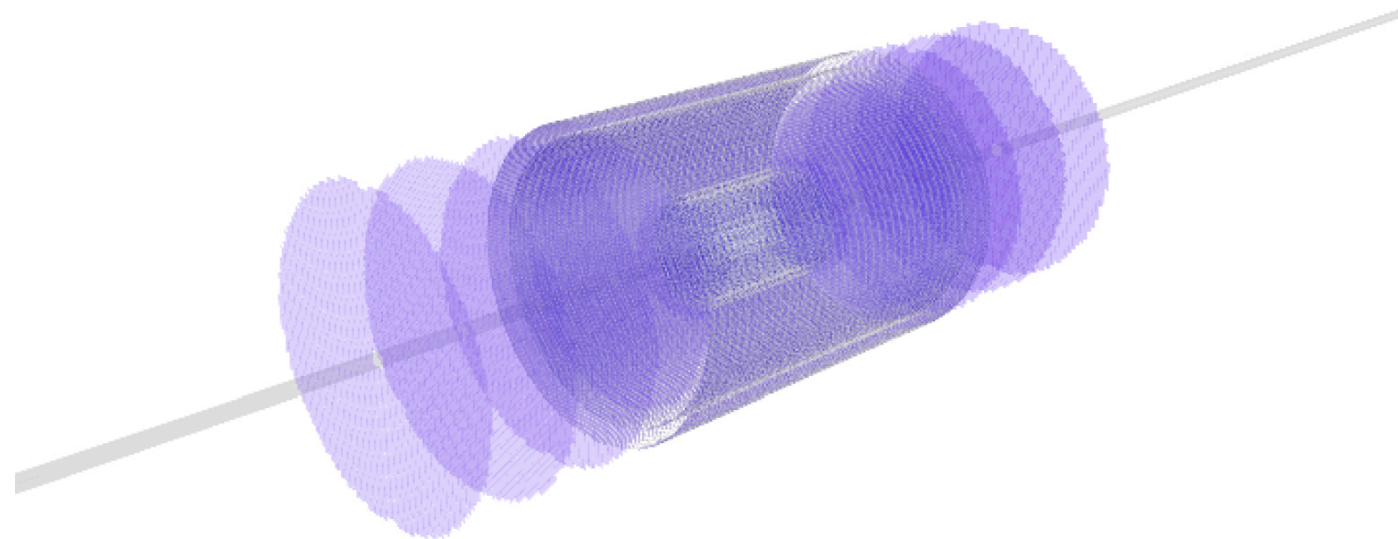


All-Silicon Tracker Implementation in Fun4All (Status report)



Rey Cruz-Torres

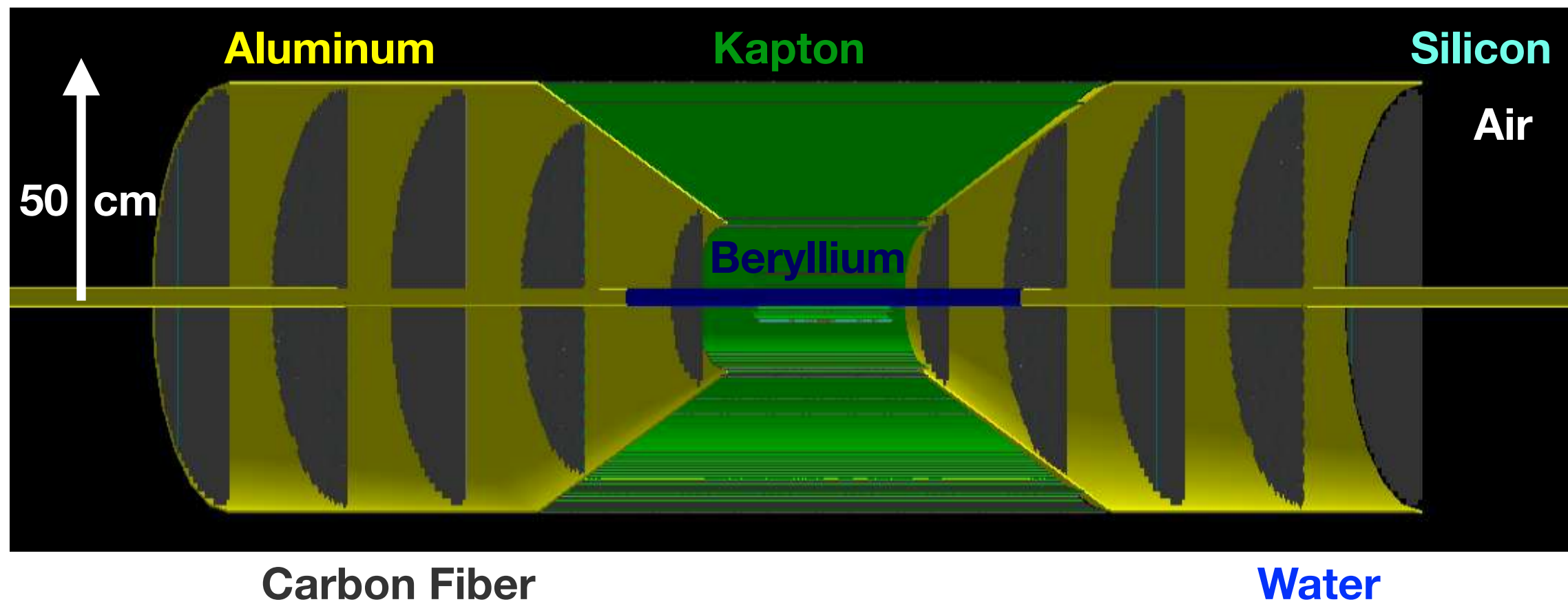
EICUG Yellow Report Tracking Meeting

05/07/2020

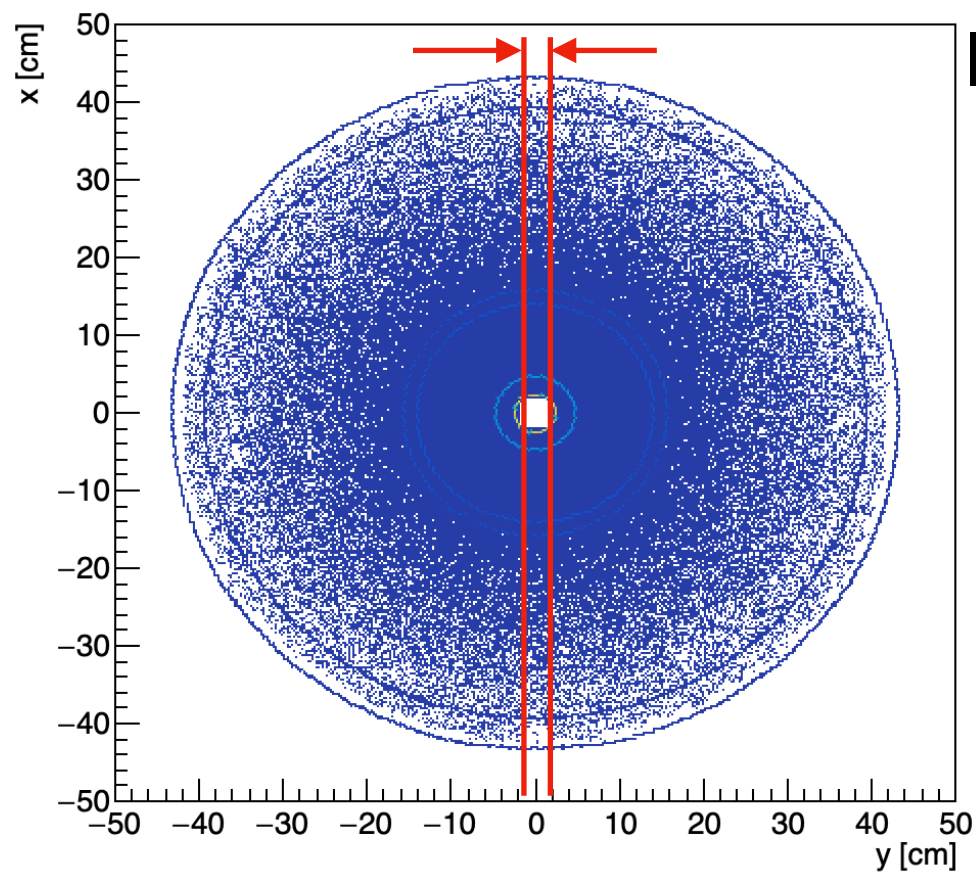
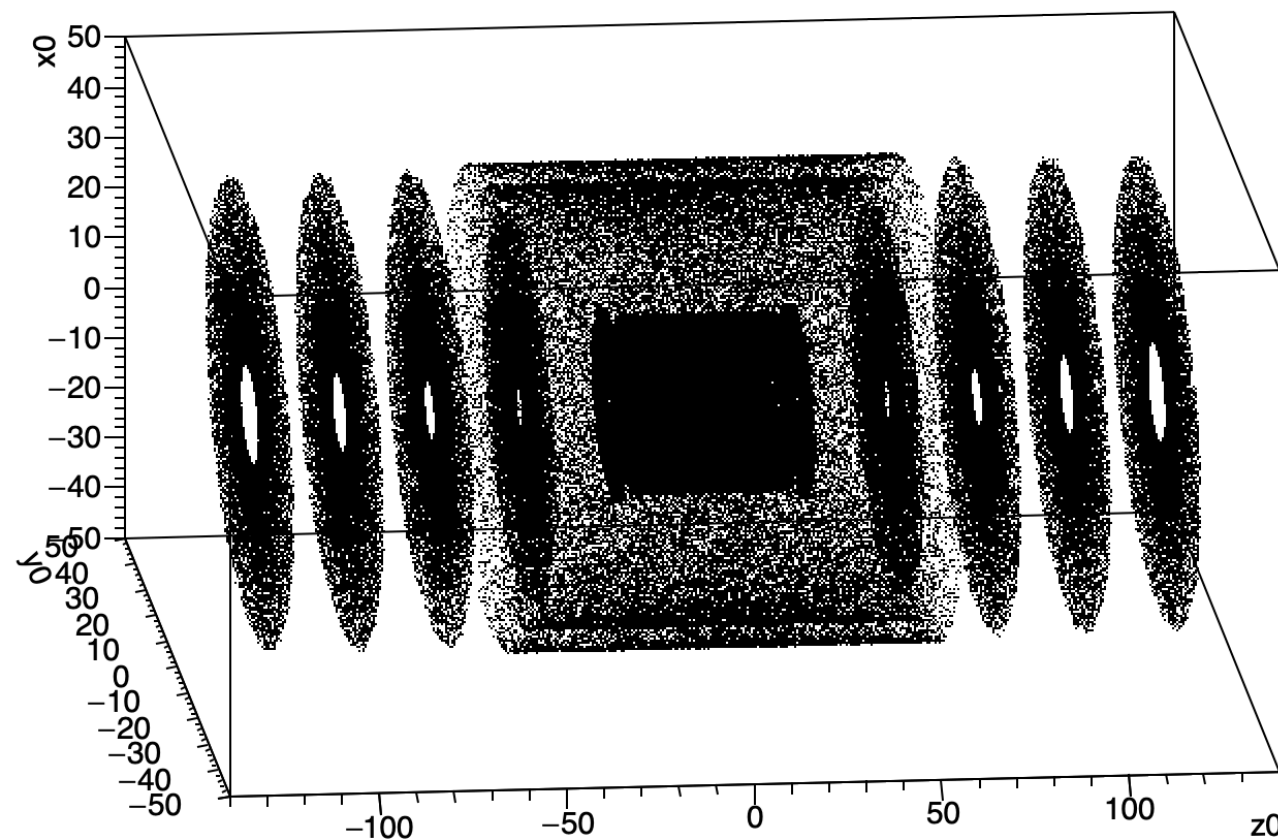
Status

