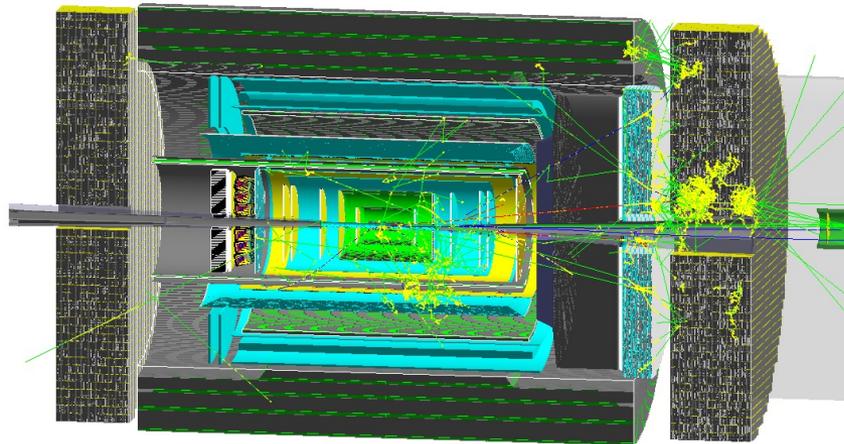


Heavy flavor reconstruction with latest integrated silicon tracking detector

Xuan Li on behalf of the LANL EIC team

Outline

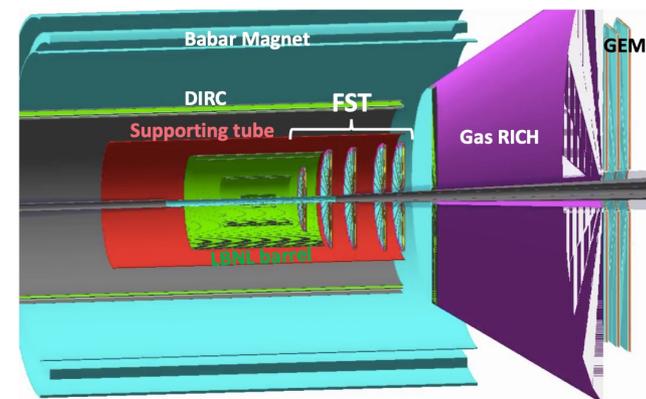
- Heavy flavor reconstruction updates with recent integrated silicon vertex/tracking system for ECCE.
- Updated R_{eA} projection.
- Ongoing tracking performance evaluation.



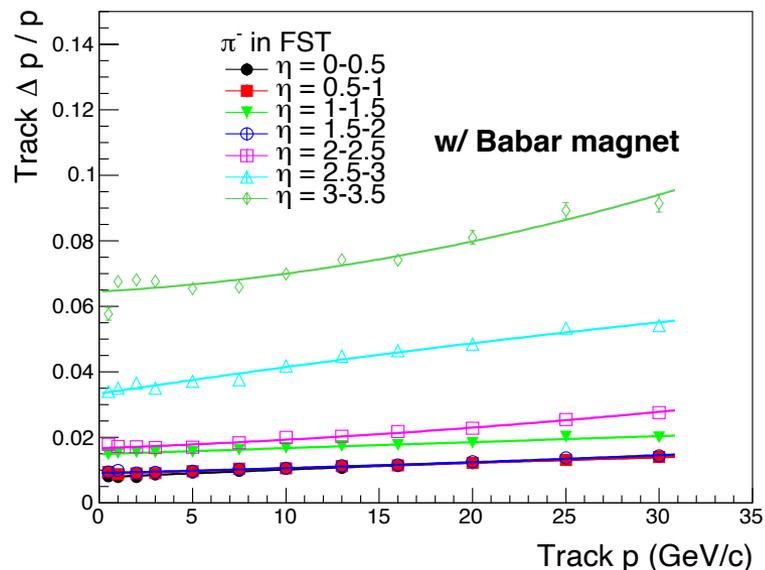
Heavy flavor reconstruction and projected R_{eA} updates

