

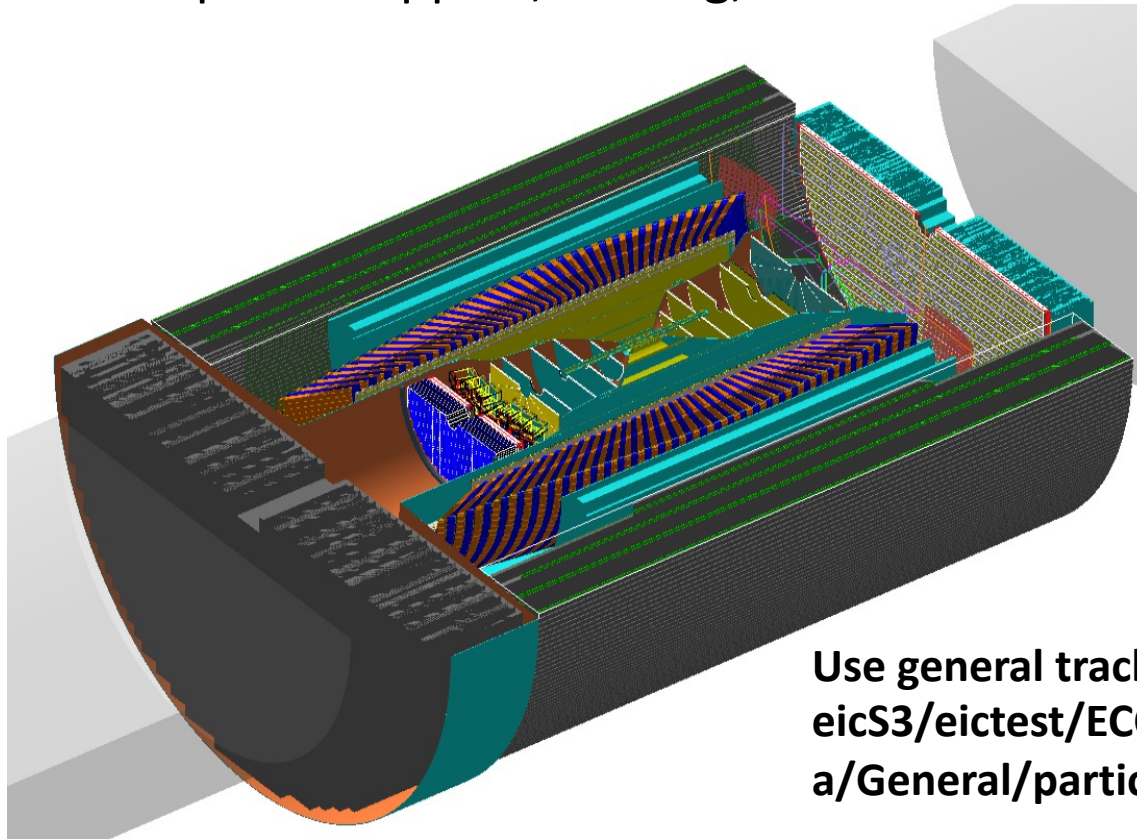
ECCE Tracking Performance with the 2nd simulation production

Xuan Li (Los Alamos National Laboratory)

Integrated ECCE Detector implemented in Fun4All



- 2nd simulation campaign 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.



