

# Software algorithm implementation on geometric efficiency calibration for gamma spectrometry with scintillation detector using numerical methods

Gamma spectrometry ( $\gamma$ ) is used to detect photons with different energies, which characterize the different elements of radioactive samples. For this process there are several types of detectors applied to various types of sources. The present study focuses on obtaining a geometric efficiency calibration software, which will be used to introduce experimental characteristics, such as source radius, distance, among others. This way, a calibration curve can be obtained with alternative numerical methods to Monte Carlo, thus reducing the memory expenditure in Python, for cylindrical scintillation detectors and to be able to use it in future research. In this paper, geometric efficiency was calculated for punctual sources and disks, which were compared with experimental data to demonstrate what this software would do in the future.

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