Updated tracking performance for the latest integrated silicon vertex/tracking detector

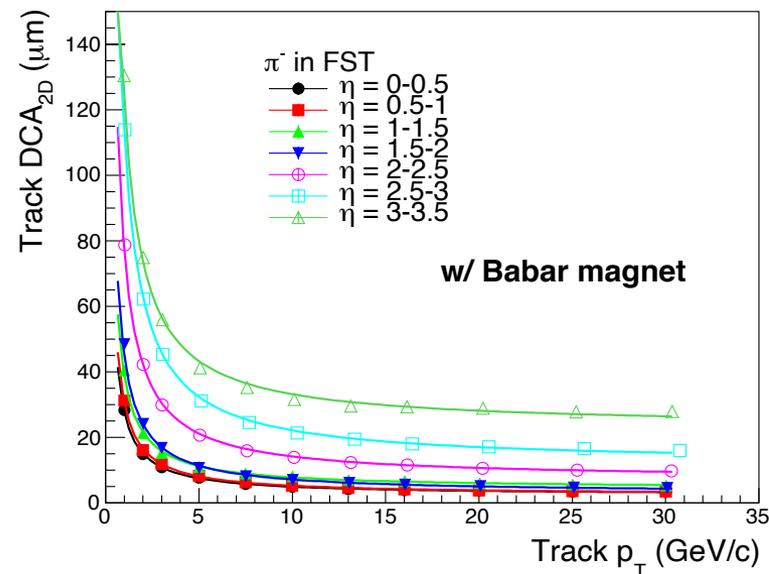
- Based on the detector geometries (w/ service parts) and tracking performance evaluation presented in https://indico.bnl.gov/event/11659/contributions/50175/attachments/34926/56788/LANL_FST_06042021.pdf



