TESTING OF THE PARIS CLUSTER WITH γ-RAYS SOURCES UP TO 8.9 MEV

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The Photon Array for the studies with Radioactive Ion and Stable Beams, PARIS, is a high efficiency calorimeter for medium resolution spectroscopy and detection of γ-rays over a large energy range [1]. It is composed by phoswich detectors (2"x2"x2" of $LaBr_3$:Ce coupled to 2"x2"x6" of NaI:Tl).

In order to have a characterization of the first PARIS cluster (9 phoswich detectors), several tests have been made. The present work is focused on data acquired at Università degli Studi di Milano and at the ELBE Bremsstrahlung facility (HZDR, Dresden) mainly using sources. Aim of these tests was to analyze the cluster response to γ-rays between 0.662 MeV and 8.9 MeV.

As the PARIS array is composed by phoswich detectors, the first step of the analysis is to select the different signals coming from the two different crystals ($LaBr_3$:Ce and NaI:Tl). This is possible by using dedicated electronic modules.

The data acquisition is described, together with the algorithm used to separate the signals.

The phoswich calibration method and the energy resolution of the crystals are then presented. In order to test the cluster performance, the events distribution and their multiplicity within the cluster and the time analysis within the crystals were conducted.

REFERENCES

[1] Maj A et al. The PARIS Project. Acta Phys. Pol B, 40:565–75, 2009