

Updated ECCE Tracking Performance with the 2nd simulation production

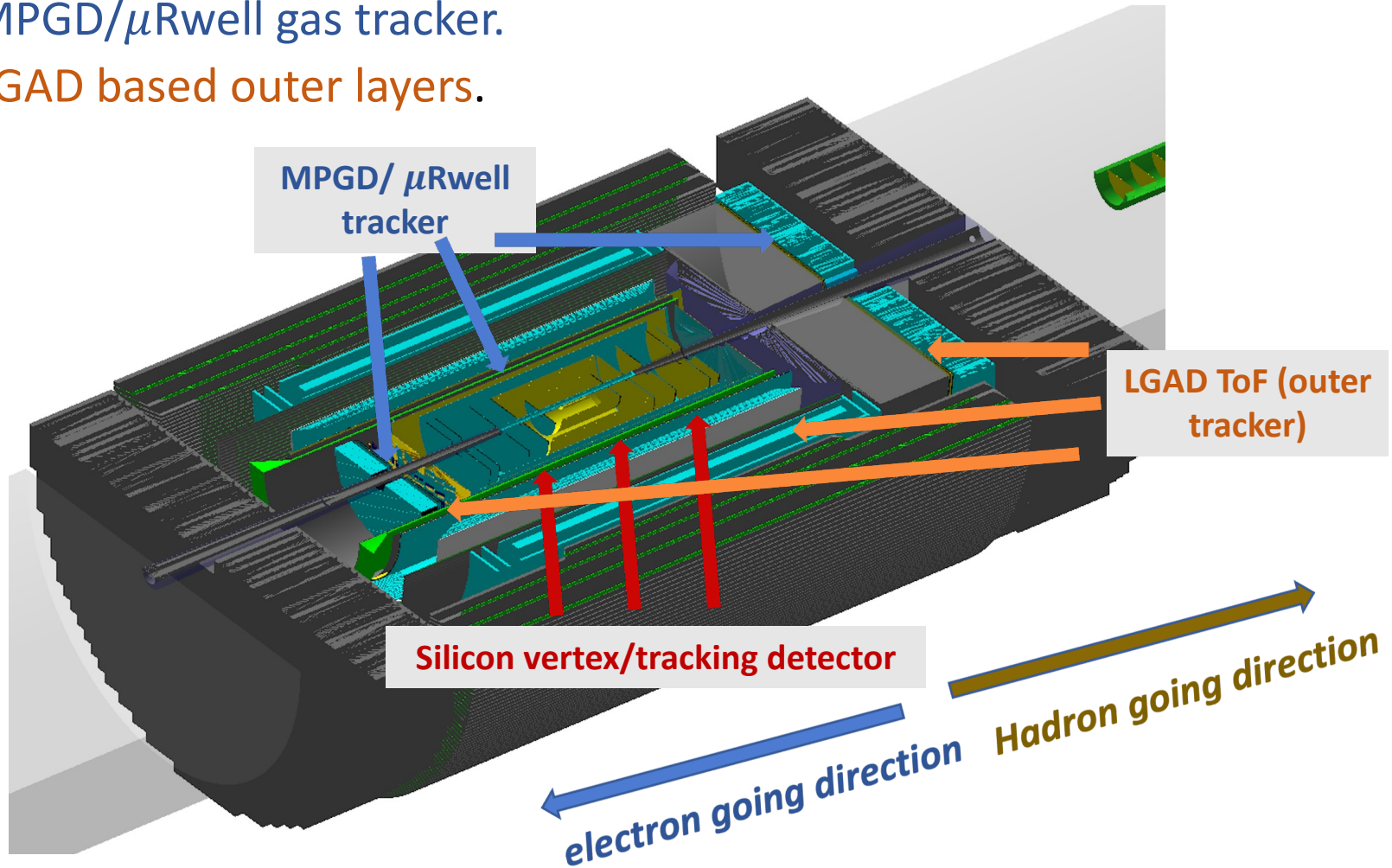
Xuan Li (Los Alamos National Laboratory)

- Tracking geometry in the 2nd simulation camping.
- Comparison of the tracking performance between the 1st and 2nd simulation camping.
- Comparison of the tracking performance between different tracking detector configurations from the 2nd simulation camping.
- Conclusions and To do.