$\Delta p / p$ VS p

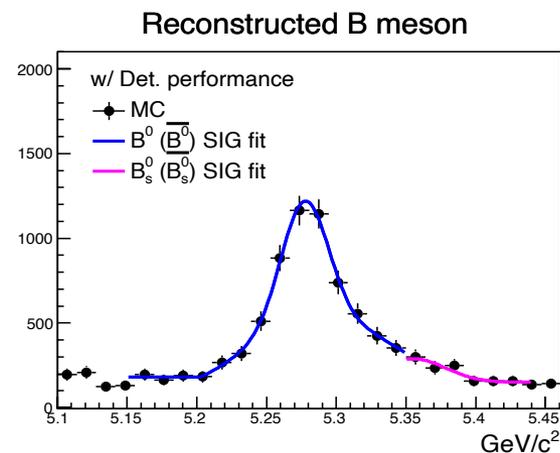
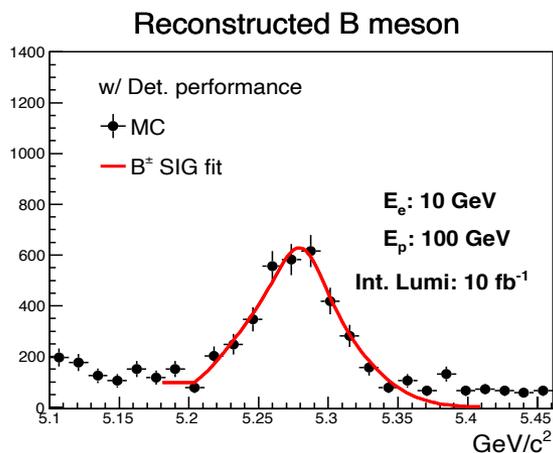
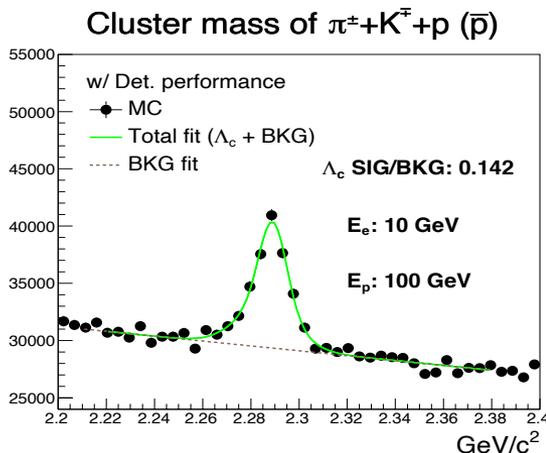
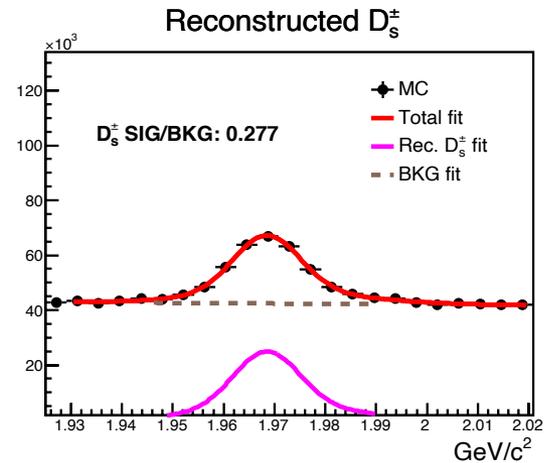
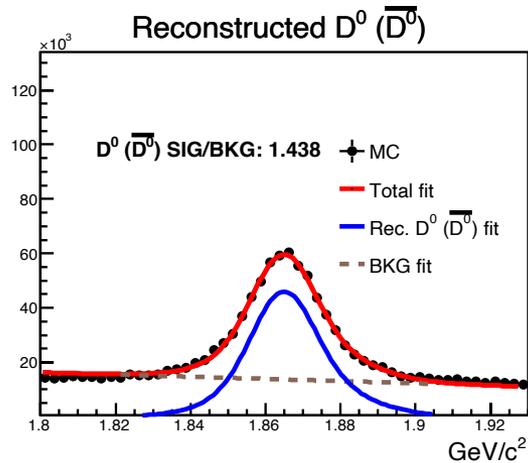
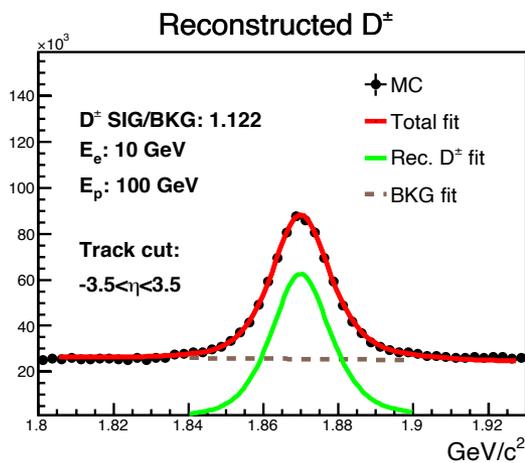