See last meeting's presentation by Ernst Sichtermann [here](#).

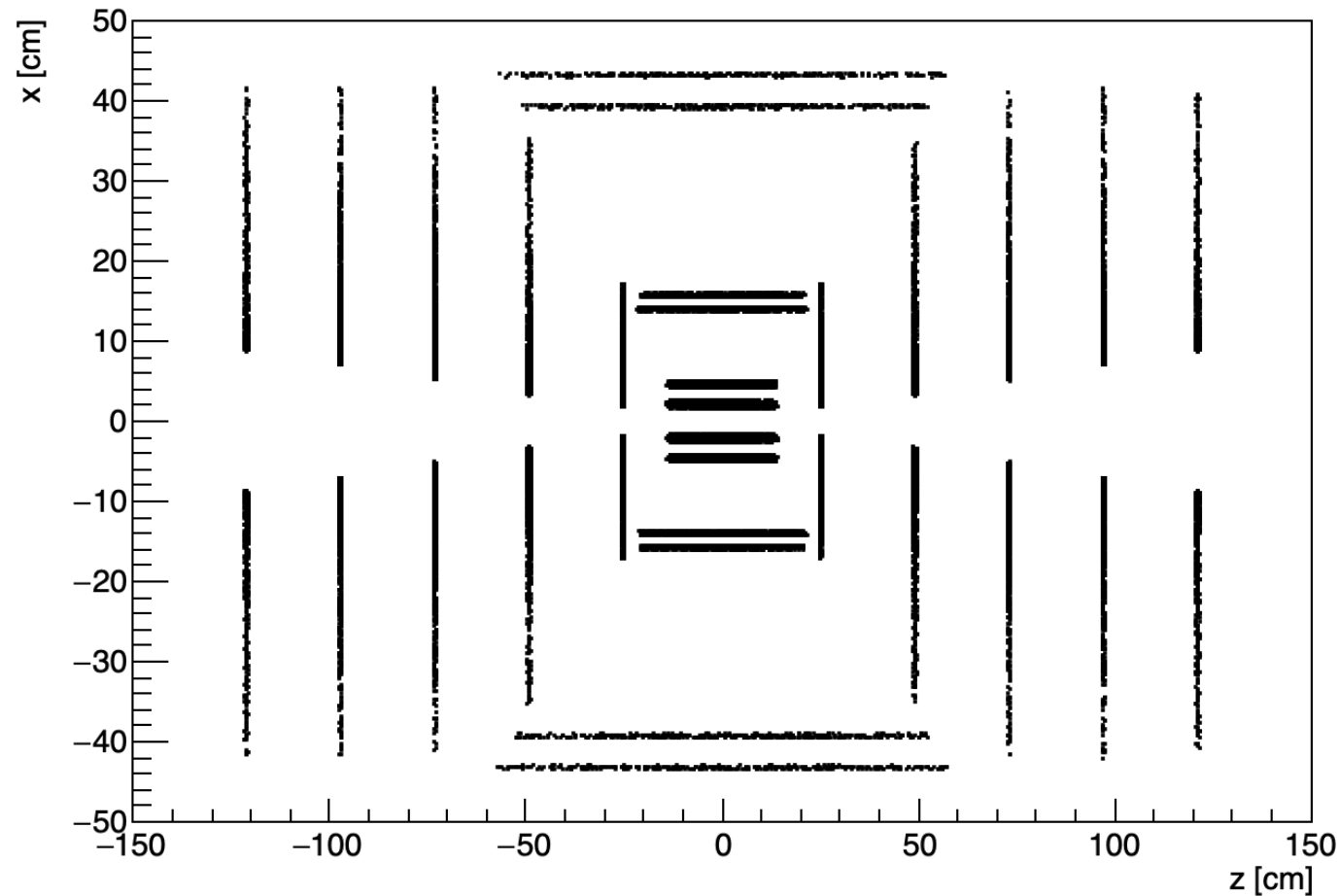
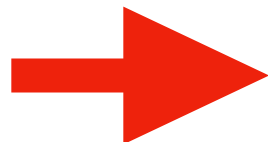
- Implementation in Fun4All by Chris Pinkenburg
- TGeo -> gdml conversion.
- Pulled out new volume from gdml file.
- Stepping action attached.
- Si material made active.



