibrated** with a smaller ^{137}Cs , and a ^{60}Co source, which produces γ 's of two different energies.

The goals of the experiment are:

1. Measure the scattered photon energy as a function of scattering angle. Make a graph which shows the measurements and predictions together.
2. Measure the differential scattering cross section, to within a constant. That is, it is not necessary to measure the absolute value of the cross section, just its shape.

The physics and experimental methods, except for the MCA, are well- described in **Experiments in Modern Physics**, by A. C. Melissinos; Academic Press (1965).