DCA_{2D} resolution VS p_T



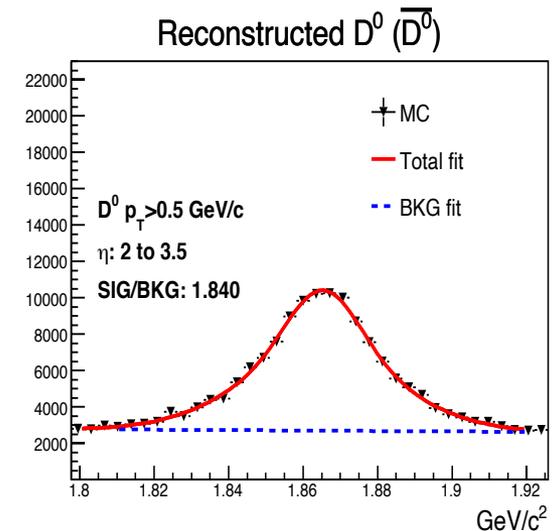
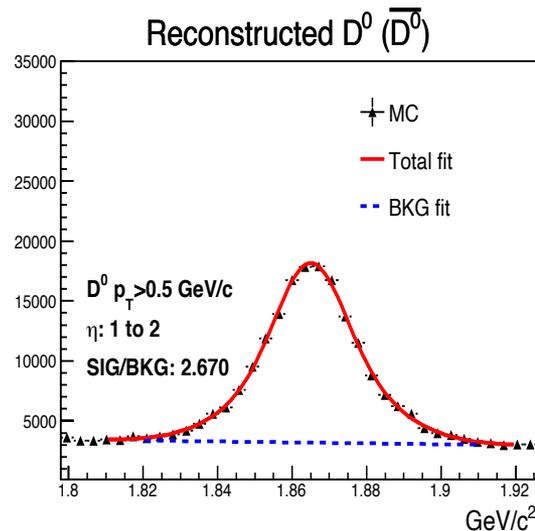
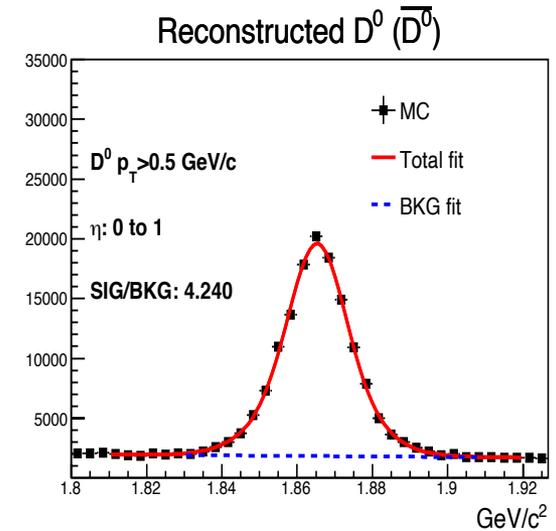
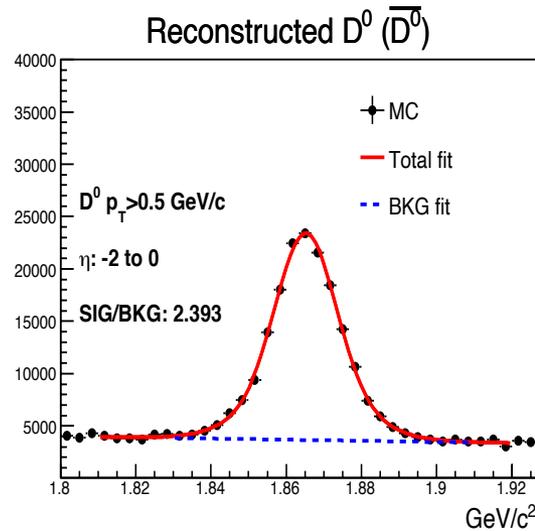
Reconstructed heavy flavor hadrons in 10+100 GeV e+p collisions

- Reconstructed heavy flavor hadrons in 10 fb⁻¹ 10 GeV electron and 100 GeV proton collisions with the parameterized detector performance.