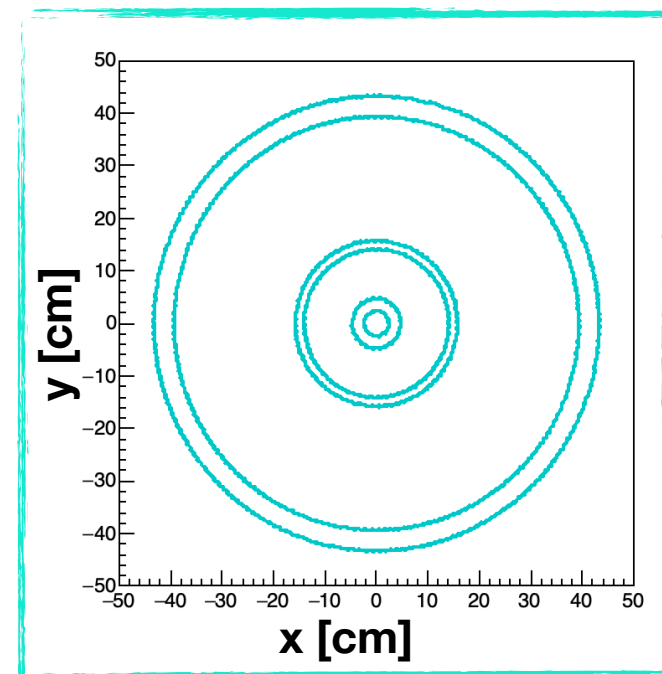
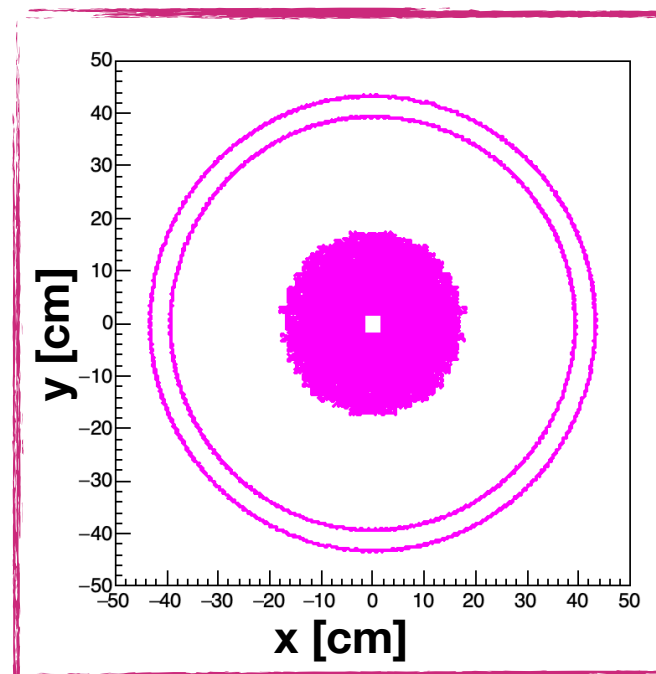
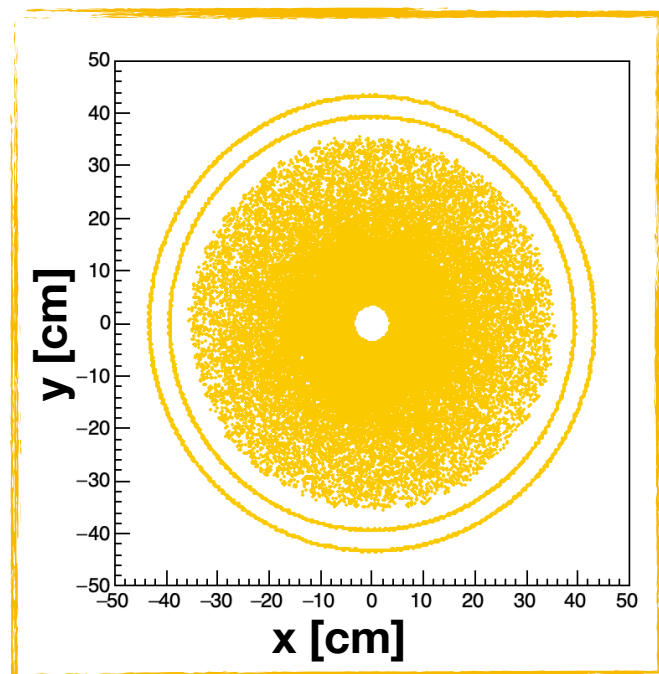
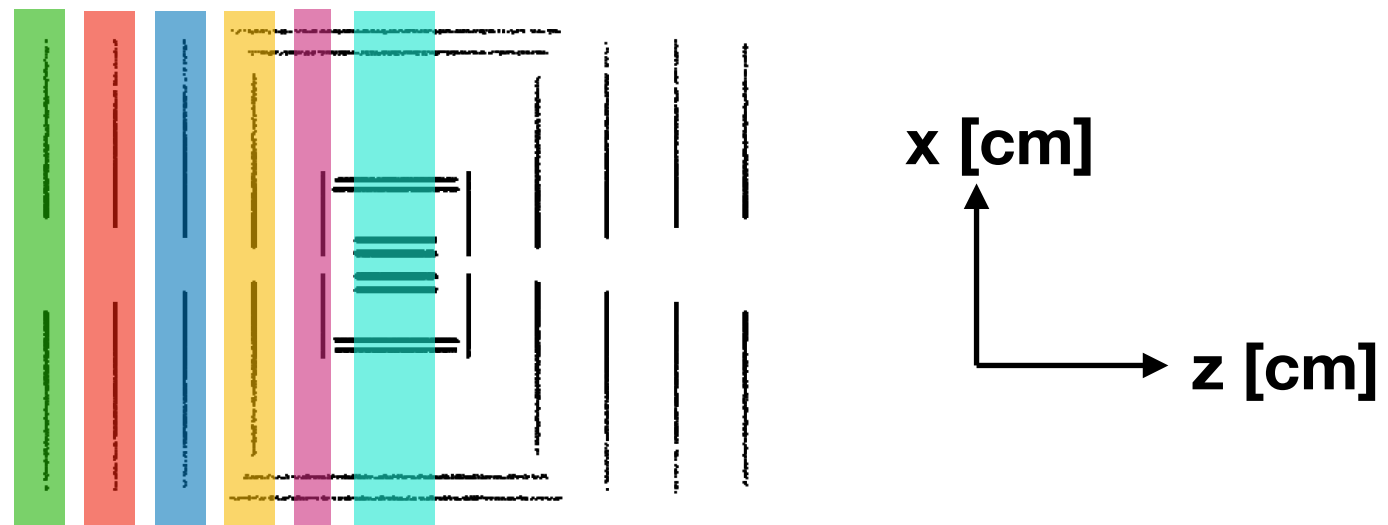
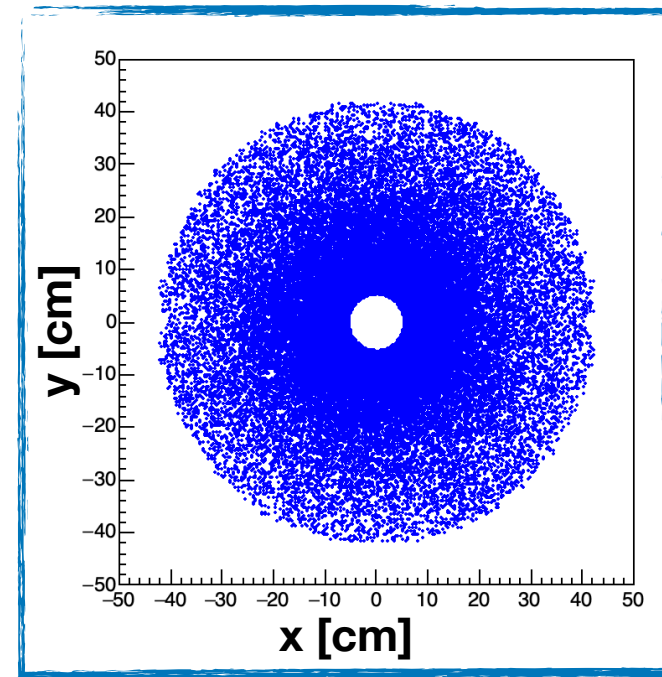
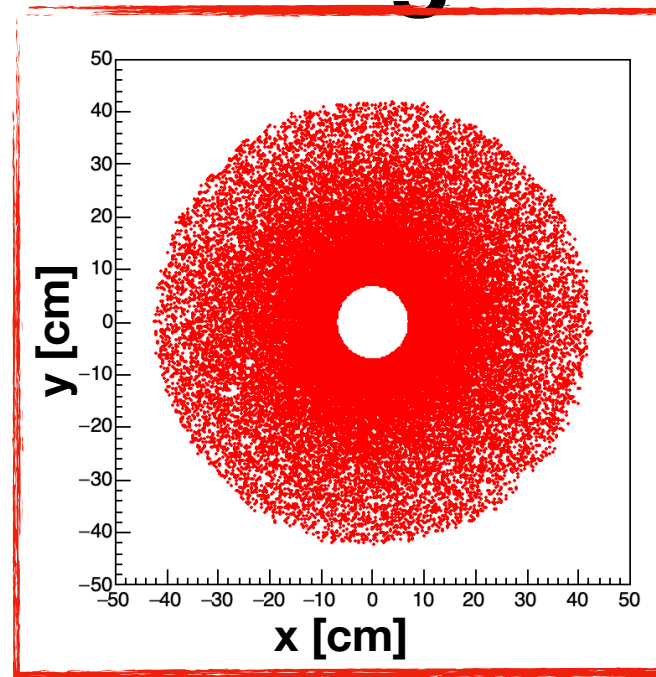
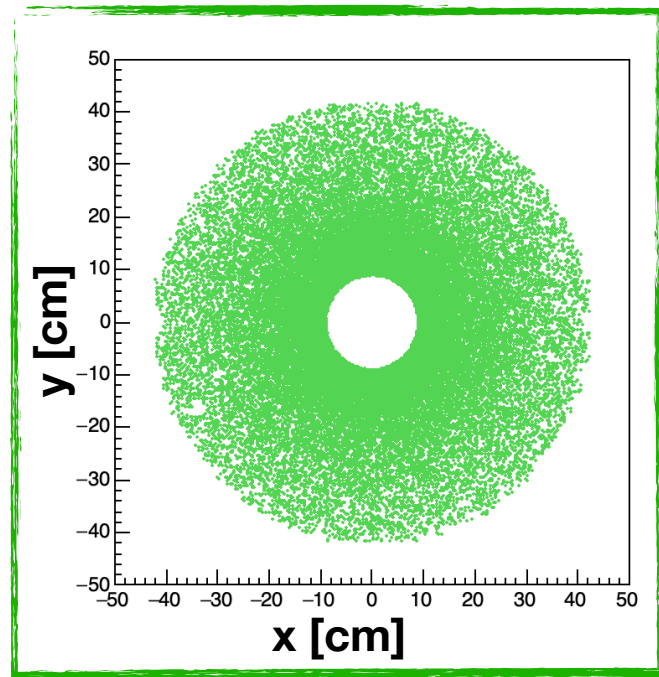
Hits in Silicon from Geantino scan