Detector geometry in the 1st simulation camping



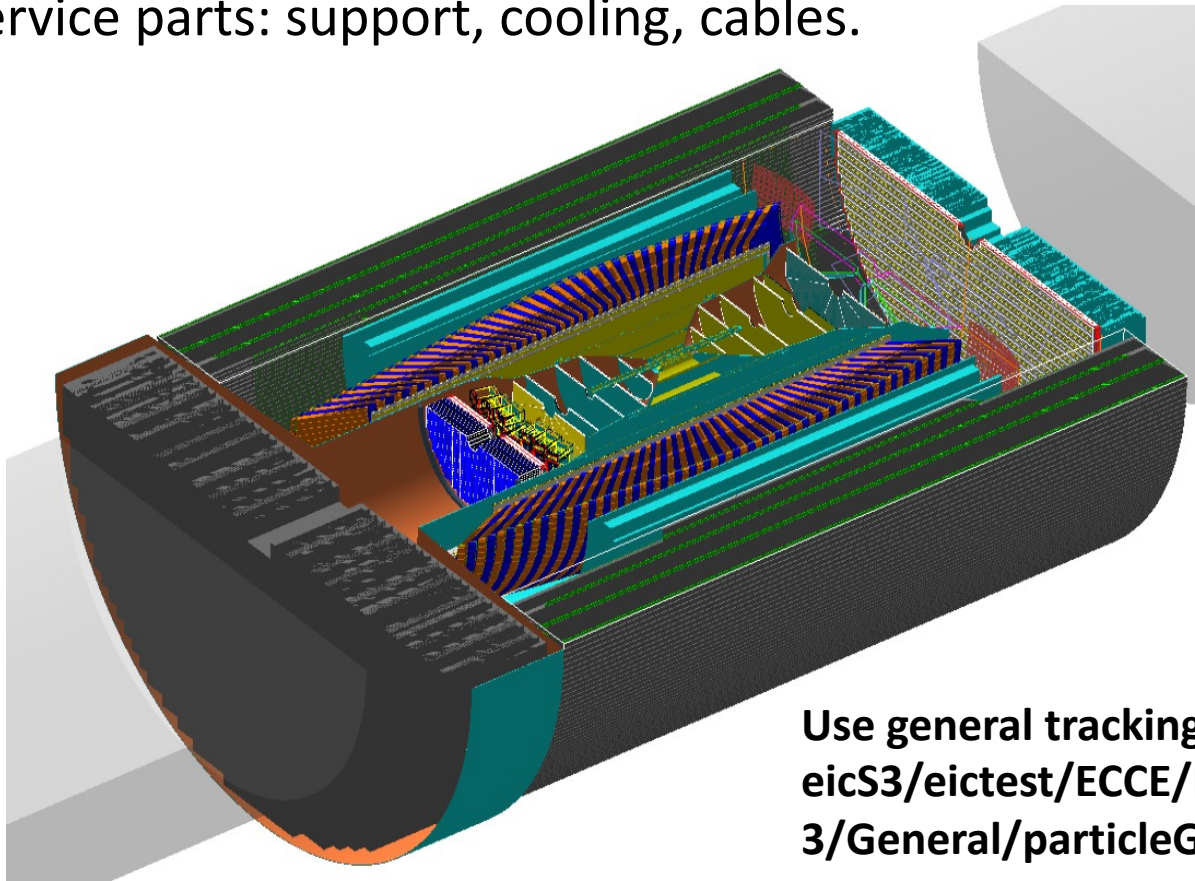
- 1st simulation camping ECCE tracking detector consists of
 - MAPS based silicon vertex/tracking layers/planes.
 - MPGD/ μ Rwell gas tracker.
 - LGAD based outer layers.



Detector geometry in the 2nd simulation camping



- 2nd simulation camping ECCE tracking detector consists of
 - MAPS based silicon vertex/tracking layers/planes.
 - MPGD/ μ Rwell gas tracker.
 - LGAD based outer layers.
 - Service parts: support, cooling, cables.