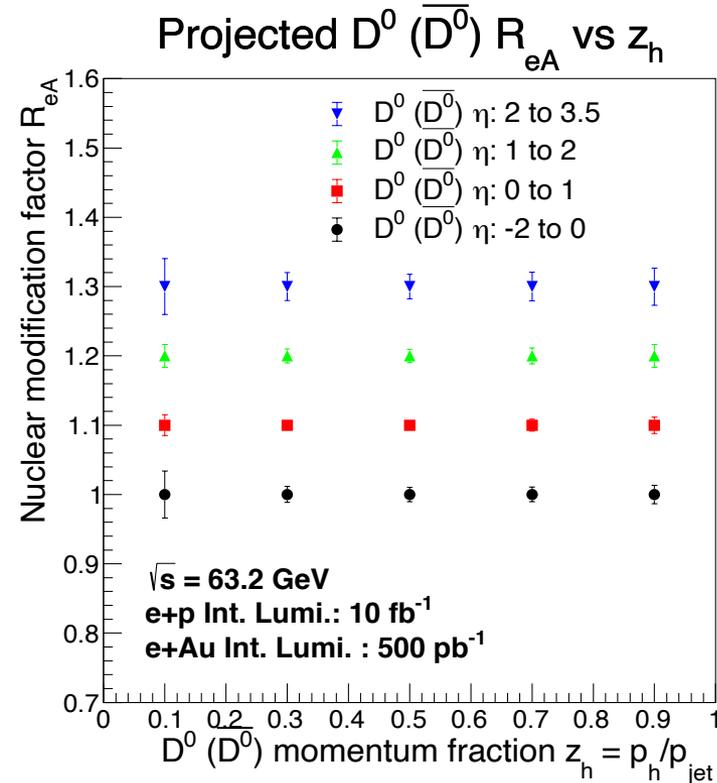
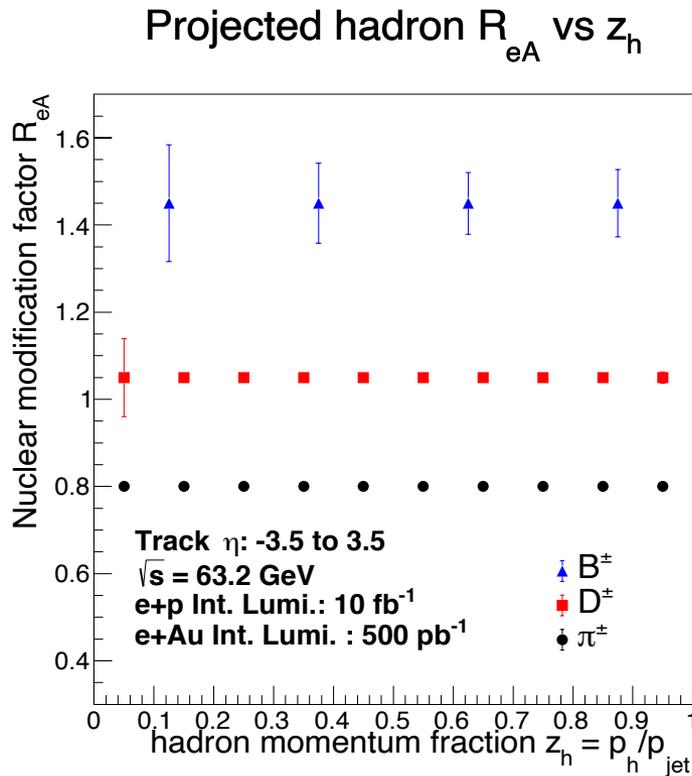
η dependent reconstructed D-mesons in 10+100 GeV e+p collisions

- Reconstructed $D^0(\overline{D}^0)$ meson in four separated pseudorapidity bins (-2 to 0, 0 to 1, 1 to 2, 2 to 3.5) in 10 fb^{-1} e+p collisions at 63 GeV.
- Pseudorapidity dependent reconstructed D-meson mass resolutions is correlated with the pseudorapidity dependent tracking momentum resolution.



Updated nuclear modification factor R_{eA} projection w/ latest silicon tracking performance

- In 10 GeV electron and 100 GeV proton/Au collisions with the latest silicon tracking performance:



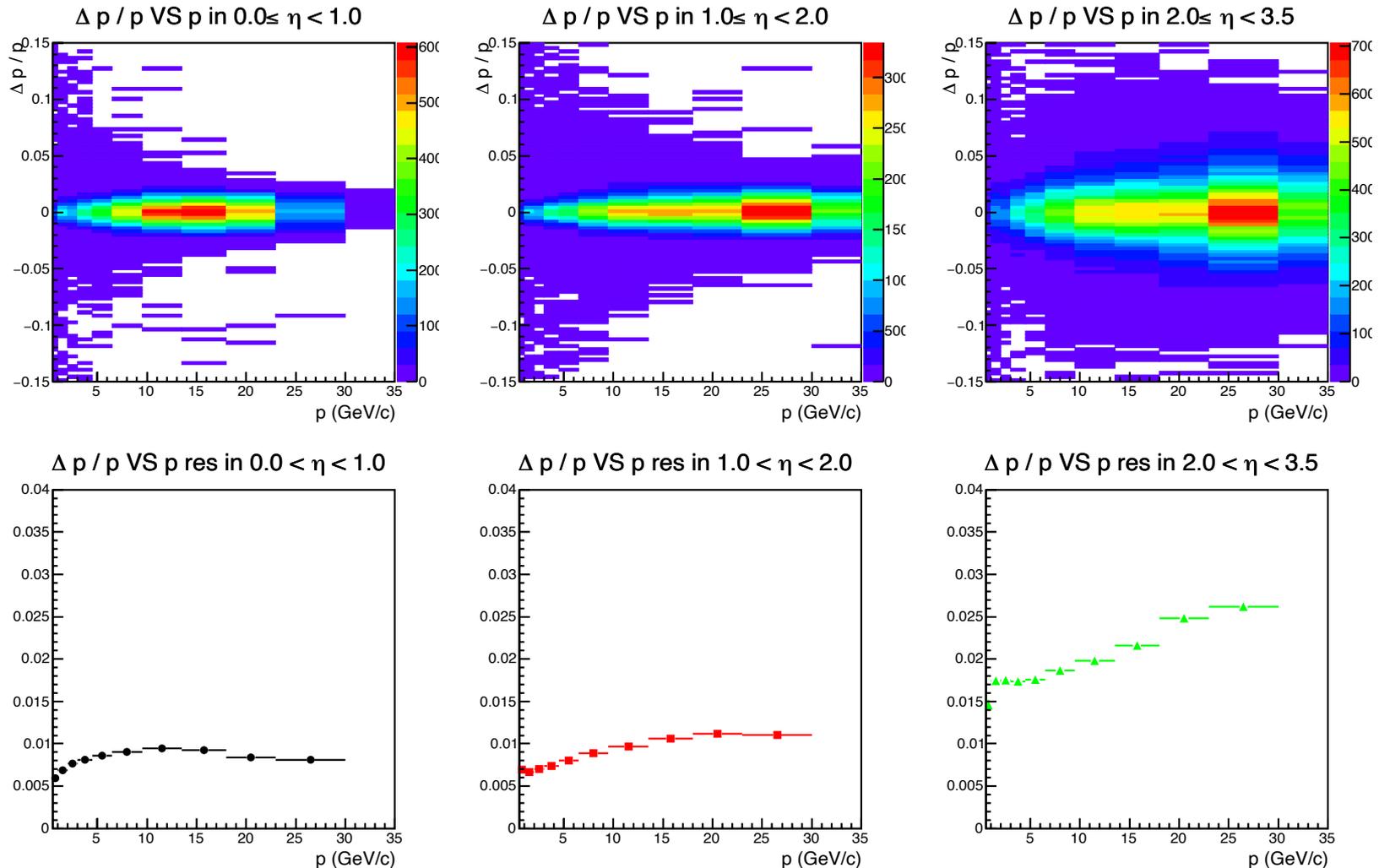
Better than 10% stat. uncertainty of projected R_{eAu} can be achieved in the high z_h region with around one-year EIC operation.

Recent tracking performance evaluation for the integrated ECCE detector

Thank the ECCE simulation team for their nice efforts!