$|y| < 1.5$ cm

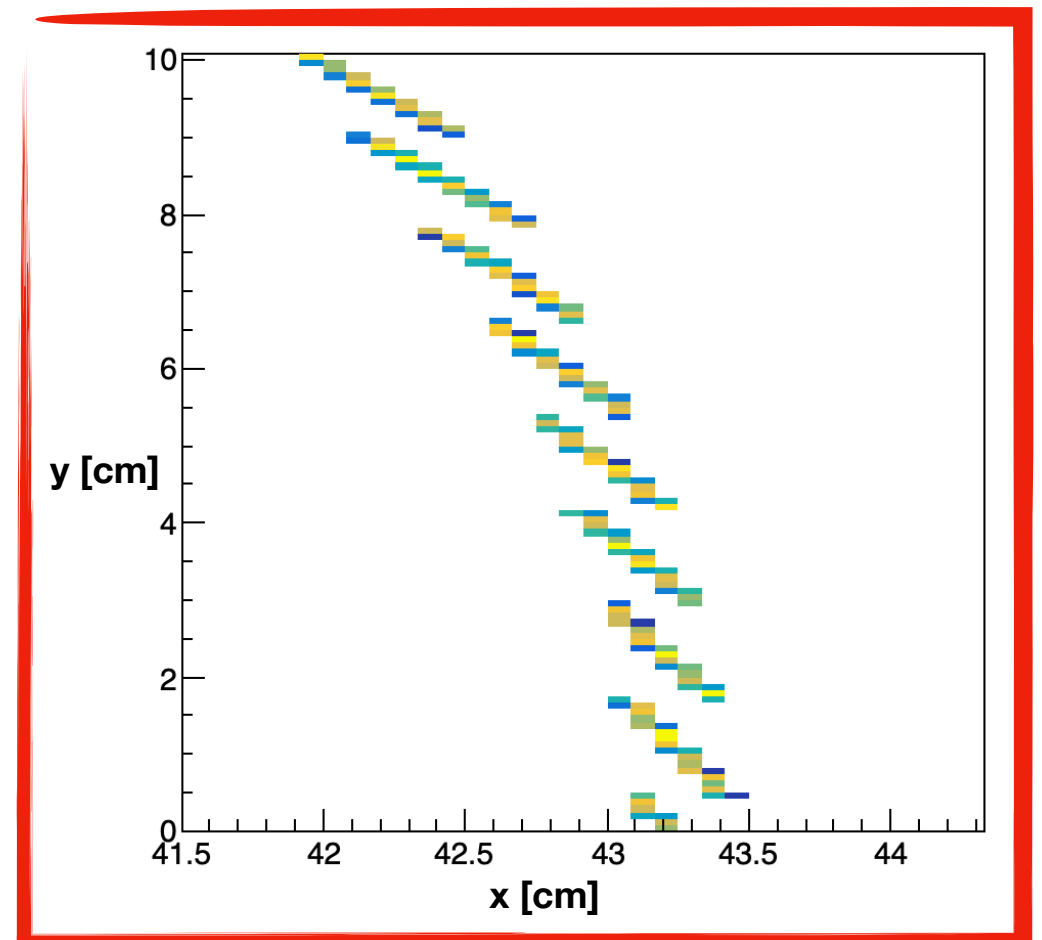
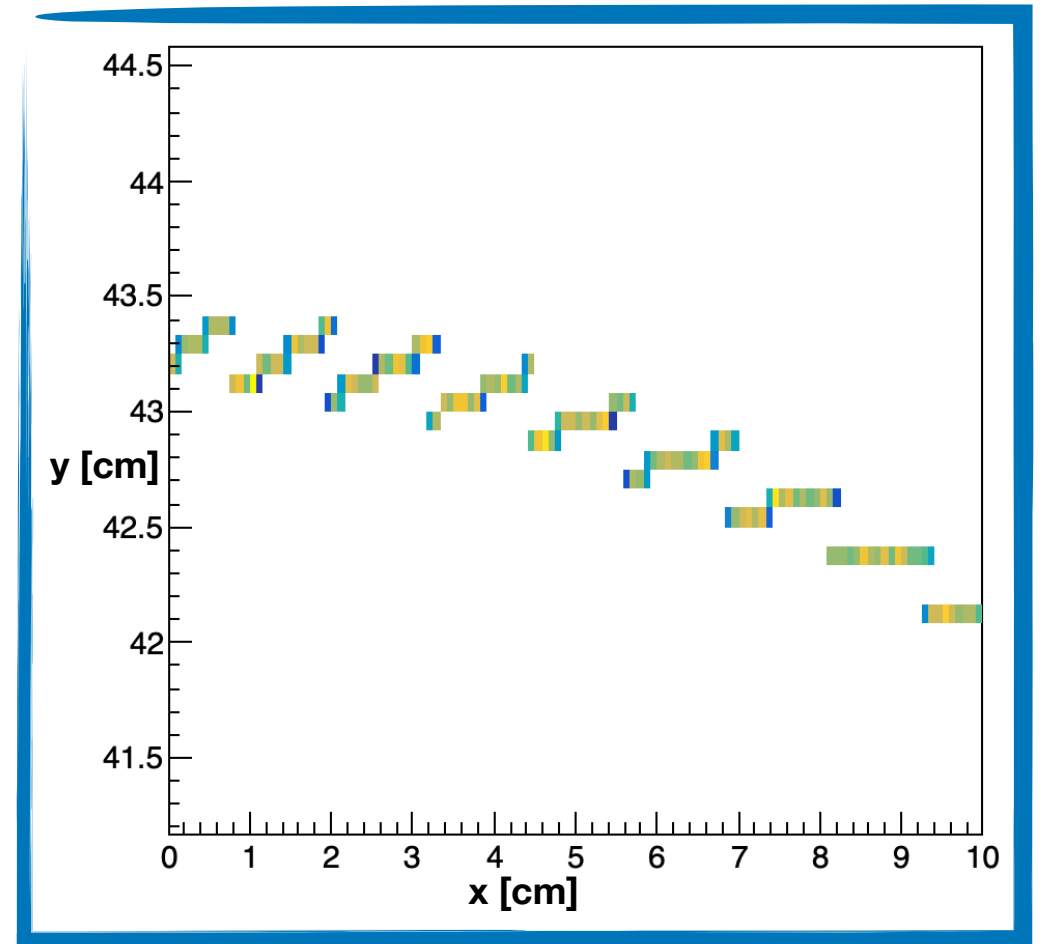
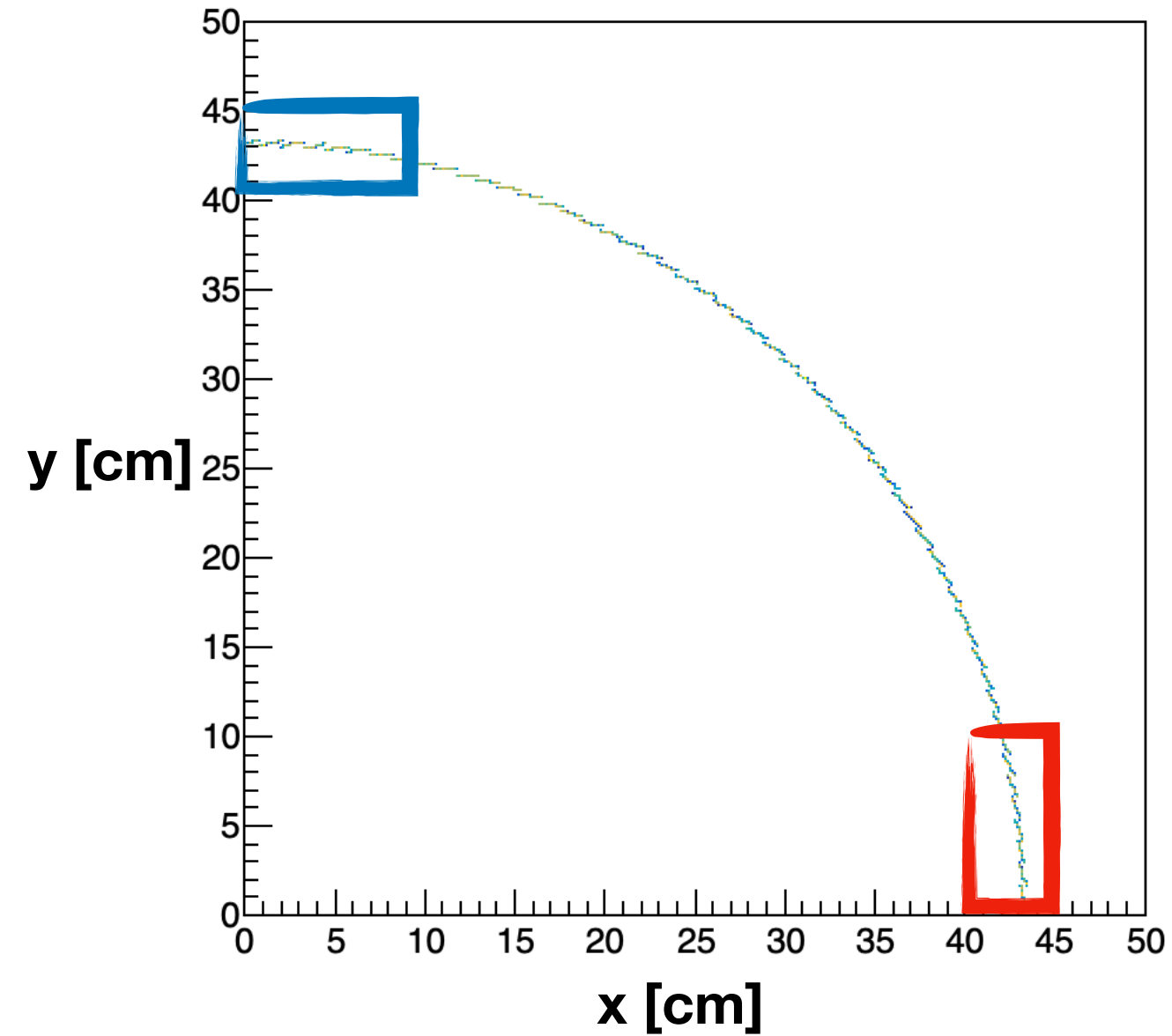