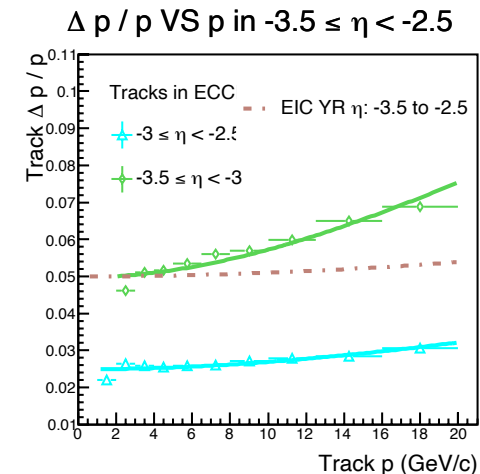
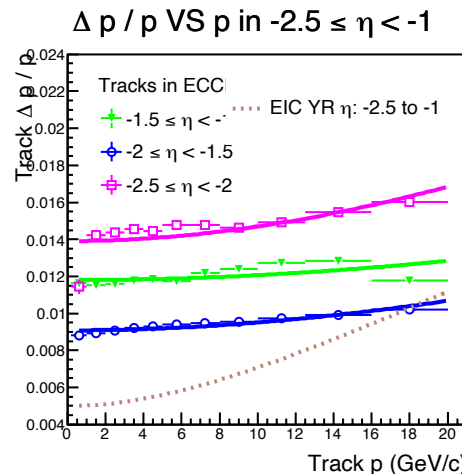
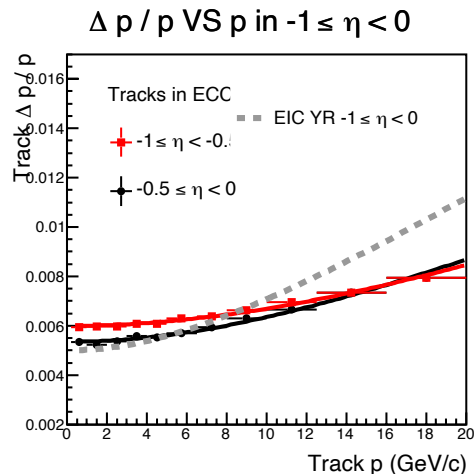
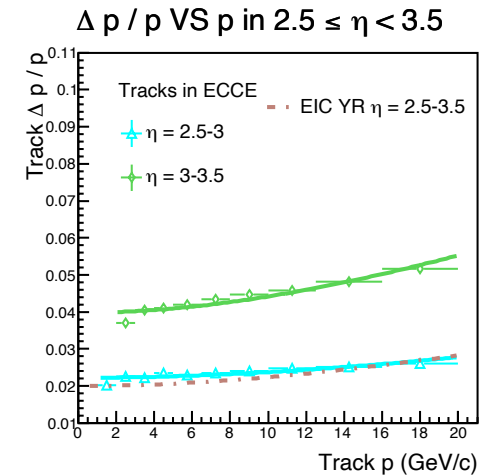
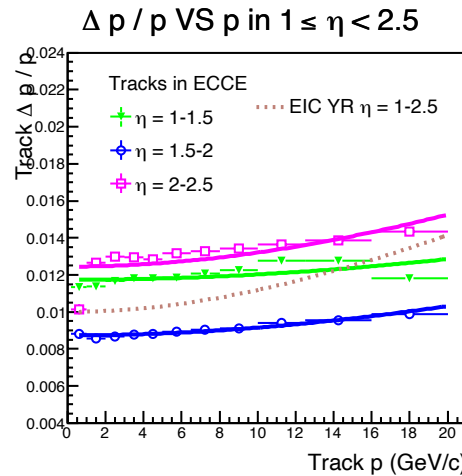
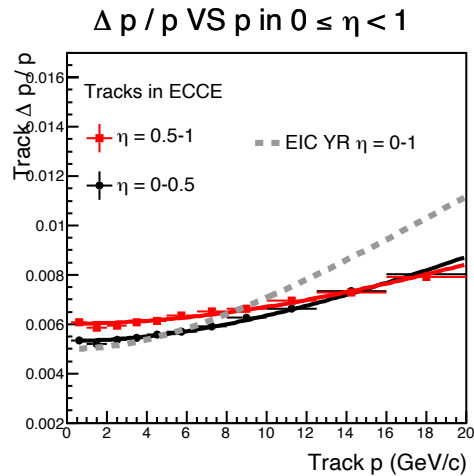


Use general tracking DST files in
eicS3/eictest/ECCE/MC/prop.3/prop.3.
3/General/particleGun/singlePion

