Tracking performance evaluation with the recent ECCE simulation production

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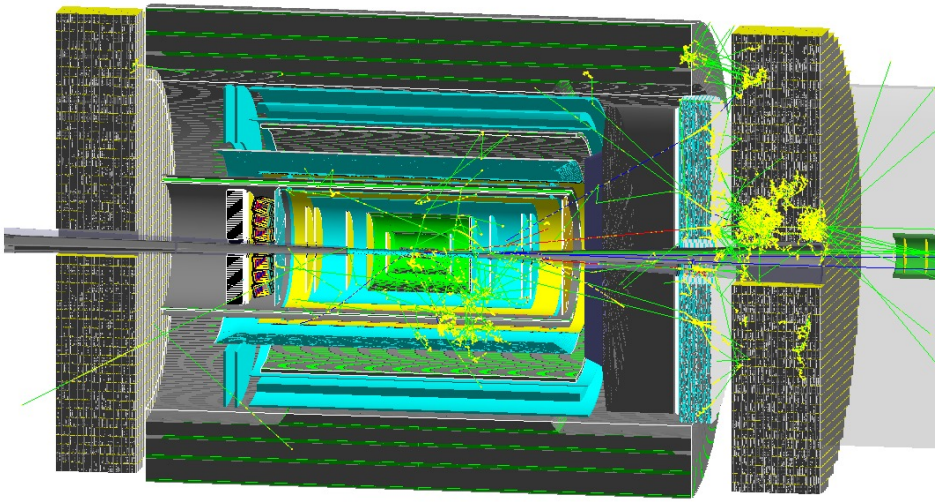
Simulation sample and detector configuration

- Tracking performance evaluation with recent simulation production:
  - eicS3/eictest/ECCE/MC/new/5f210c7/General/particleGun/singlePion
  - eicS3/eictest/ECCE/MC/ana.14/5f210c7/SIDIS/pythia6/ep_18x100highq2

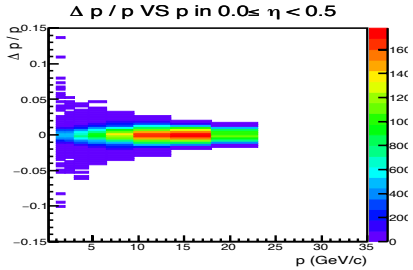
Latest ECCE detector configuration

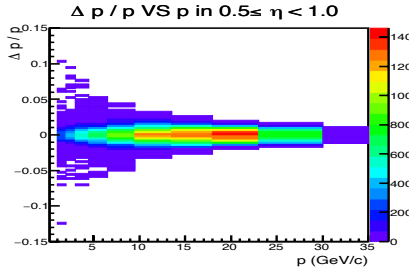


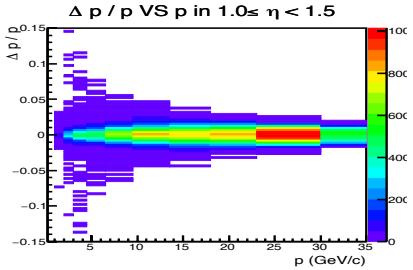
Thank the ECCE simulation team for their nice efforts!

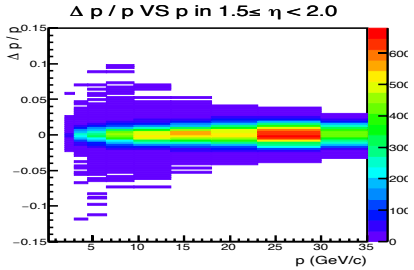
Single pion events

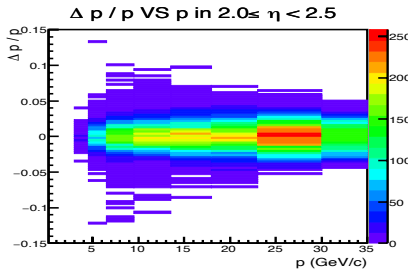
Momentum resolution VS momentum using single pion events (η>0)

