ALICE PMD alignment issues
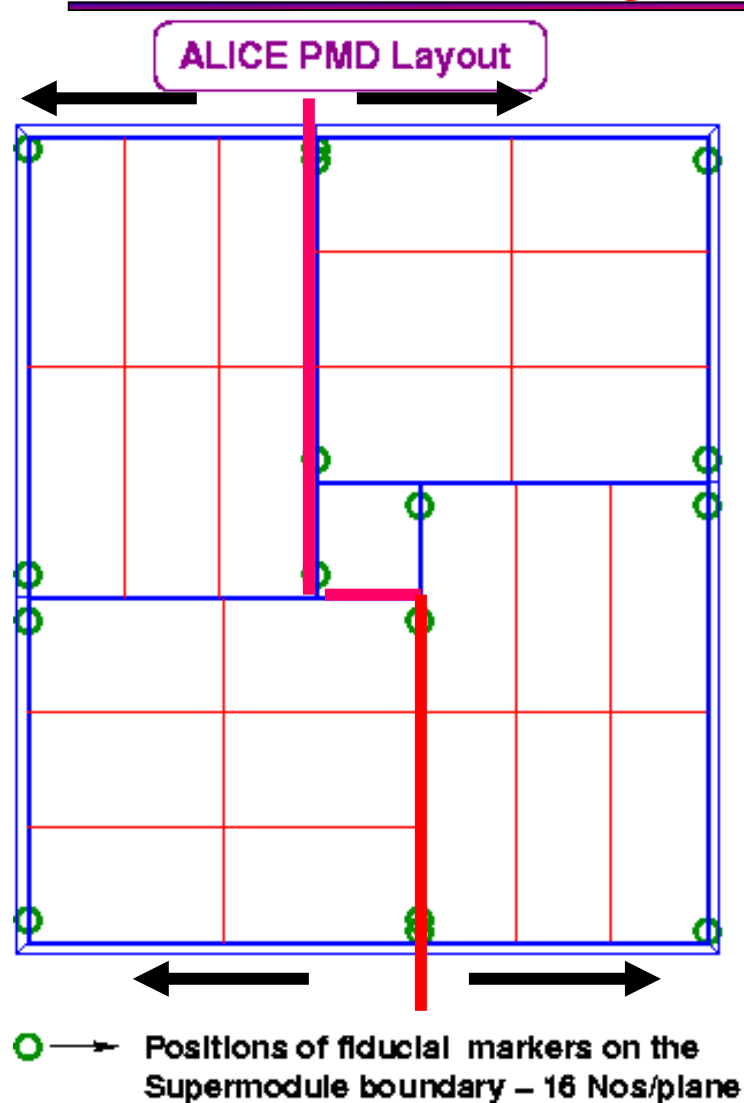
Bedanga Mohanty, VECC, Kolkata

