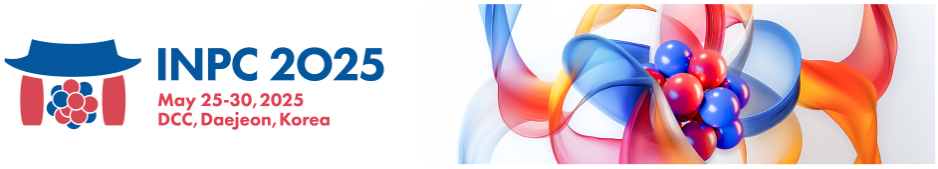

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Measurement of $^{27}\mathrm{Al}(p,\gamma)^{28}\mathrm{Si}$ reactions near 2 MeV

Thursday, 29 May 2025 12:10 (15 minutes)

We developed a $LaBr_3$(Ce) detector array (HANULball) to measure gamma rays with energies up to 10 MeV. The HANULball consists of 10 $LaBr_3$(Ce) detectors arranged in a truncated cuboctahedron structure, each coupled with a photomultiplier tube for detecting scintillation light. Using a 2-MV tandem ion accelerator at KIST, we measured gamma rays from the $^{27}\mathrm{Al}(p,\gamma)^{28}\mathrm{Si}$ reaction over the proton energy range of $E_p = 2.040$ to $E_p = 2.080$ MeV. Additionally, we conducted simulation studies to evaluate the detection efficiency of the $LaBr_3$(Ce) detectors. We will discuss the performance of the HANULball detector system and its detection efficiency across a wide range of gamma-ray energies.

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