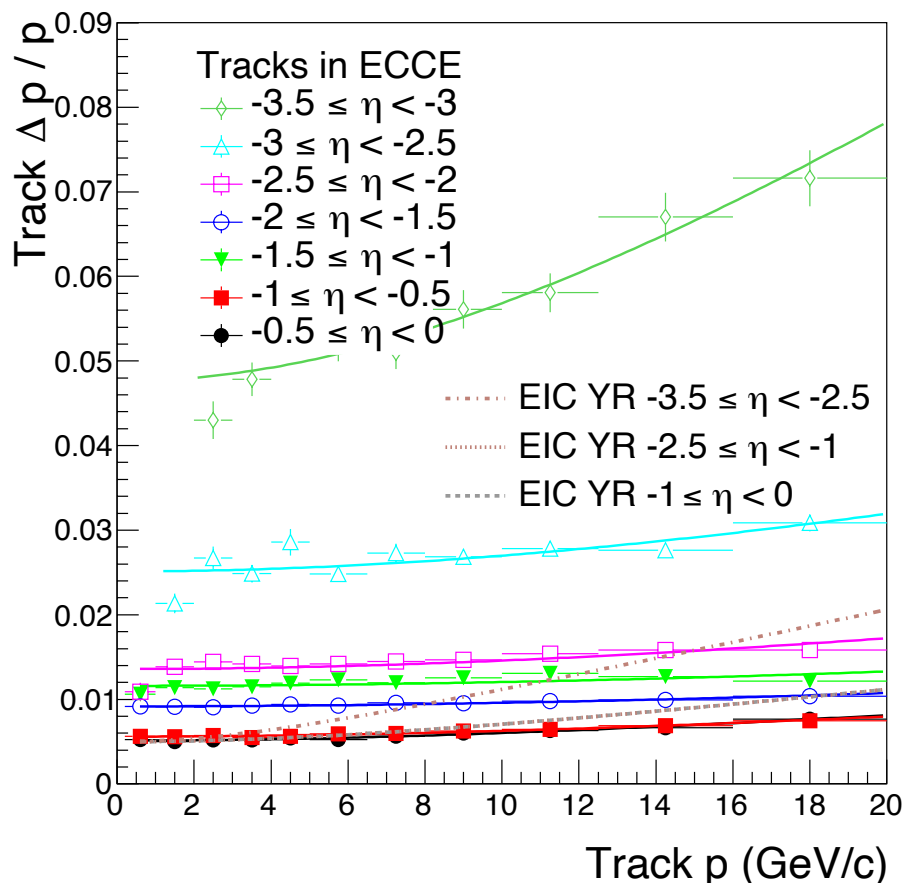
Use general tracking DST files in
eicS3/eictest/ECCE/MC/ana.26/408060
a/General/particleGun/singlePion/