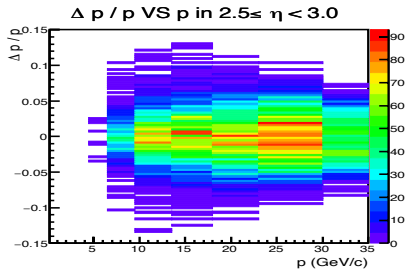


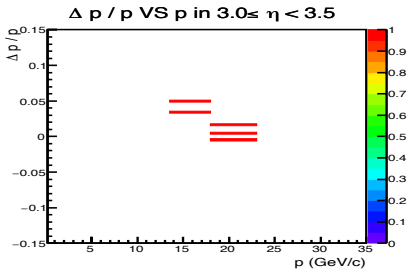




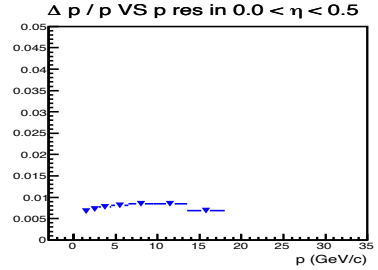


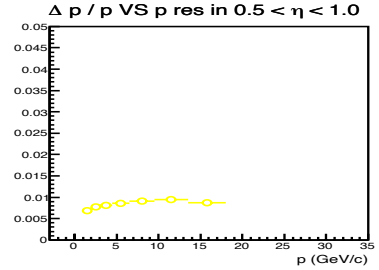


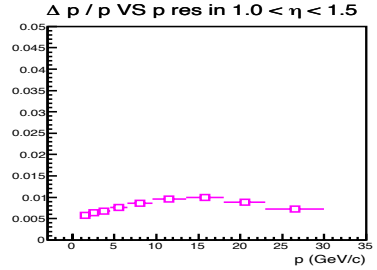


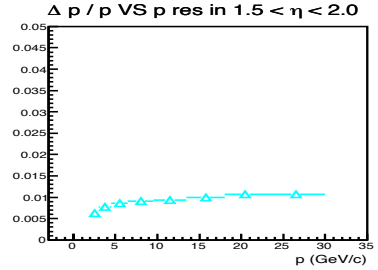


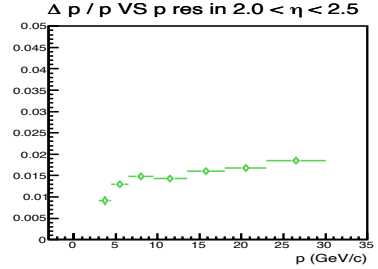
Track p_T > 1 GeV/c

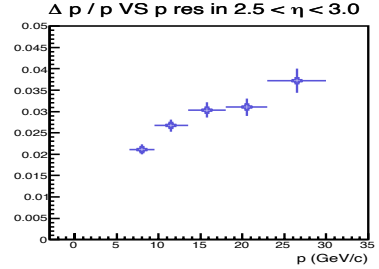


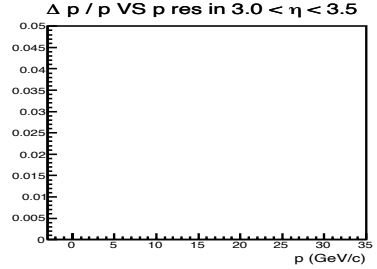




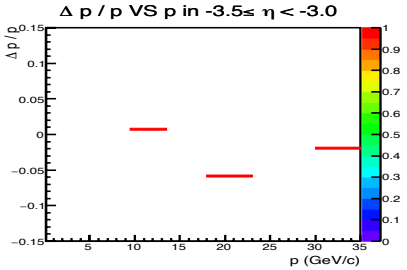


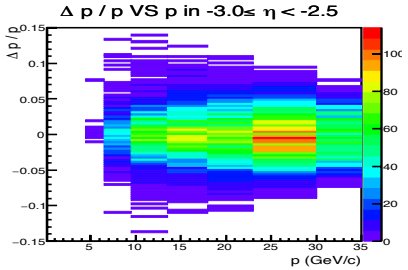


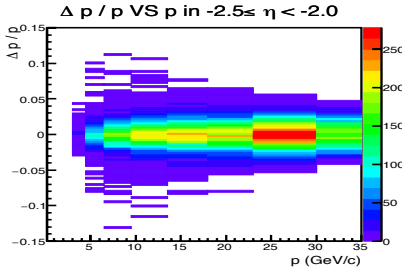


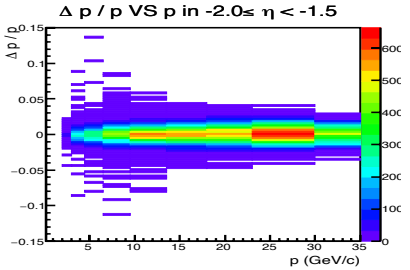


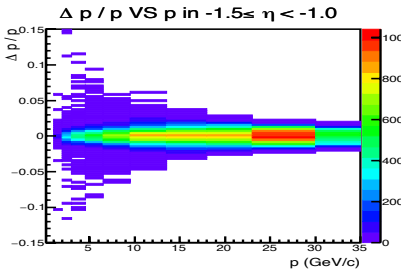
Momentum resolution VS momentum using single pion events (η<0)

