

Detector Instrumentation activities for nuclear physics at IUAC

Inter University Accelerator Centre (IUAC), New Delhi provides facilities for nuclear structure and reaction studies [1], focused at energies around Coulomb barrier, using the Pelletron-LINAC accelerator system. The Centre is equipped with the research facilities such as gamma detector array, recoil mass spectrometers, scattering chamber and neutron detector array. The heavy-ion induced reactions are characterized by performing measurements such as high spin gamma spectroscopy, Coulomb excitation, fission mass and angular distributions, fusion cross-section and barrier distributions, multi-nucleon transfer, neutron and charged particle multiplicity, etc. To execute these experiments, detector systems [2,3] based on proportional counters, particle identification telescopes, scintillators for light charged particle and neutron detection have been developed. New detector systems for the future facilities such as FAIR are also being planned. An overview of developments in detector instrumentation at IUAC will be presented.

[1] Nuclear reaction and structure studies using experimental facilities at Inter-University Accelerator Centre (IUAC), Eur. Phys. J. A (2022) 58:250,

<https://doi.org/10.1140/epja/s10050-022-00855-y>

[2] Detector Development Activities at IUAC, Advanced Detectors for Nuclear, High Energy and Astroparticle Physics, Springer Proceedings in Physics 201,

https://doi.org/10.1007/978-981-10-7665-7_3

[3] Detector instrumentation for nuclear fission studies, Pramana J. Phys. 85 (2015) 483

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