2nd simulation camping ECCE Detector Tracking Performance: Momentum resolution

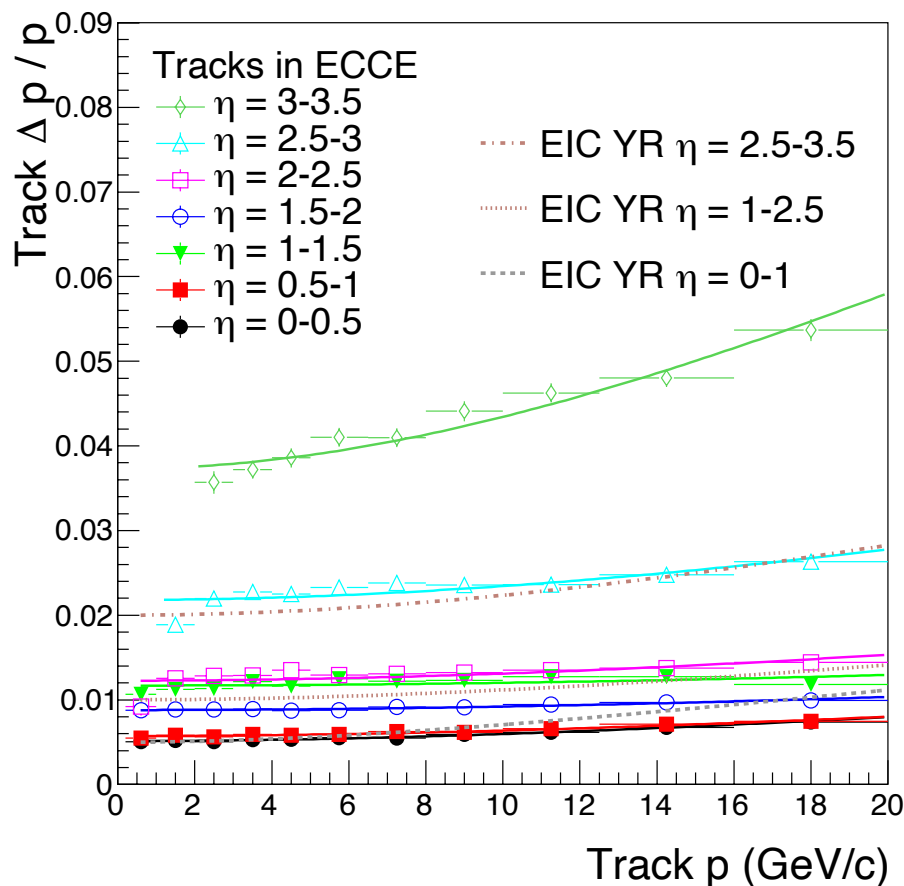


- The tracking momentum resolution of the current ECCE design