Slices along the z axis



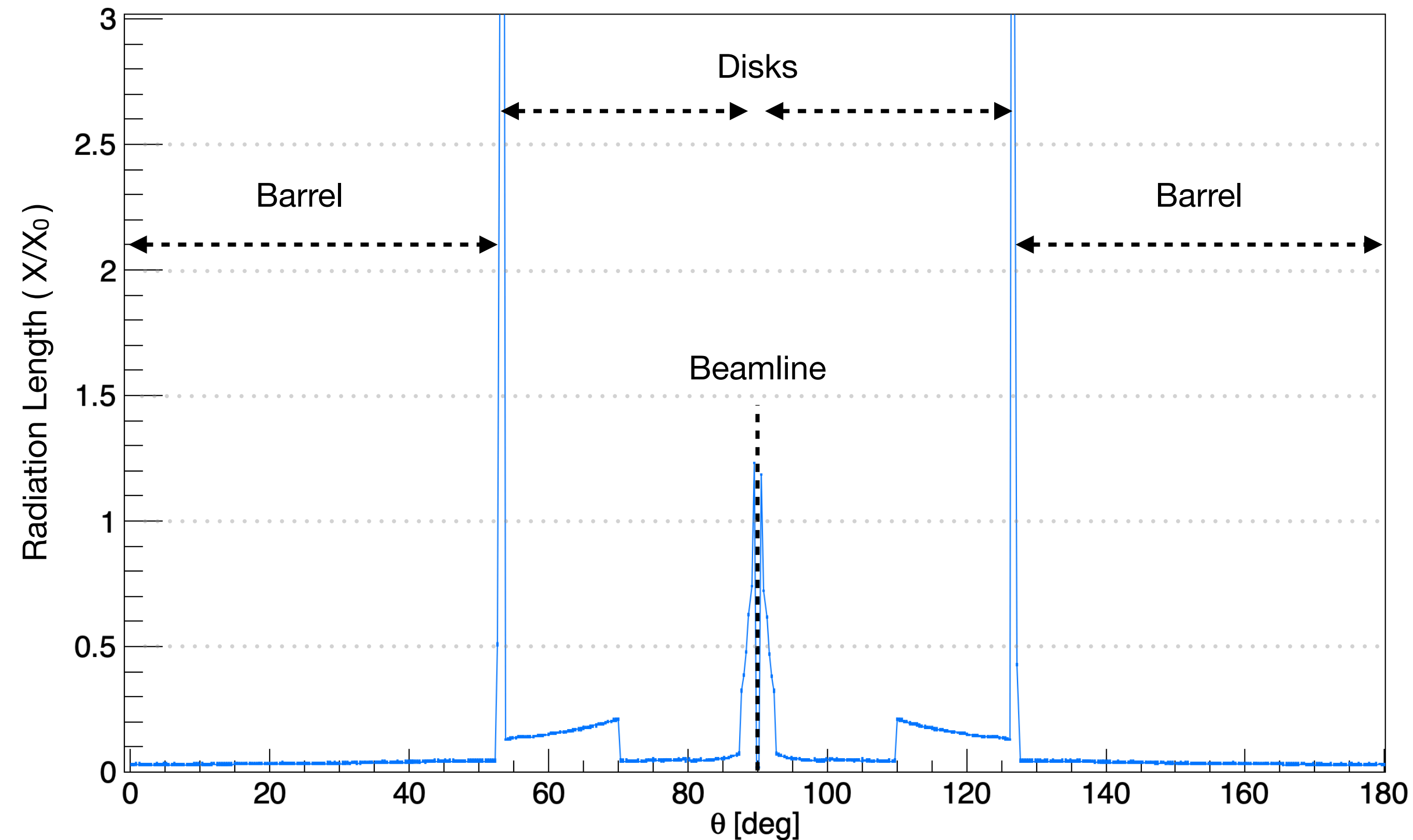
Geometry details

tile-like structure not clearly visible
in previous plots



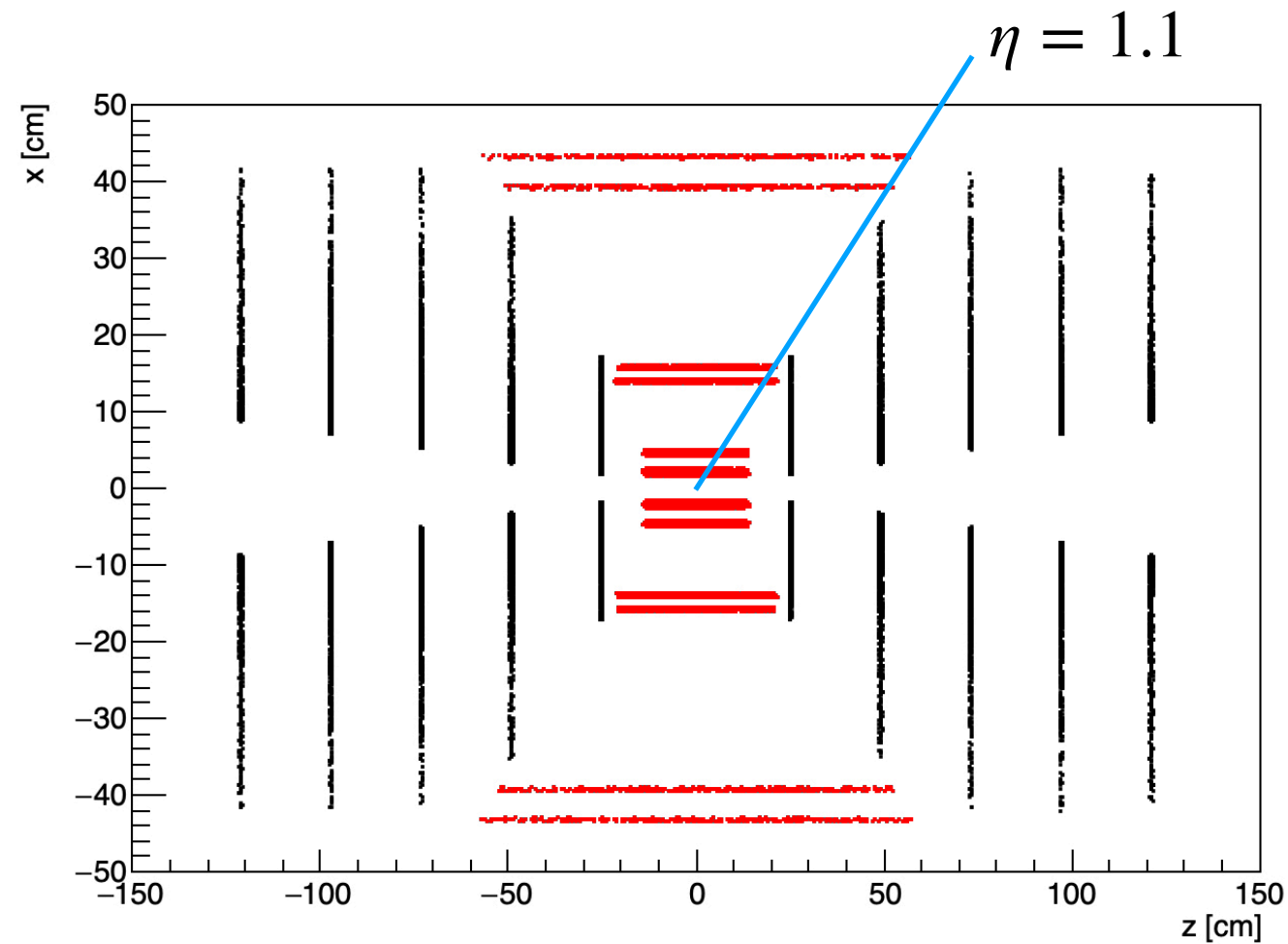
Material Scan

See procedure details [here](#).