Tracking momentum resolution from 2nd simulation production



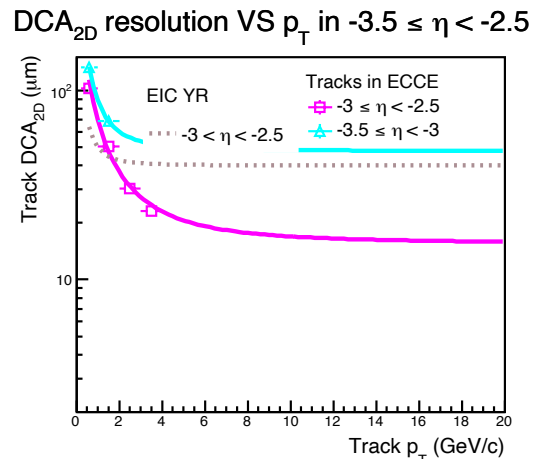
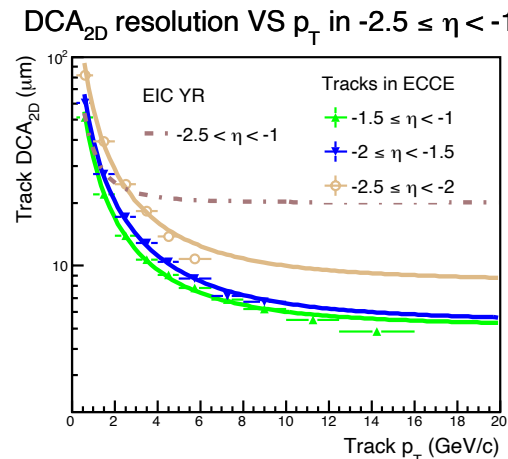
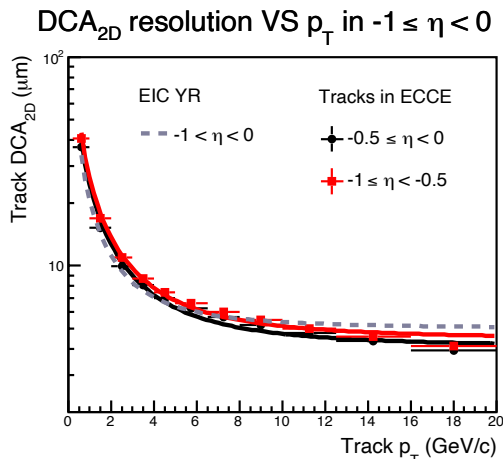
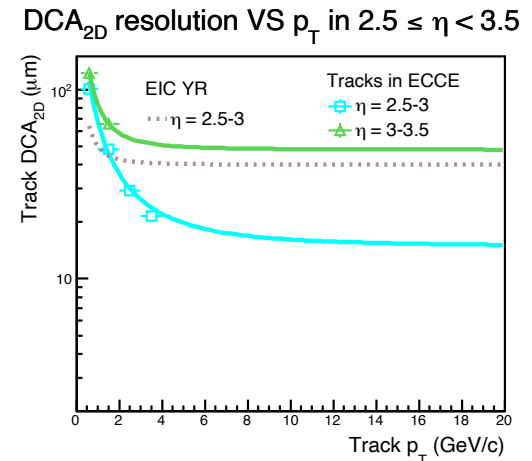
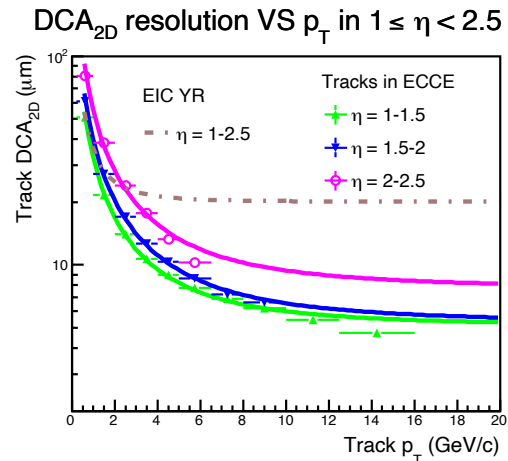
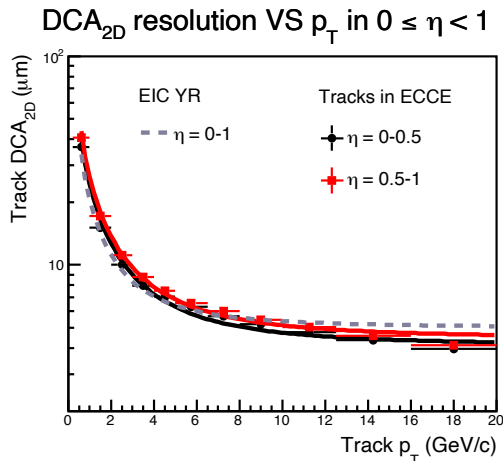
- Using single pion events for the tracking performance evaluation.