is not far from the EIC Yellow Report requirements.

$\Delta p / p$ VS p in $-3.5 \leq \eta < 0$



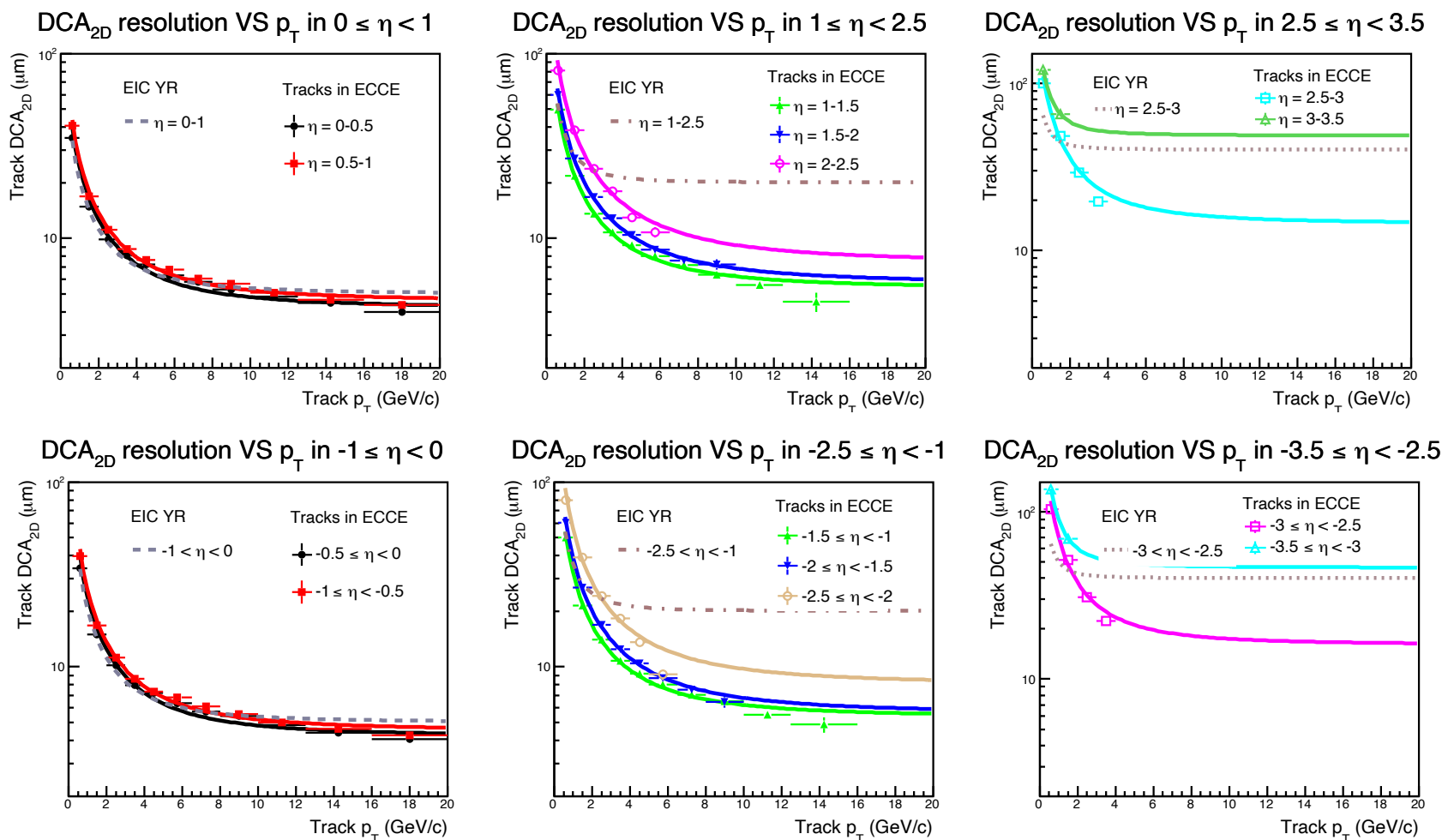
$\Delta p / p$ VS p in $0 \leq \eta < 3.5$