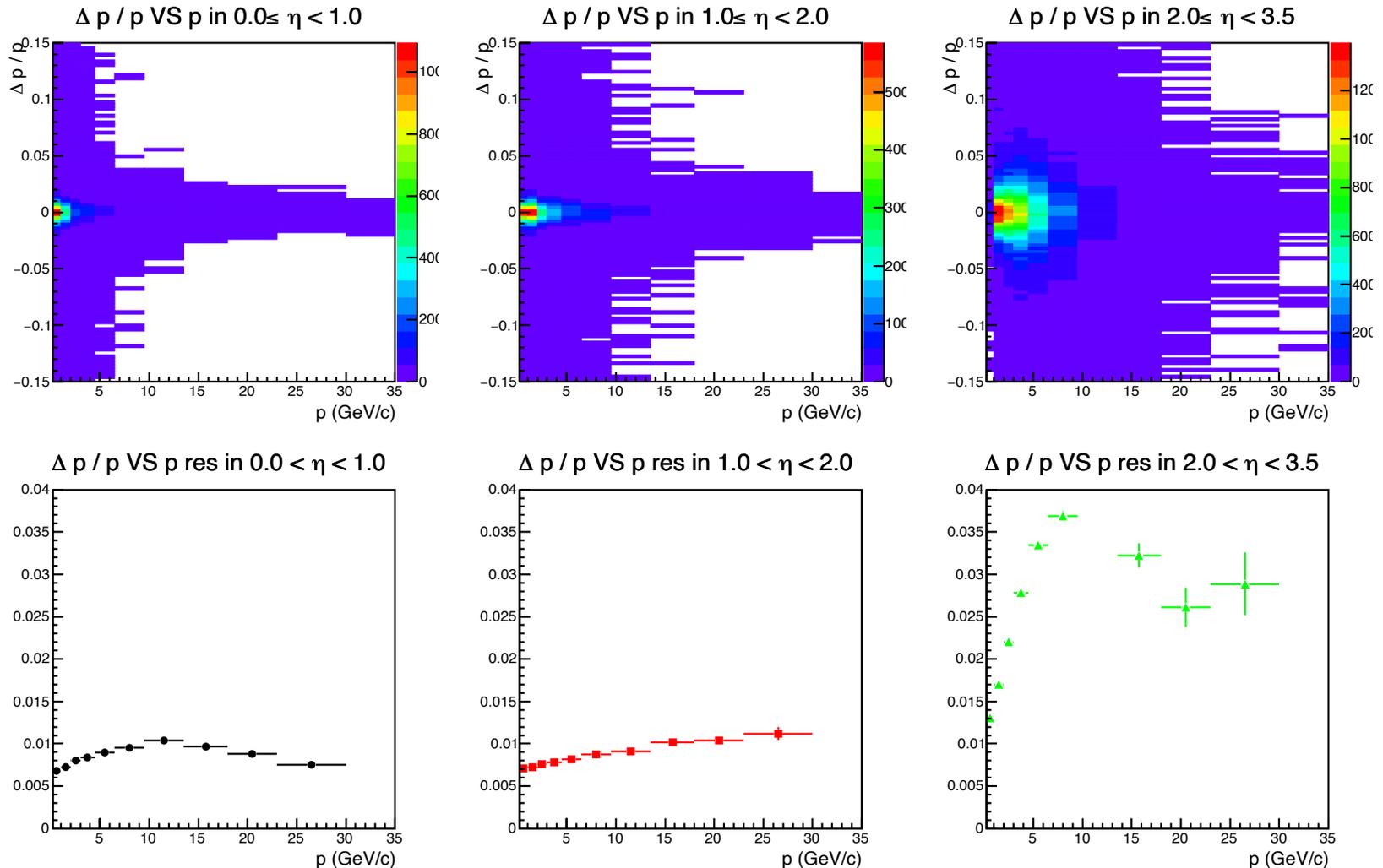
Tracking performance for the integrated ECCE detector

- Momentum resolution VS momentum using single pion events.



Tracking performance for the integrated ECCE detector

- Momentum resolution VS momentum using SIDIS high Q^2 events.



Summary and Outlook

- Good capability to reconstruct heavy flavor hadrons with the updated silicon tracking detector including the estimated service parts.
- First order tracking performance look promising. Further studies are ongoing.