

Tracker Meeting: simulation of the first station calibration in a vertical position

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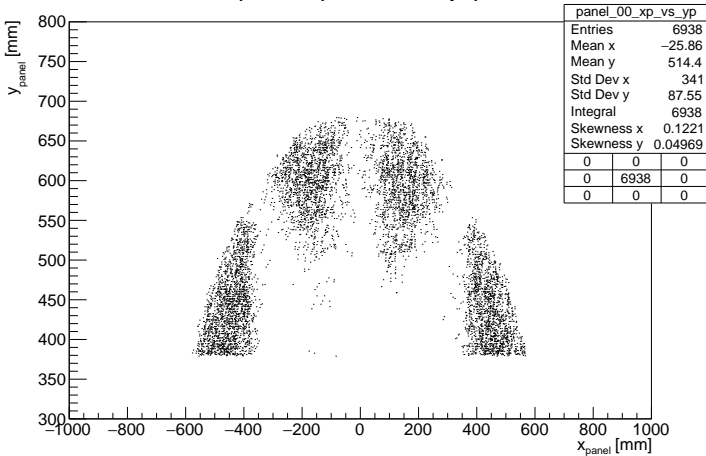


Cosmics simulation and selection criteria

- A simulation has been performed to reconstruct cosmics for the calibration, to understand possible biases in the determination of longitudinal position due to the non uniform illumination of a panel;
- Selection of first station;
- Vertical and extracted position;
- No magnetic field;
- To reconstruct a straight line in 3D, at least 4 hits at different z are needed: tracks selected with $nhits_{face_i} \geq 1$;
- To improve the resolution, $nhits_{panel_i} \leq 3$ were selected.

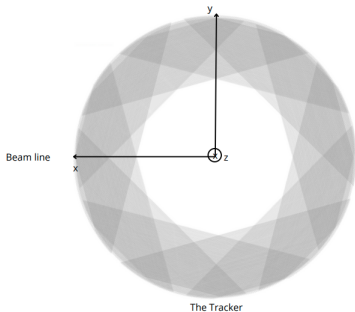
Panel illumination

Run 1210, plane0, panel0: x vs y, panel frame



Reconstruction of Cosmic tracks

- The station is not yet calibrated:
only whether a straw has been hit or not is known;
- The reconstruction of the hit position is performed using:
 - the straw direction;
 - the straw midpoints (x, y) ;
 - the straw z coordinate.
- The intersection of two straw in two different faces, in the same plane, is considered to be the hit point of a plane;
- Two intersection points are found
→ reconstructed line.



Combo, Stereo Hits and Reconstructed line

1. Geometrical Combo Hits

Determination of a unique straw in a panel:

- mean of straws midpoint (x, y, z) ;
- straws direction (x, y) .

2. Geometrical Stereo Hits

Determination of the hit point in a plane:

- intersection point (x, y) using the two straws directions and midpoints;
- mean of z coordinate between faces.

3. Reconstructed Line

Determination of a unique reconstructed track:

- one stereo hit per plane: one line reconstructed geometrically;
- the intersection point of the line with panels is found knowing the z coordinate.

Results

x coordinate distribution (panel frame) $x_{rec} - x_{true}$ distribution (panel frame)