2nd simulation camping ECCE Detector Tracking Performance: DCA_{2D} resolution



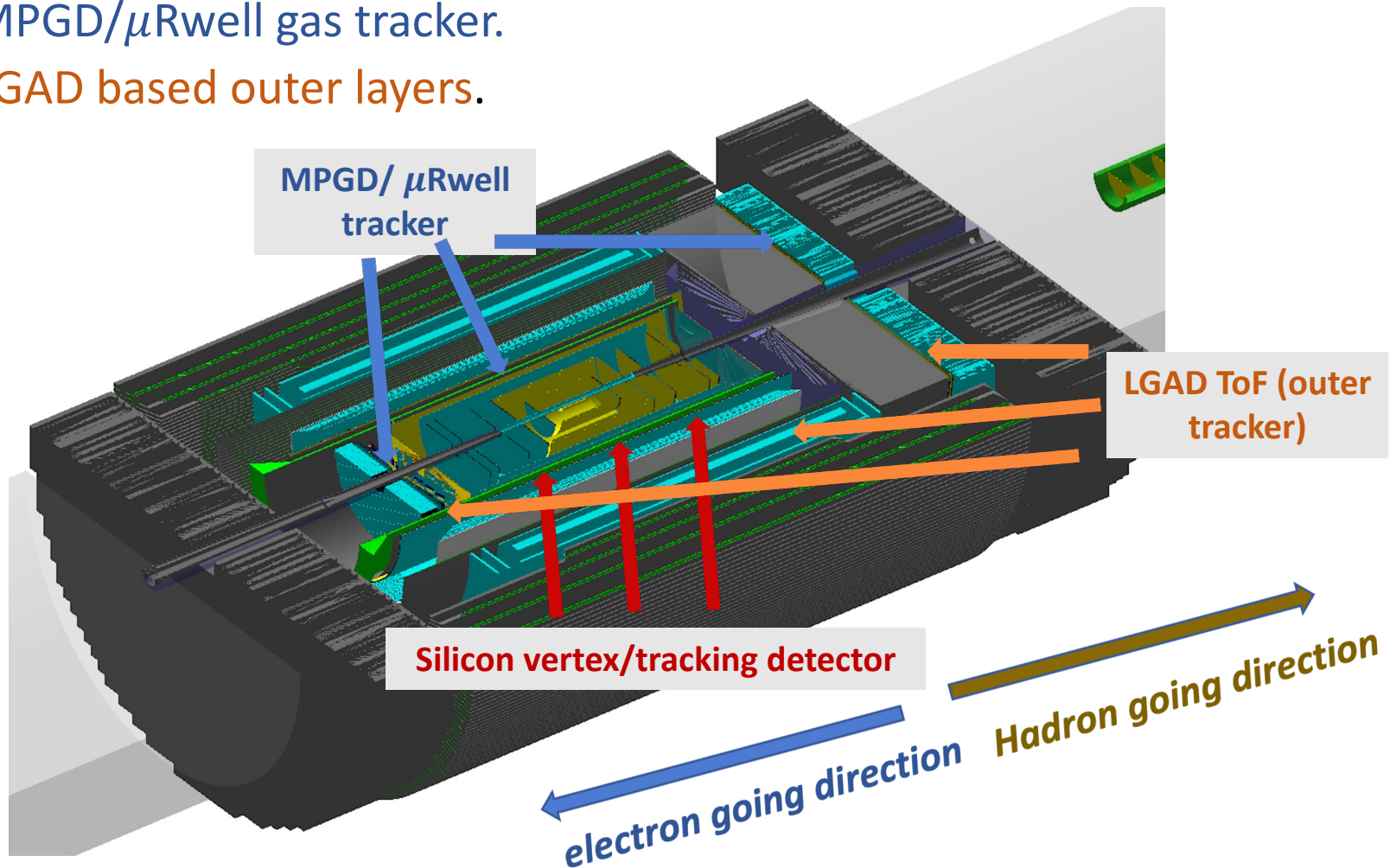
- The tracking DCA_{2D} resolution of the current ECCE design meets the EIC Yellow Report requirements.