Tracking DCA_{2D} resolution from 2nd simulation production



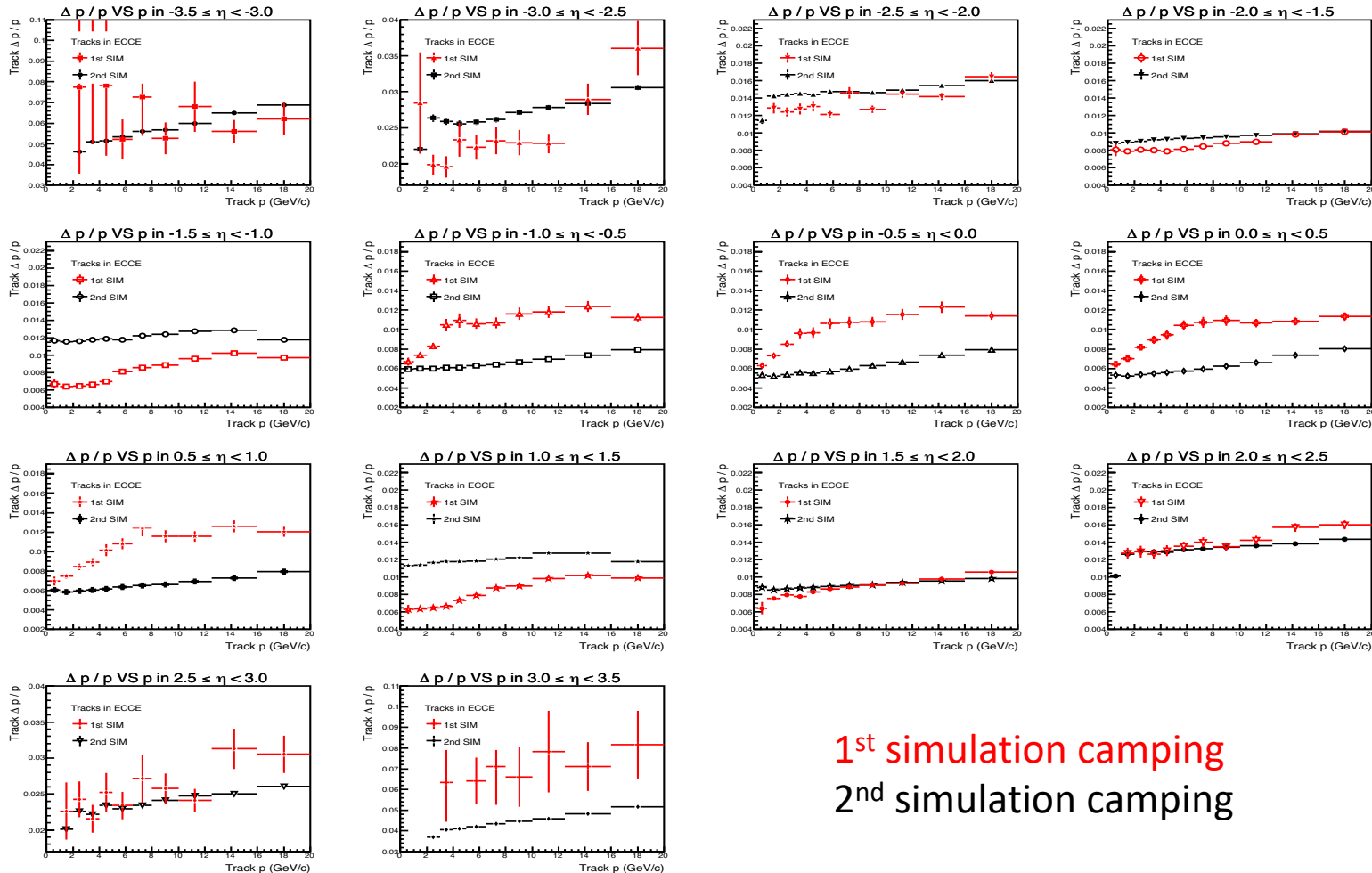
- Using single pion events for the tracking performance evaluation.