Outline --

- ➤ Align-able parts
- ➤ Alignment targets
- ➤ How to implement in simulation
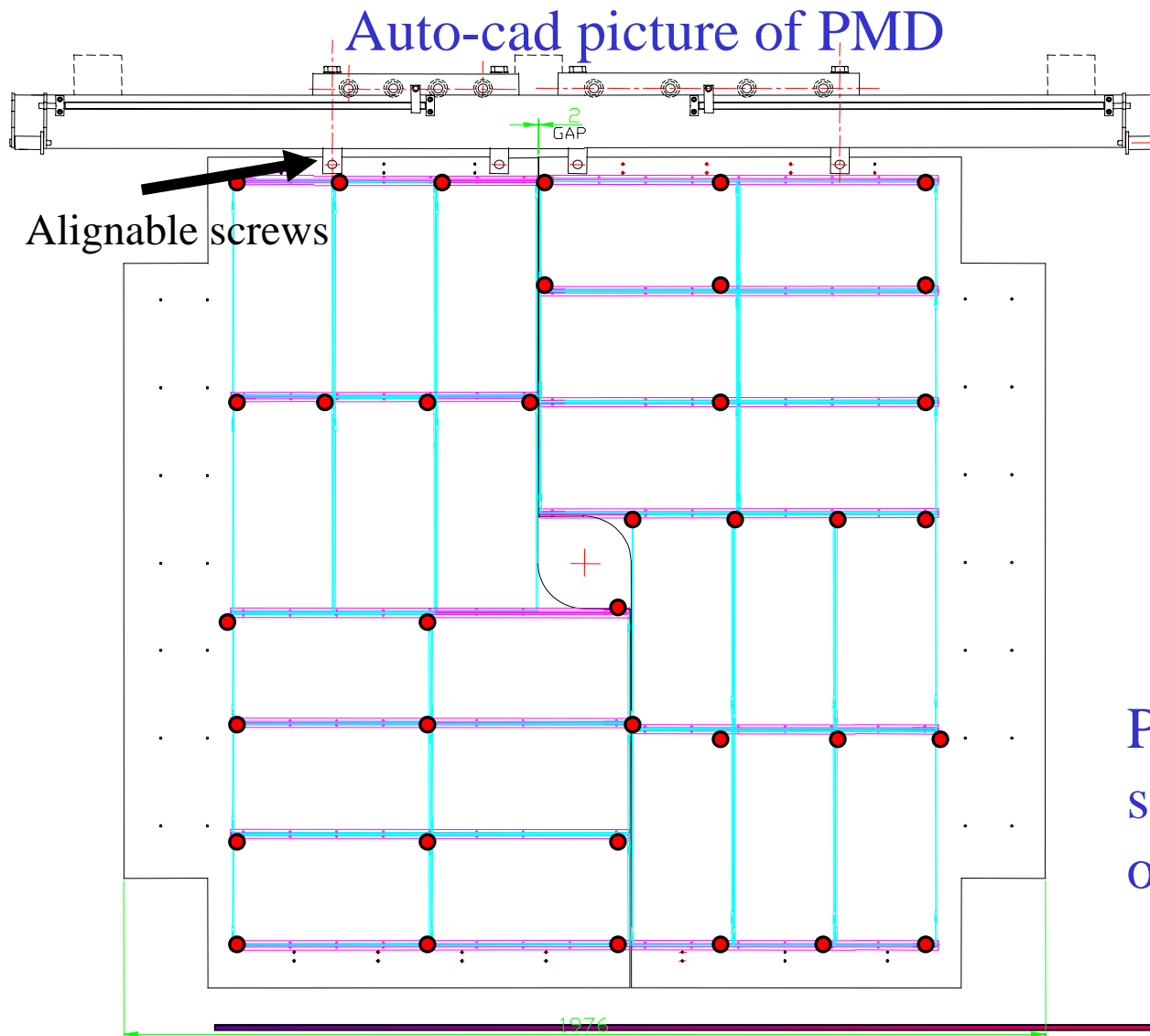- ➤ Correct the misalignment

Align-able parts of PMD

ALICE PMD Layout

O ⟶ Positions of fiducial markers on the
Supermodule boundary – 16 Nos/plane

✓PMD has 2 planes : Veto and preshower

✓Each plane has 24 modules which
will be mounted separately on steel
plates.The precision of distances
between modules mounted on the
steel plates is well controlled .

✓So align-able parts of the PMD are
(i) steel plates
(ii) distance between the two planes
(iii) Cells of two planes