Integrated ECCE Detector implemented in Fun4All



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

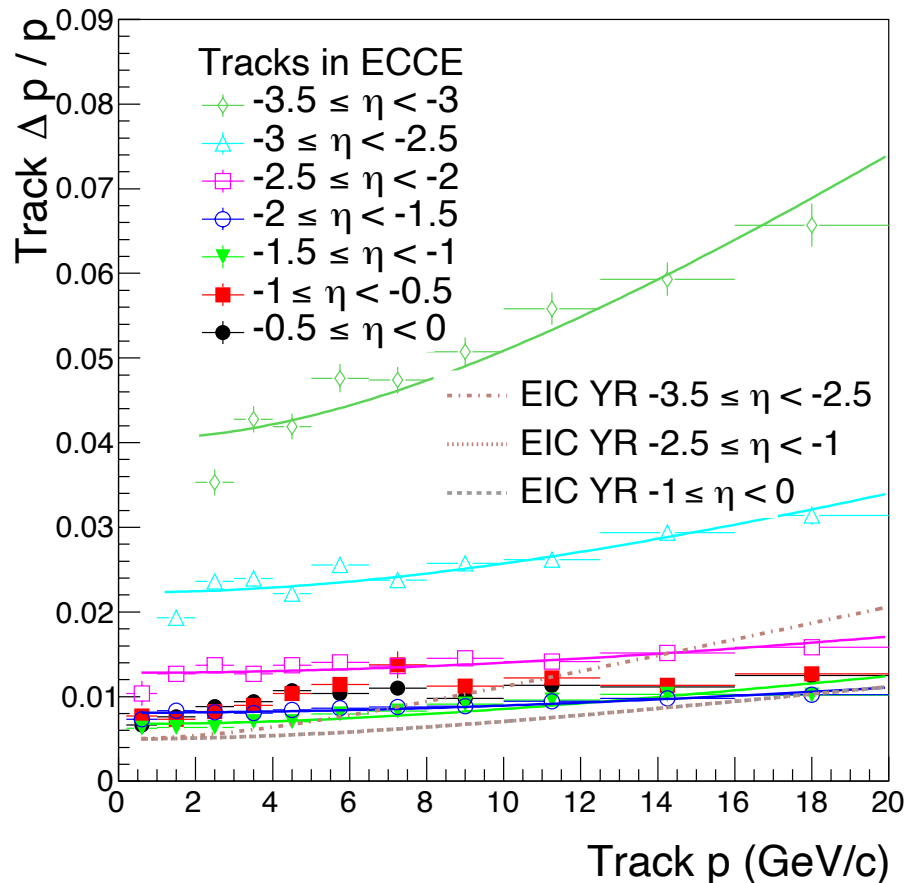


1st simulation camping ECCE Detector Tracking Performance: Momentum resolution

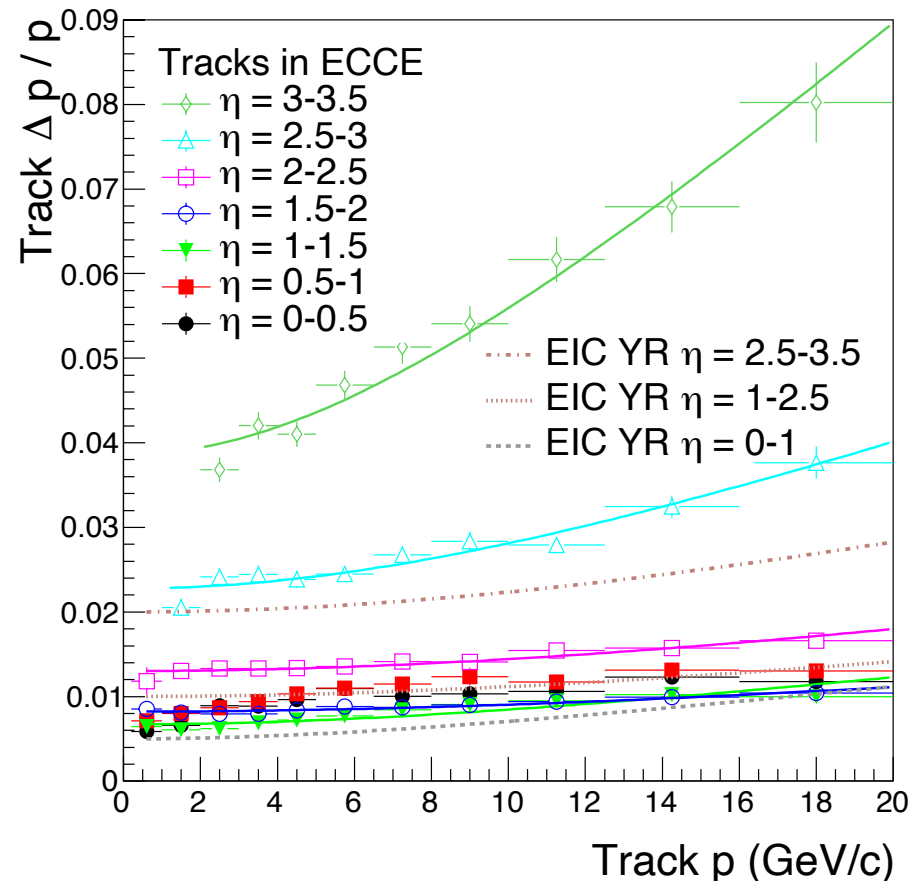


- The tracking momentum resolution of the current ECCE design is not far from the EIC Yellow Report requirements.

