

Profiling Cesium Iodide Detectors and Using Pulse Shape Discrimination to Identify Alpha Particles, Neutrons, and Gamma Rays

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The purpose of this research was to investigate the properties of detectors that are to be used in future experiments. First, we investigated the properties of a cesium iodide detector. We placed a mask over the front of the detector and used an alpha source to measure the energy and frequency of alpha particles passing through various holes in the mask. From that, we found the detector's resolution for each hole or area we tested. In the second part, we investigated the pulse shape discrimination capabilities of a plastic scintillator, another type of detector. We used the scintillator to detect alpha particles, neutrons, and gamma rays and applied various analysis techniques to identify each type of particle by their waveforms.