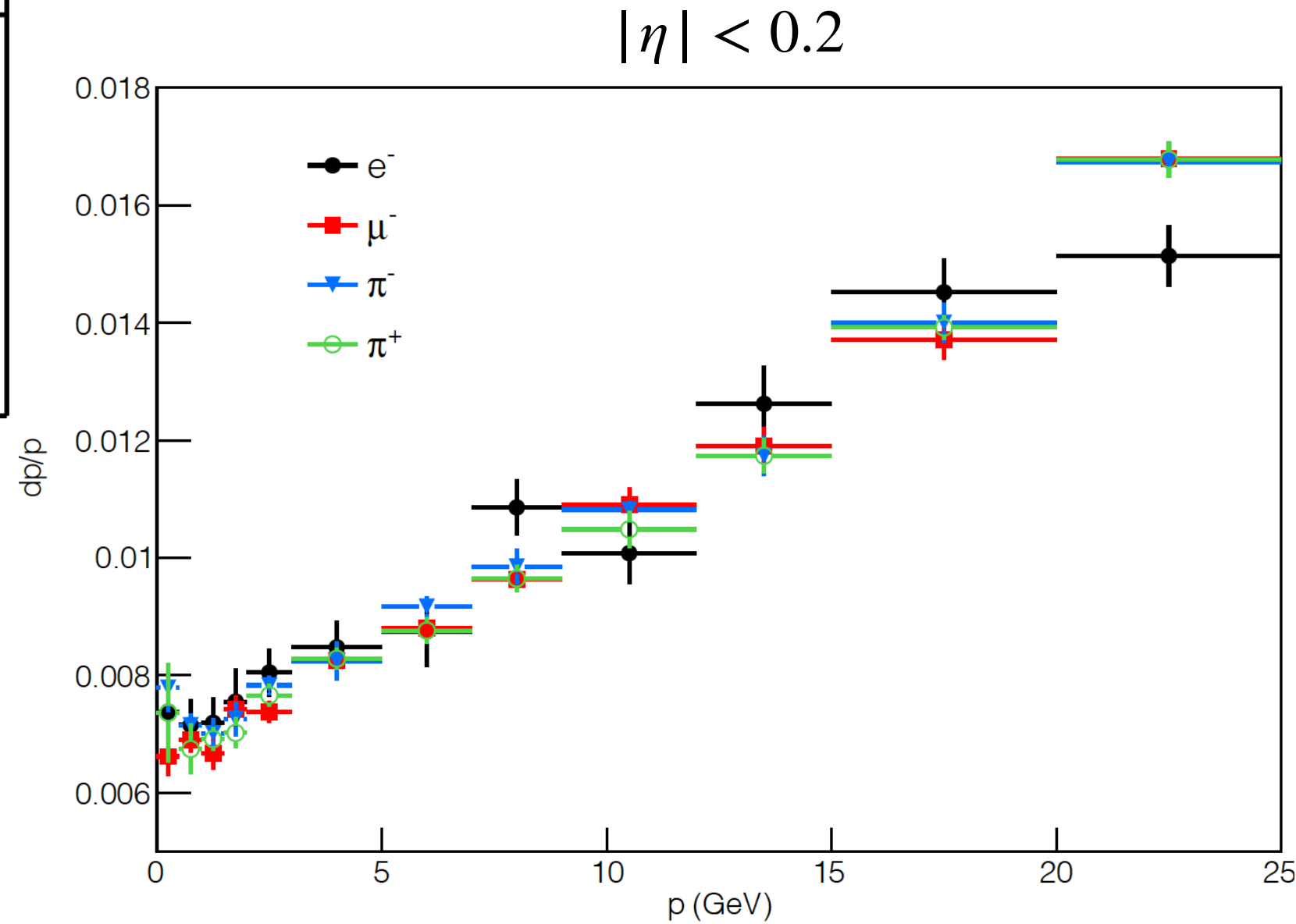
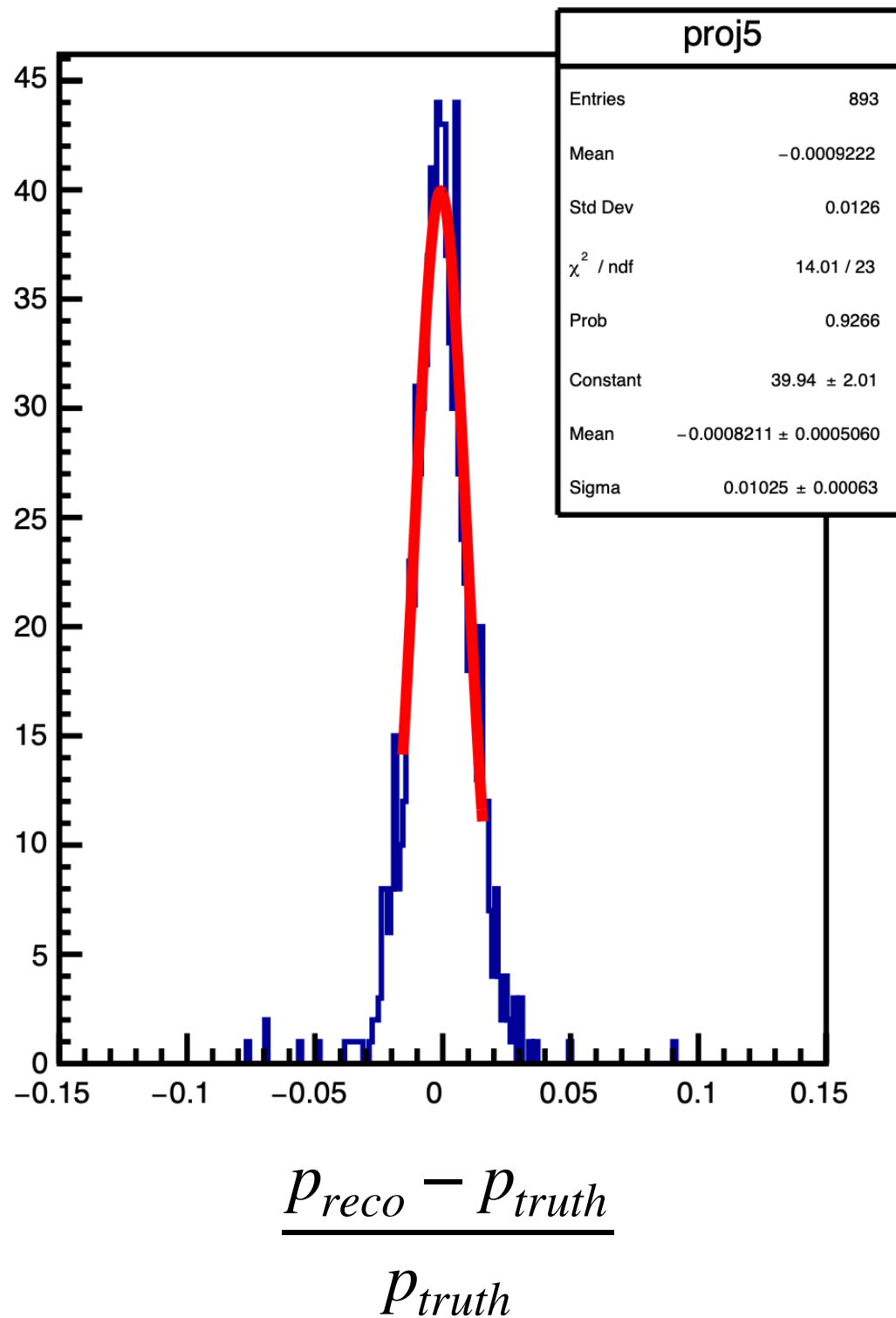
Note: world is an air-filled cylinder of 5m in radius, which adds a significant amount to X/X_0 in this calculation. Need to repeat in vacuum.