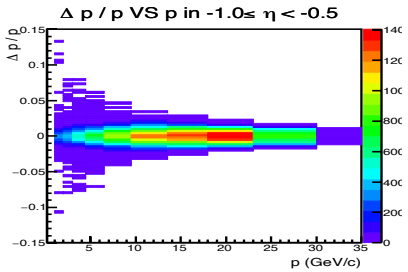


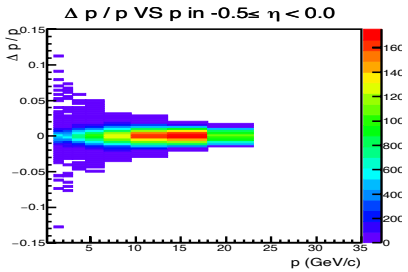




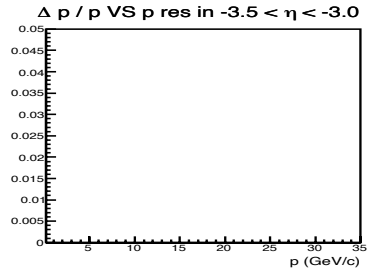


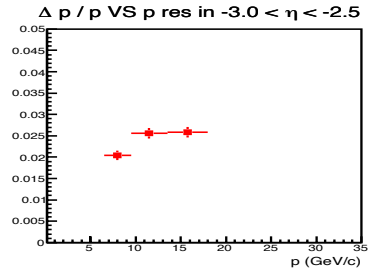


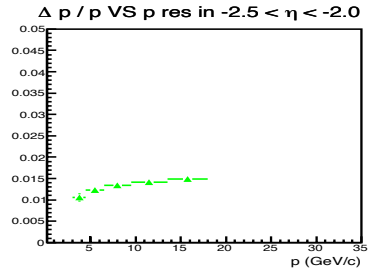


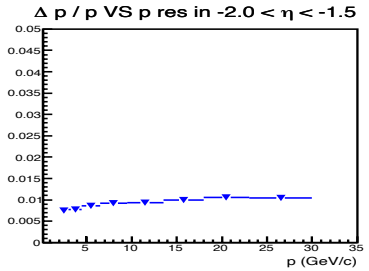


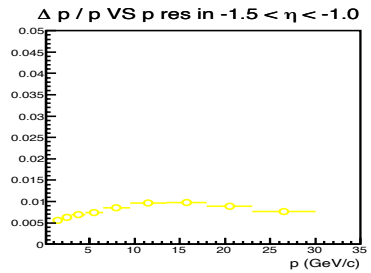
Track p_T > 1 GeV/c

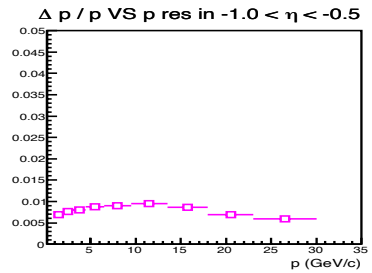


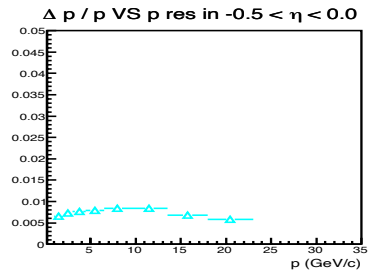




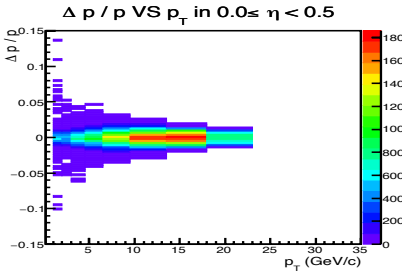


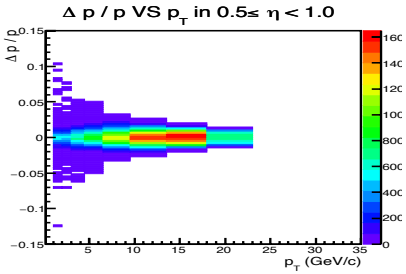


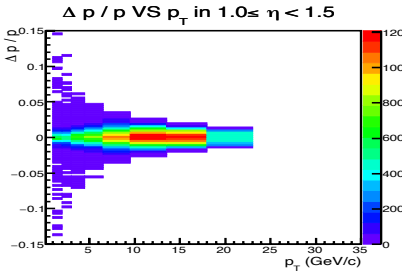


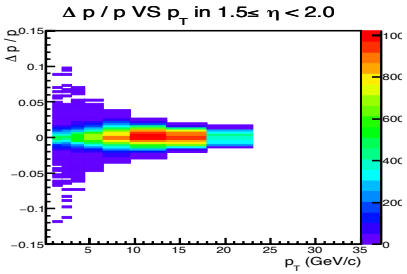


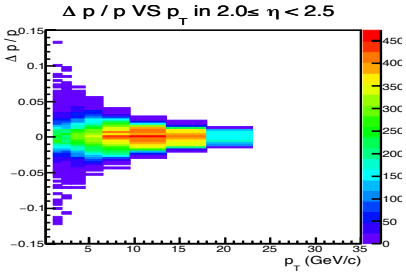
Momentum resolution VS p_T using single pion events (η>0)