Tracking momentum resolution comparison



- Tracking momentum resolution comparison between the 1st and 2nd simulation camping.

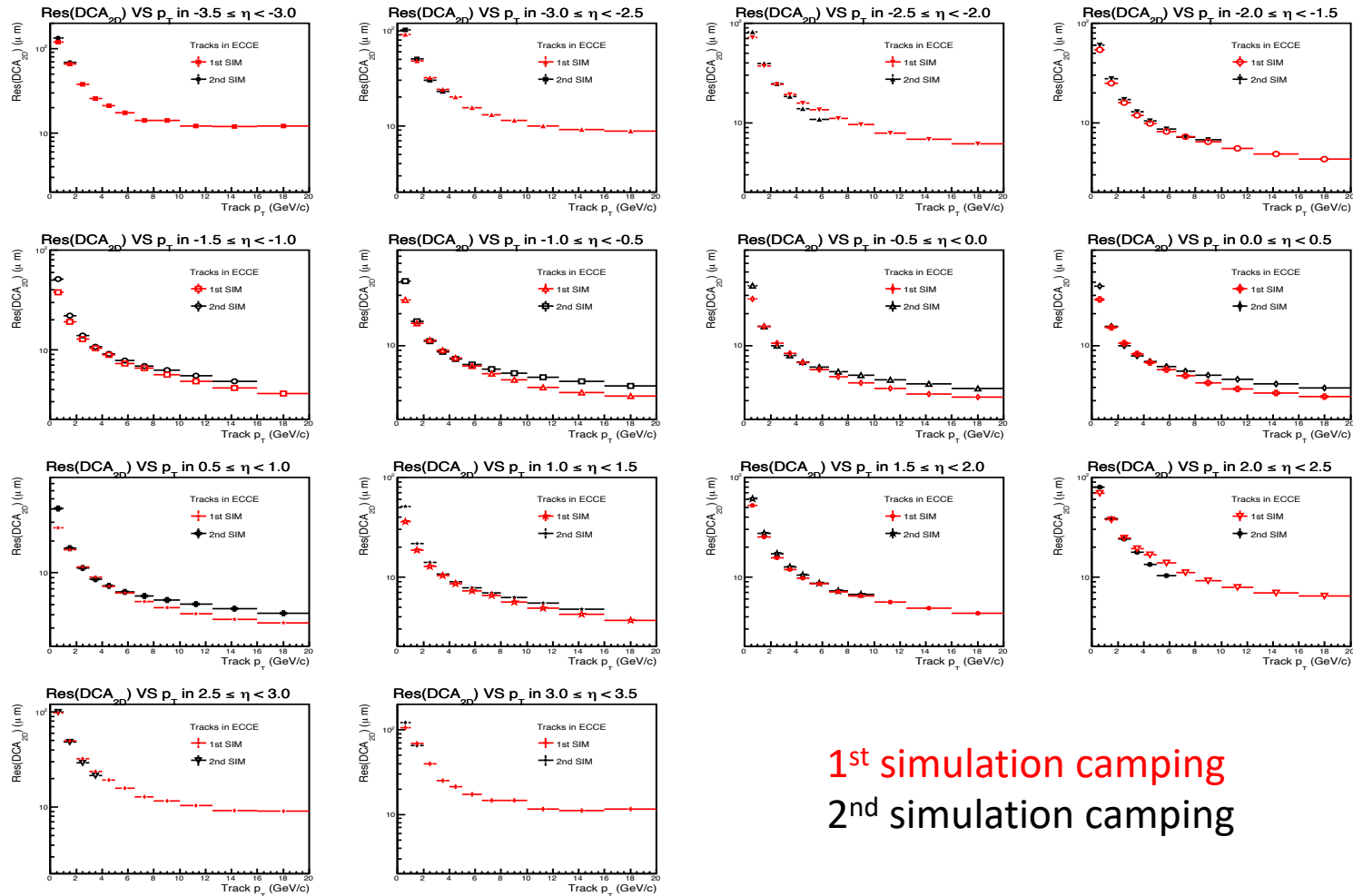


1st simulation camping
2nd simulation camping

Tracking DCA_{2D} resolution comparison



- Tracking DCA_{2D} resolution comparison between the 1st and 2nd simulation camping.