Alignment targets

Auto-cad picture of PMD

Alignable screws

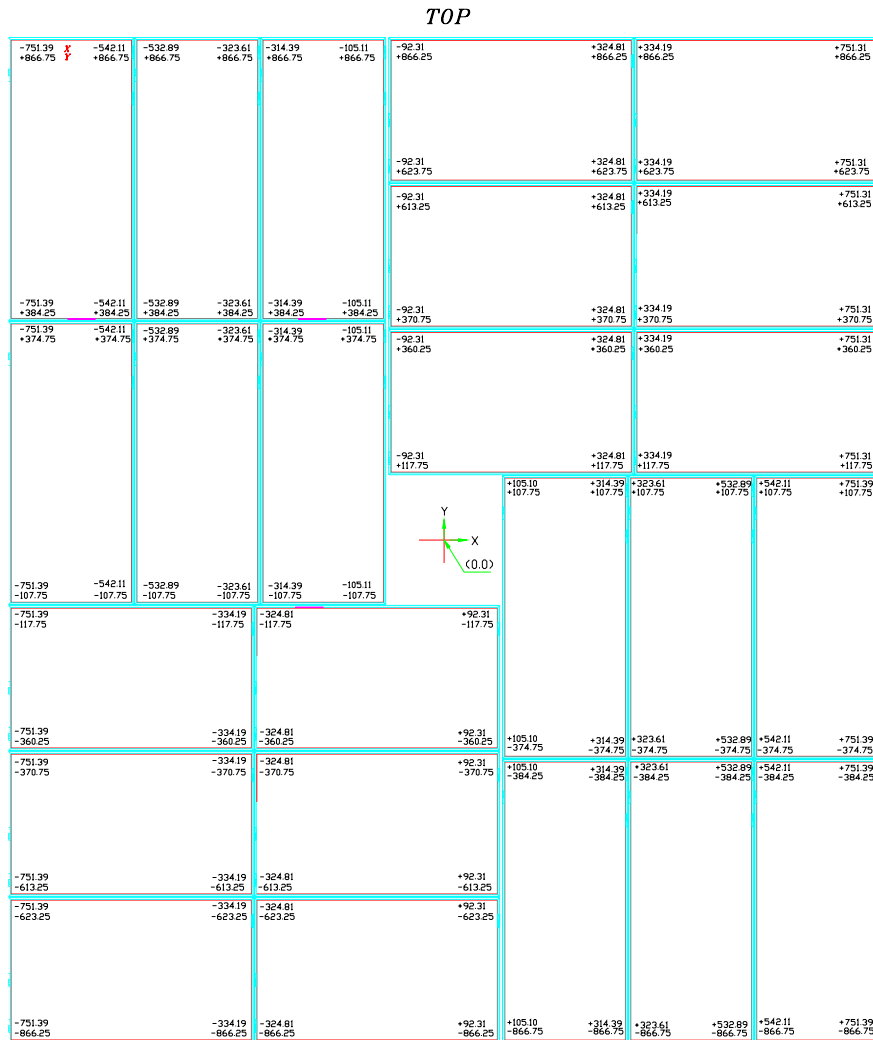🔴 Possible survey points for PMD co-ordinates and alignment

Some alignment possible by adjusting the align-able screws

Planarity problems and shift in steel frame in one direction possible.