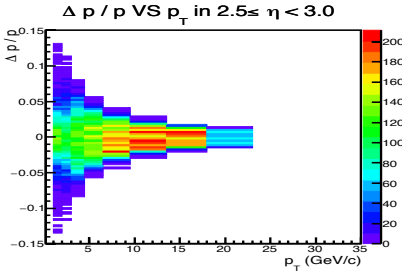


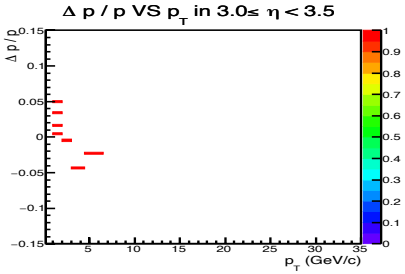




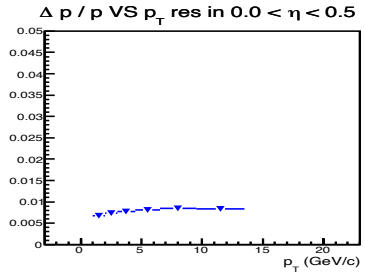


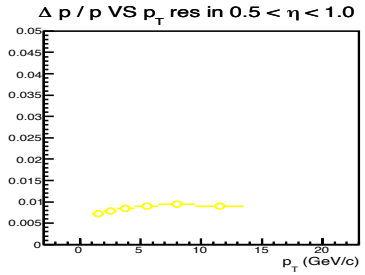


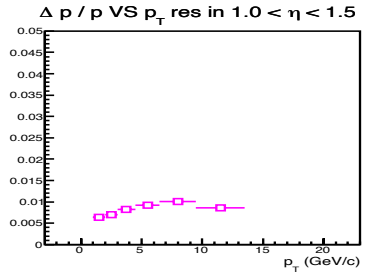


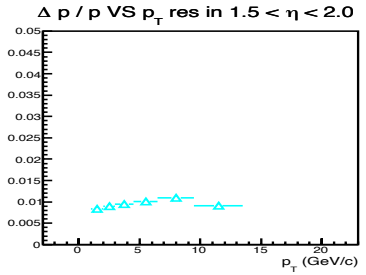


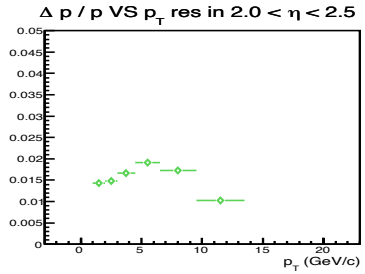
Track p_T > 1 GeV/c

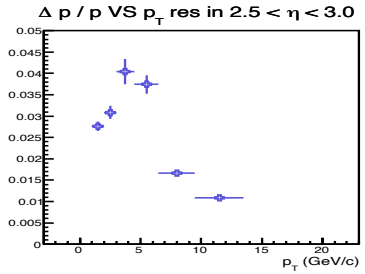


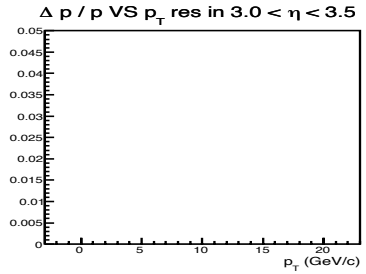




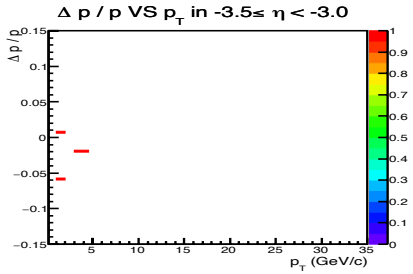