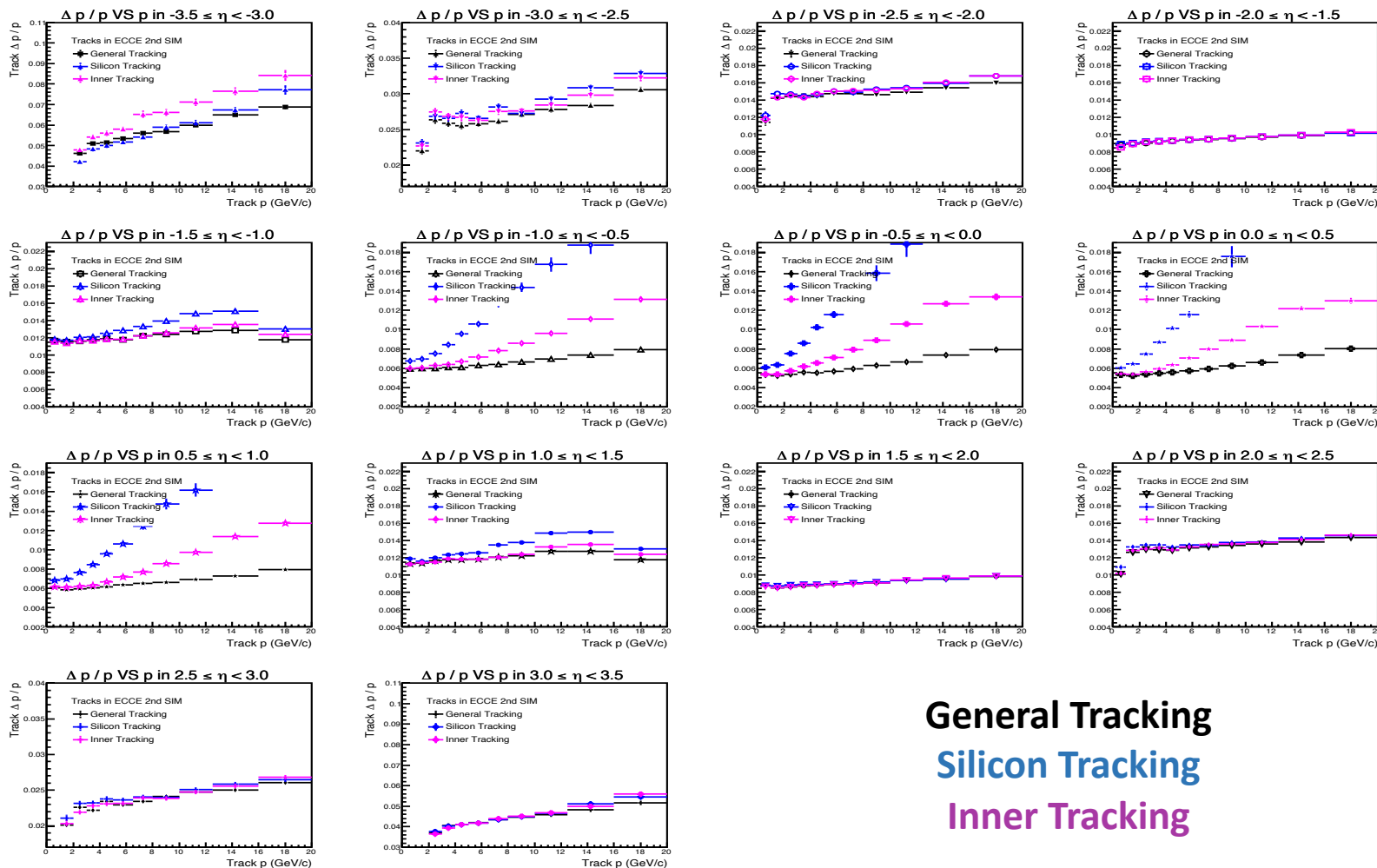


1st simulation camping
2nd simulation camping

Tracking momentum resolution comparison



- Tracking momentum resolution comparison between different detector configurations in the 2nd simulation campaign.