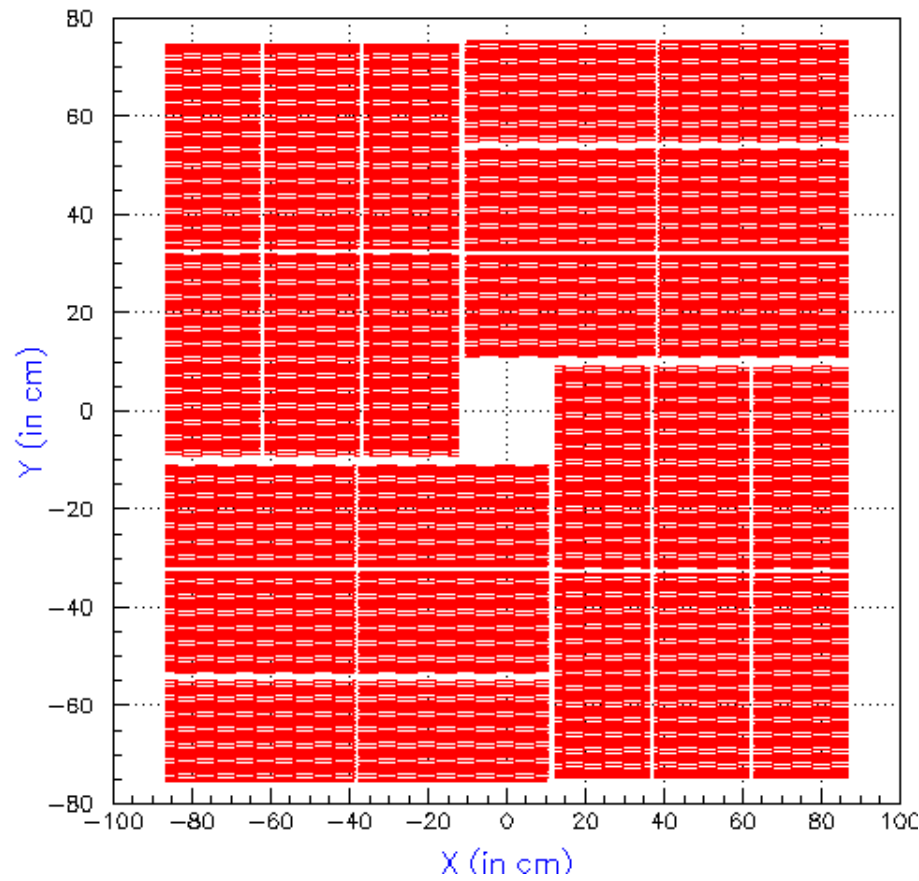# PMD Module co-ordinates

CO-ORDINATES OF CORNERS OF UM-PCB

✓Each of the corner cell position in 48 modules of the PMD is known from hardware and relative distances between modules also know

✓These are implemented in software : GEANT

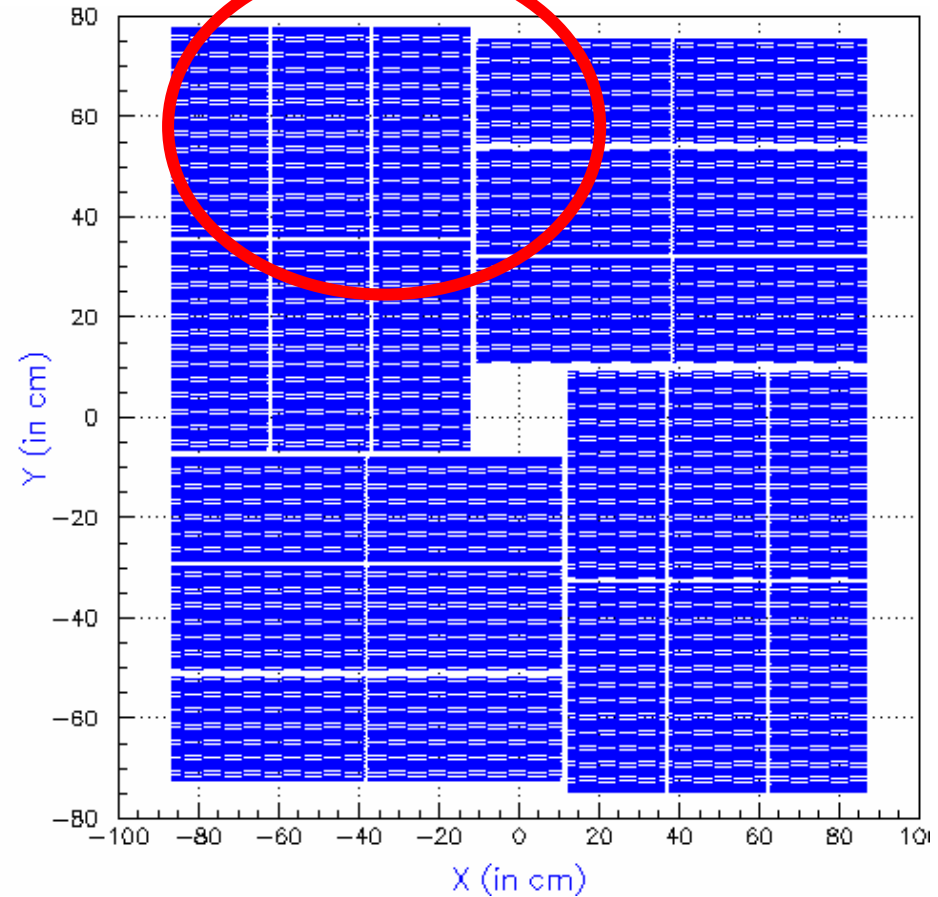✓Alignment of PMD modules and planes as per actual position can be implemented

Misalignment study (simulation)

Aligned   One possibility   Misaligned

Summary

(1) The steel frame and the distance between two planes of PMD are the align-able parts

(2) Survey to give us the PMD co-ordinates at specific points. We can calculate the distance of this from the PMD cell positions

(3) These then can be incorporated in simulations

(4) Back-to-back alignment of cells on two planes of PMD is essential for a good discrimination of photon and charged hadrons.

(5) Work on alignment algorithms to correct for misalignment in progress....