Tracking in Barrel

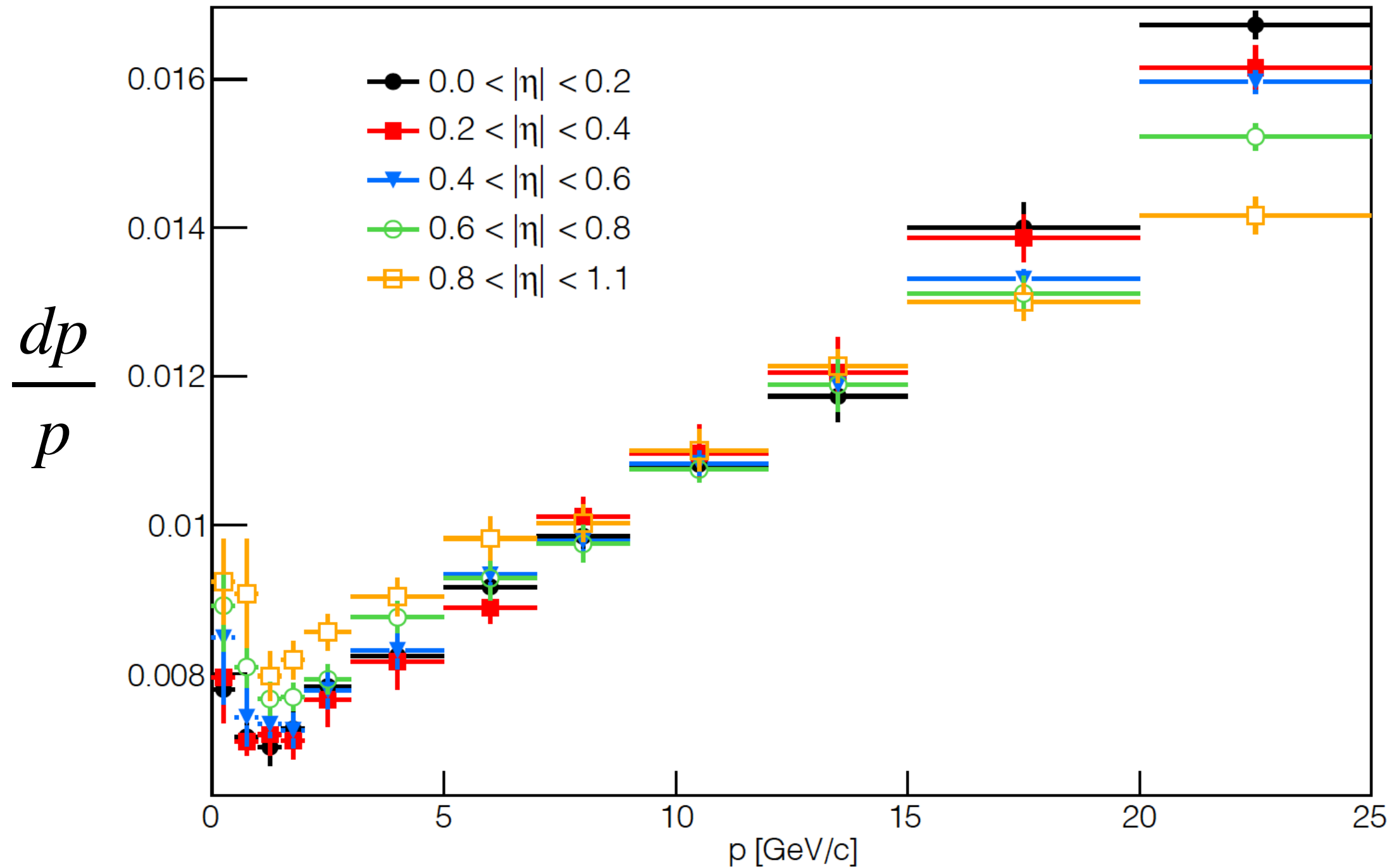


- $B = 1.5$ T
- Fast pattern recognition and full Kalman filter with PHG4TrackFastSim
- Spatial resolution:
 - azimuthal resolution: $5 \mu\text{m}$
 - z -resolution: $5 \mu\text{m}$

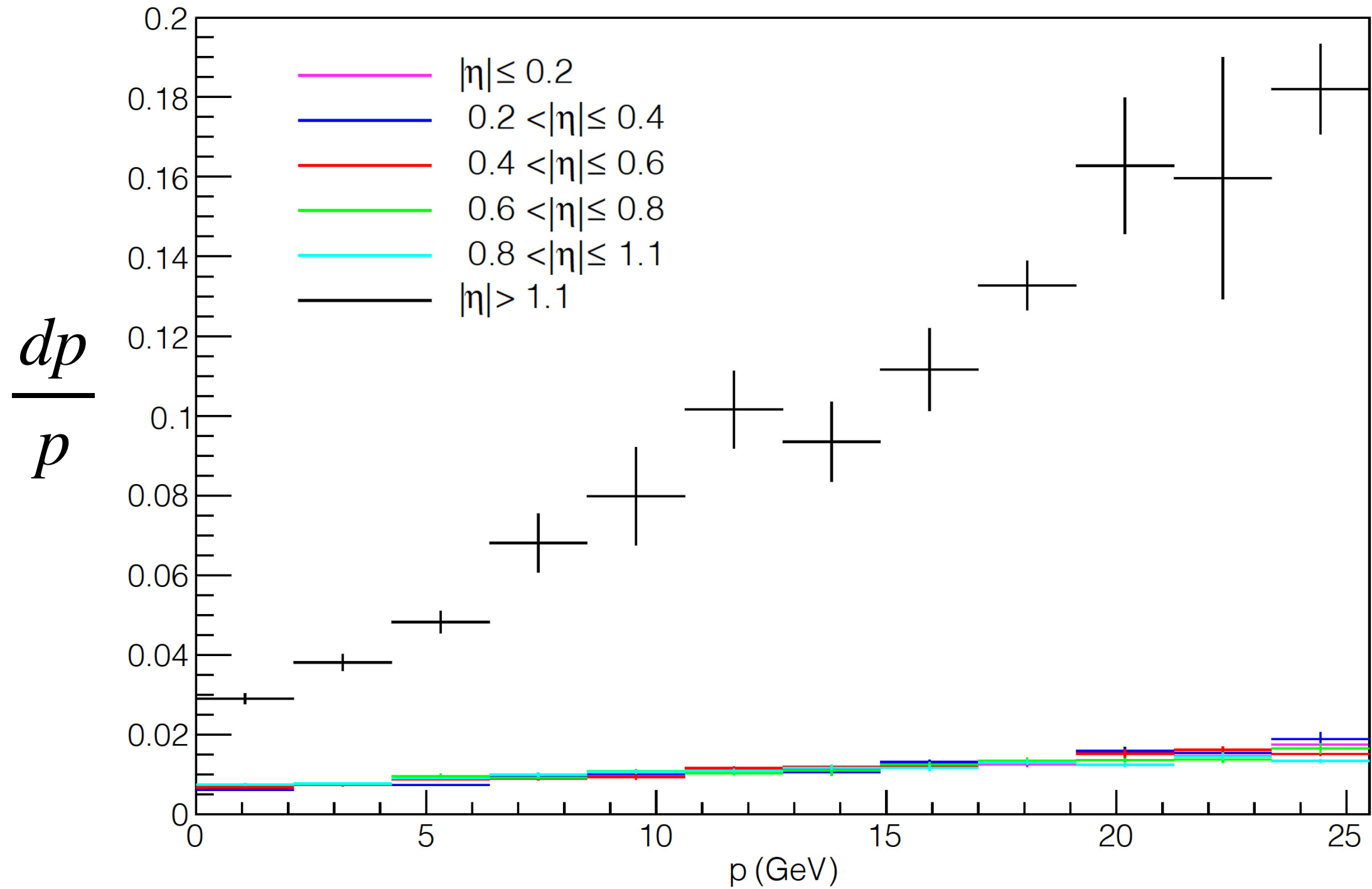
Barrel Resolution Studies



Barrel Resolution Studies (π^-)



Barrel Resolution Studies (π^-)