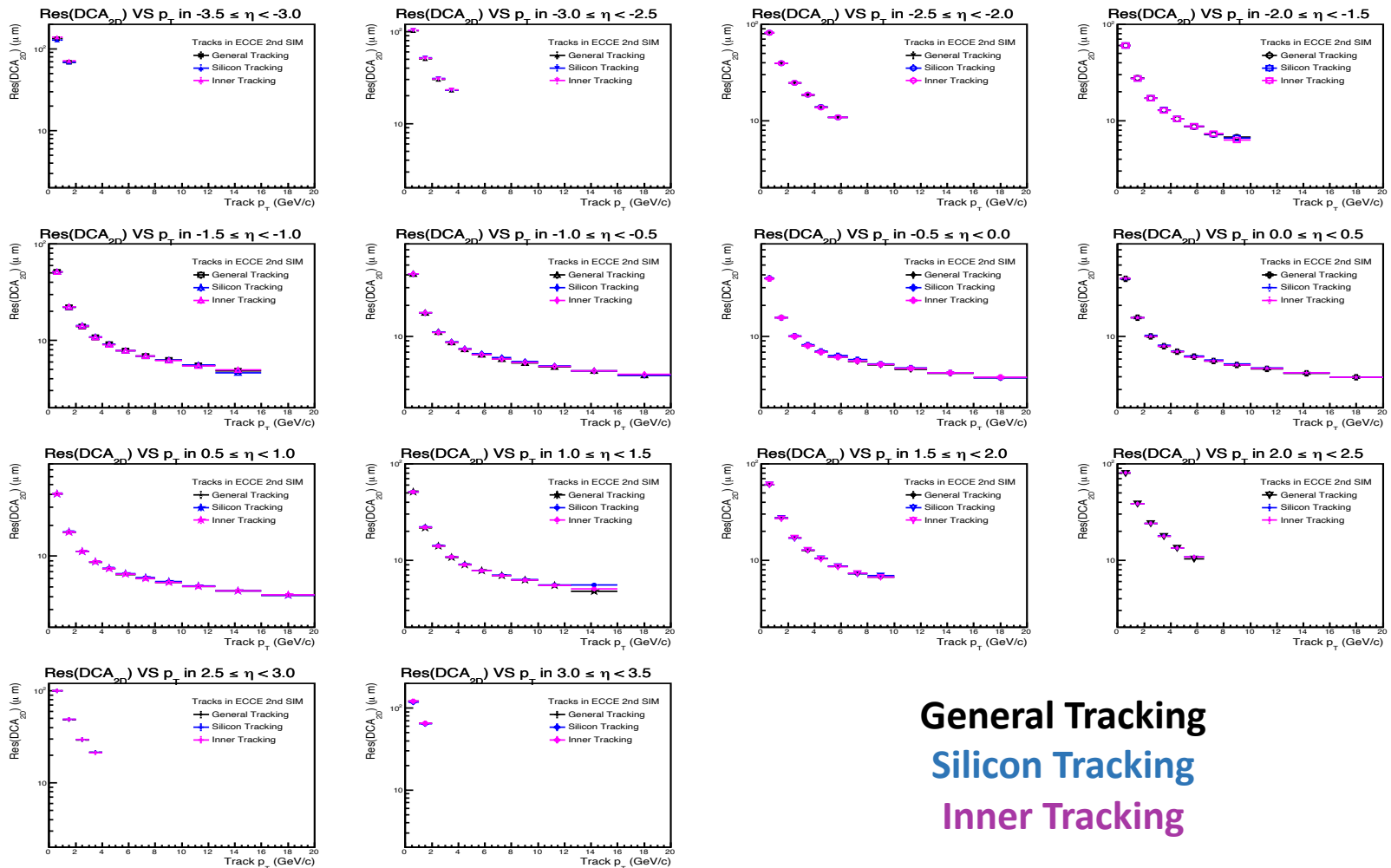


General Tracking
Silicon Tracking
Inner Tracking

Tracking DCA_{2D} resolution comparison



- Tracking DCA_{2D} resolution comparison between different detector configurations in the 2nd simulation campaign.



General Tracking
Silicon Tracking
Inner Tracking

- Tracking momentum resolution of the 2nd simulation camping is better than the 1st simulation camping in general except several pseudorapidity bins.
- Tracking DCA_{2D} resolution of the 2nd simulation camping is comparable with the 1st simulation camping in all kinematic regions.
- The integrated tracking system provides the best tracking momentum resolution and the DCA_{2D} resolution is mainly determined by the silicon tracking detector.
- Will study the impacts on the heavy flavor yields and projections.