$\Delta p / p$ VS p in $-3.5 \leq \eta < 0$



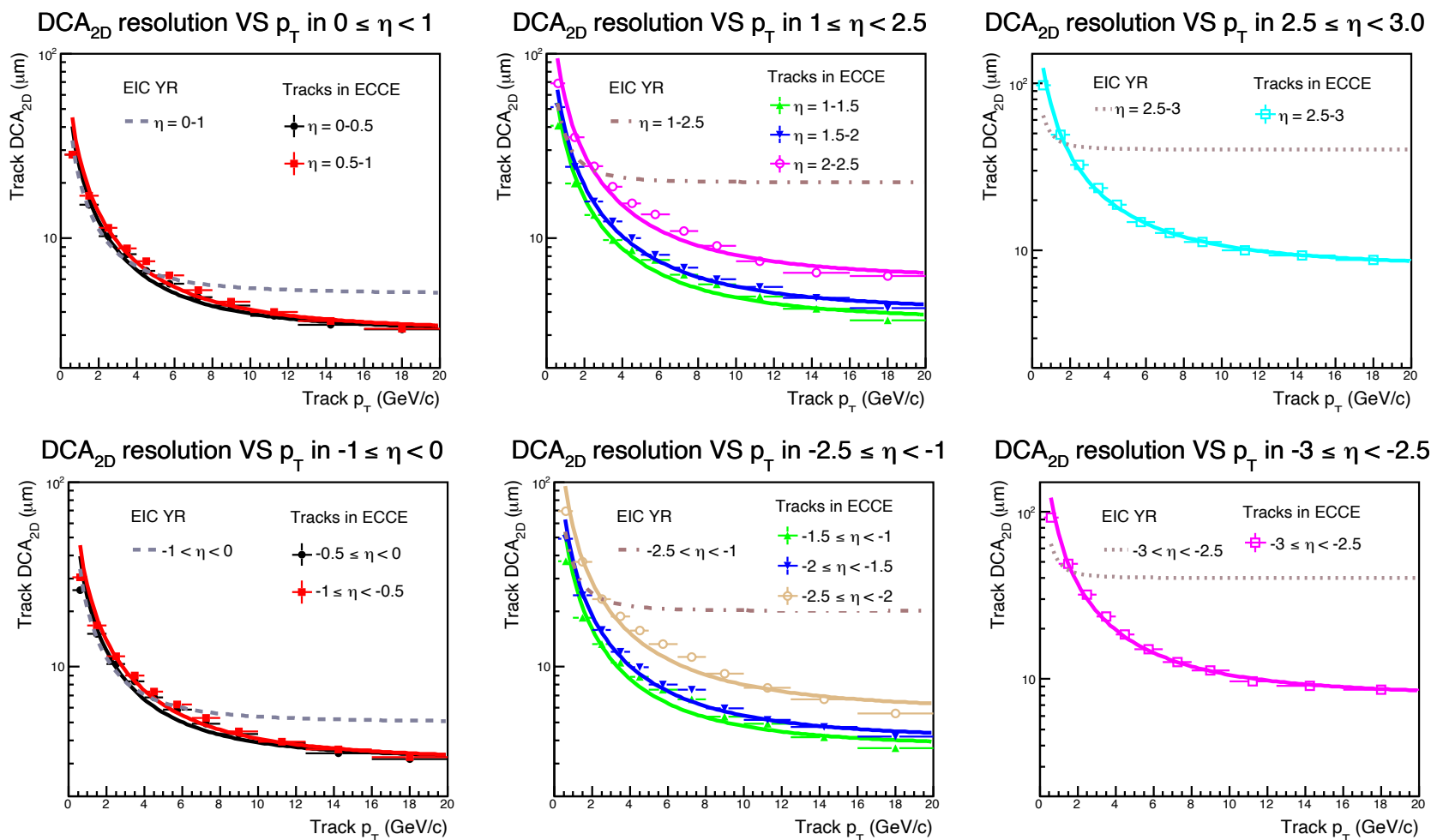
$\Delta p / p$ VS p in $0 \leq \eta < 3.5$



1st simulation camping ECCE Detector Tracking Performance: DCA_{2D} resolution



- The tracking DCA_{2D} resolution of the current ECCE design meets the EIC Yellow Report requirements.



- Tracking momentum resolution of the 2nd simulation camping is worse than the 1st simulation camping in central regions but better in the forward region.
- Tracking DCA_{2D} resolution of the 2nd simulation camping is worse than the 1st simulation camping in all kinematic regions.
- Will work on direct comparison between the 1st and the 2nd simulation camping.
- Will study the impacts on the heavy flavor yields and projections.