

## Re-construction of a HPGe detector modeling for efficiency calibration

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High purity germanium (HPGe) detector is a prior choice for determining the activity of the radioactive samples for nuclear diagnostics of Inertial Confinement Fusion (ICF) experiments. Efficiency calibration of gamma rays at a close distance from the surface of a HPGe detector is a crucial issue. So far as the detector structure is precisely clarified, a model of the detector can be well developed, based on which Gamma-ray detection efficiencies can be calculated accurately using Monte Carlo method. In this paper, internal geometry and structure except for dead layers of the HPGe detector is obtained by X-ray radiography and 3D reconstruction. The optimal dead layers of the germanium crystal are determined by tracing the minimal sum squared residual (SSR) of gamma-ray efficiencies between calculations and measurements for standard planar sources.