Study of efficiency of the ORTEC Detective-EX-100T

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Abstract

Gamma-Ray Spectrometry is a fundamental measuring technique commonly used to obtain experimental information on unambiguous nuclear structure. Its advantage lies on the fact that is a non-destructive technique. In order to identify the unknown radioactive nuclides, the process requires instruments with excellent resolution and also reasonable efficiency.

Gamma-Ray Spectrometry with HPGe detectors are used for the determination of the radioactive concentration of the radionuclides that can be found in the environment.

We investigated the efficiency of the ORTEC Detective-EX-100T using standard gamma-point sources set composed by 133-Ba, 152-Eu and 137-Cs. The main advantage of the detector it’s the performance in the rapid identification of radioisotopes. Further, the efficiency calibrations were performed for three different geometries: 10, 15 and 20 cm distances from the end cap detector.

The study revealed that significant deviations in the efficiency is depending on the source-detector distance and photon energy.