

Frontiers in Gamma Ray Spectroscopy

FIG18

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Ancillary detectors for gamma spectroscopy

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Content :

Akhil Jhingan^{1*}, R. Palit², R. P. Singh¹

¹Inter University Accelerator Centre, P. O. Box 10502, New Delhi – 110067

²Department of Nuclear and Atomic Physics, Tata Institute of Fundamental Research, Mumbai 400005

* akhil@iuac.res.in, jhinganakhil@gmail.com

The development of high resolution large gamma arrays such as INGA [1,2] have provided opportunities to nuclear structure studies with heavy ion induced nuclear reactions. To probe the nuclear structure and related rare phenomena more deeply, ancillary detectors are required to improve upon the channel selection capability of these multi-detector arrays. This includes particle detectors such as position sensitive proportional counters, silicon detectors, ionization chambers, scintillation detectors etc., along with their front-end electronics. Charged particle arrays based on CsI for light charged particle detection is being developed as an ancillary detector system for INGA for spectroscopic studies. Silicon detector systems are being planned for particle identification in transfer induced and decay spectroscopy with recoil separators [3]. Proportional counters have been developed for Coulex, recoil and isomer decay tagging experiments. New detectors are being developed for scattered heavy ion detection such as fission fragments. Hybrid gas-silicon proportional counters have been developed to measure both velocity and energy of the reaction products. These detectors also demand state of the art nuclear instrumentation for the signal processing and data acquisition. The status of overall detector development and instrumentation being carried out will be presented.

[1] S. Muralithar, et al., Nucl. Instr. & Meth. in Phys. Res. A 622(2010)281

[2] R. Palit, et al., Nucl. Instr. & Meth. in Phys. Res. A 680(2012)90

[3] N. Madhavan et al., Pramana J. Phys. Vol. 75, 317 (2010).

Primary authors : Dr. JHINGAN, Akhil (Inter University Accelerator Centre, P. O Box 10502, Aruna Asaf Ali Marg, New Delhi – 110067)

Co-authors : Dr. PALIT, R (Department of Nuclear and Atomic Physics, Tata Institute of Fundamental Research, Mumbai 400005) ; Dr. SINGH, R. P. (Inter University Accelerator Centre, P. O. Box 10502, New Delhi – 110067)

Presenter : Dr. JHINGAN, Akhil (Inter University Accelerator Centre, P. O Box 10502, Aruna Asaf Ali Marg, New Delhi – 110067)

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