

Detectors

CPDA Backward structure

At the end of the beam line, the experimental stations are placed. A 4π Charged Particle Detector Array (CPDA) is being developed at VEC Centre to understand basic properties equations of state of nuclear matter, liquid gas phase transition, isoscaling, etc. using the beam from superconducting cyclotron. The array is divided into three parts according to the type of detection system.

- A. Extreme Forward part $\theta = 3^\circ - 7^\circ$ consists of plastic phoswich detectors,
- B. Forward part $\theta = 7^\circ - 45^\circ$ consists of three layer highly granular charged particle telescope Si strip-Si strip-4 CsI(Tl) with 256 pixel and
- C. Backward part $\theta = 45^\circ - 175^\circ$ with all parts ϕ coverage $0^\circ - 360^\circ$.

The geometry of the array is such that the front face of the detectors form part of sphere of radius 150 mm. The spherical surface was discretized with isosceles trapezoids which represents the functional face of a detector shaped like a frustum of a pyramid. There are six rings with azimuthal symmetry. Different number of detectors will be kept on different rings with different angles.

The backward part of the detectors housing, their assembly and support system has been designed and fabrication is in progress in the divisional workshop. The support structure has been designed for mounting and dismounting the detectors independently. The dismantling sequence simulation for every housing was carried out with CATIA software to assess the accessibility of individual detectors for maintenance and to ensure that the detectors do not interfere with the other detectors of the array. Fig. 1 shows the model of the backward part of the charged particle detector array. The mechanical design, component level fabrication, inspection and final assembly (Fig. 2) of backward part were carried out at the workshop of Accelerator Technology Development Section.

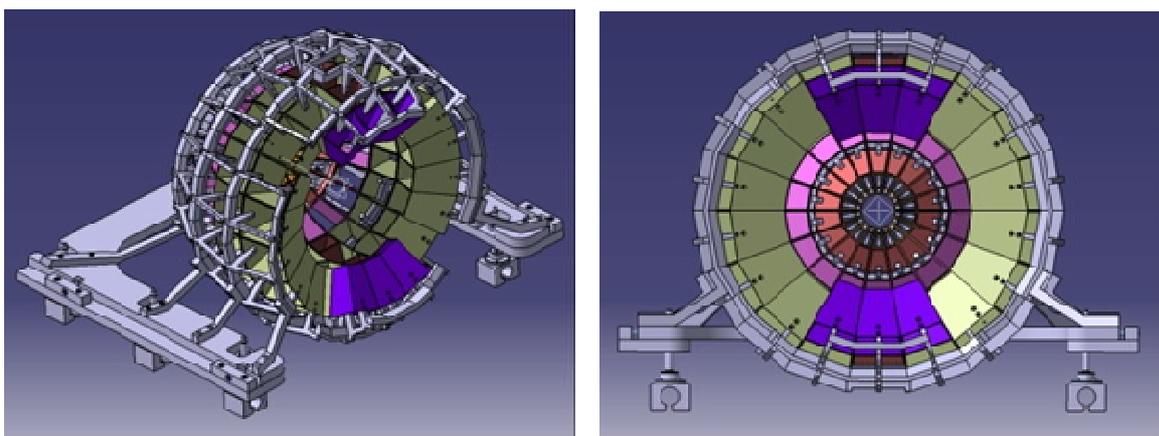


Fig. 1: CAD Model of CPDA Backward Housing



Fig. 2. Final assembly of the backward part of CPDA