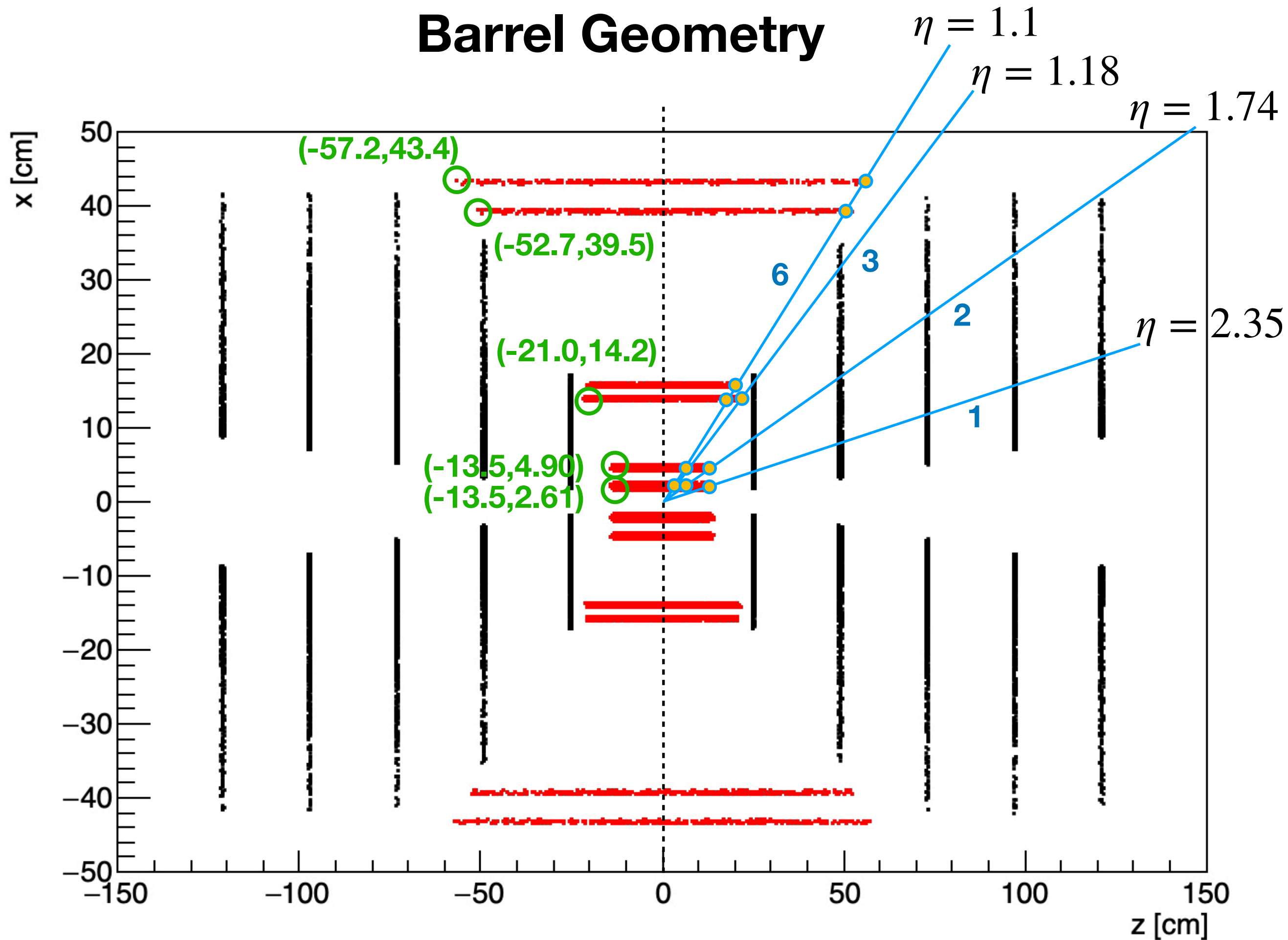


Next steps

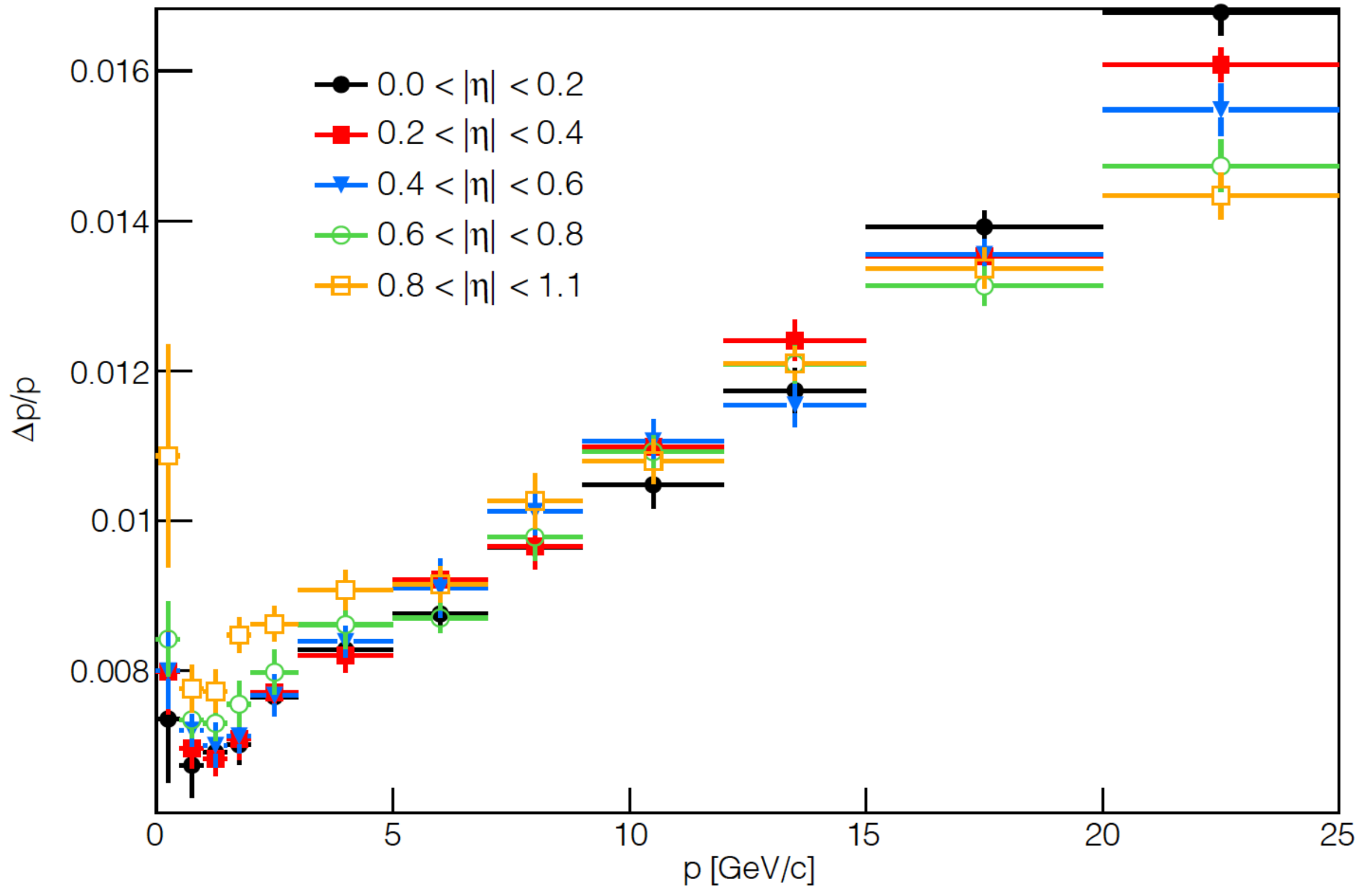
- Implement tracking in the forward/backward directions
- Additional geometry and tracking tests
- Additional resolution and efficiency studies

Backup Slides

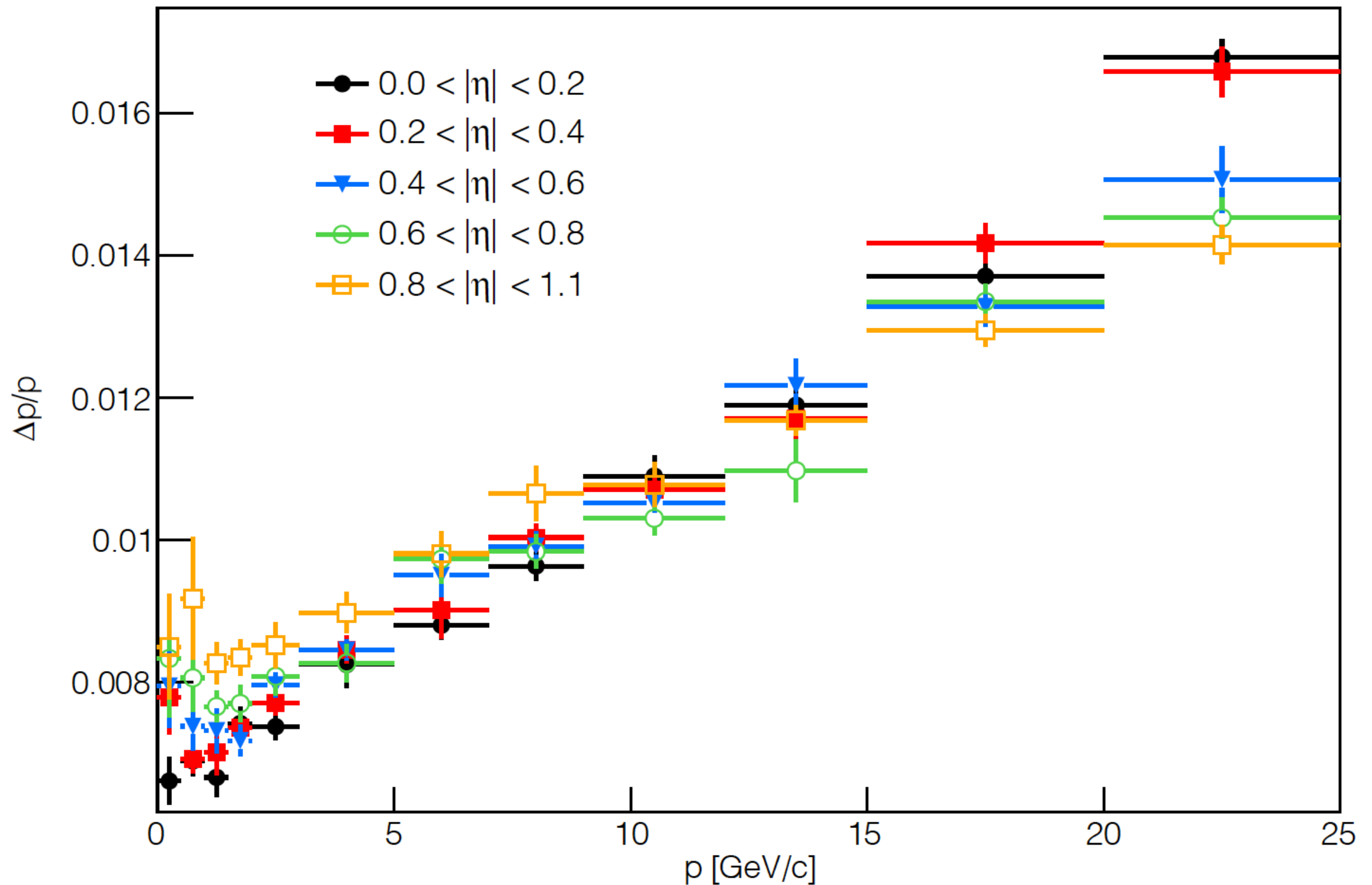
Barrel Geometry



Barrel Resolution Studies (π^+)



Barrel Resolution Studies (μ^-)



Barrel Resolution Studies (e^-)