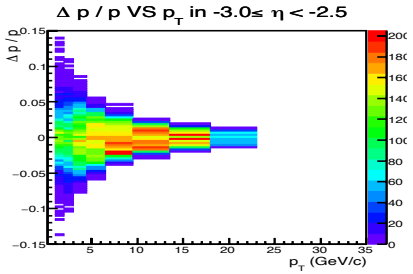


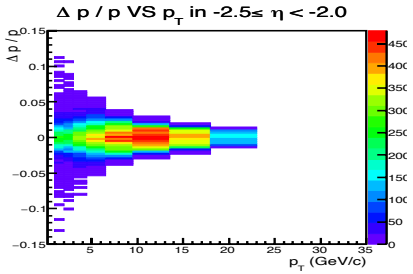


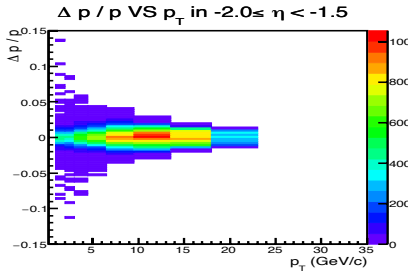


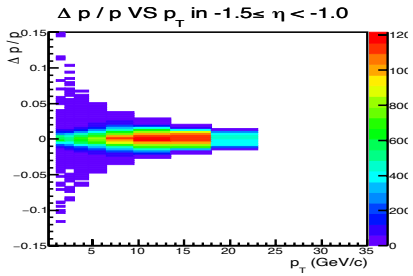
Momentum resolution VS p_T using single pion events (η<0)

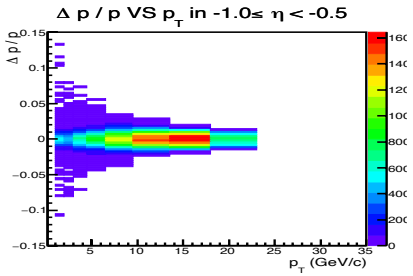


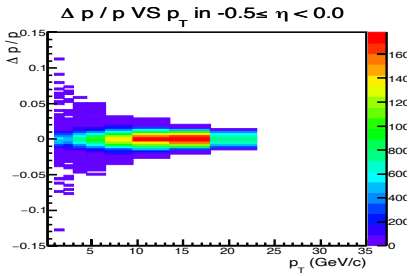




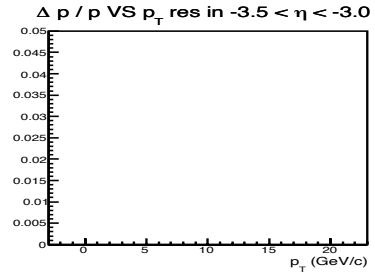


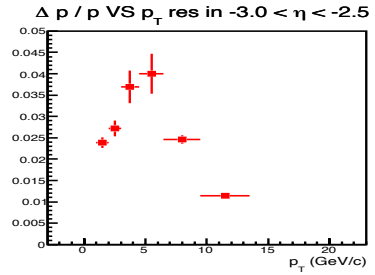


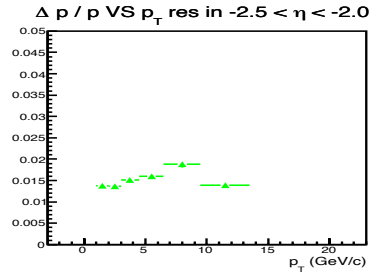


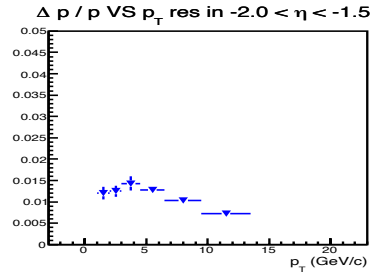


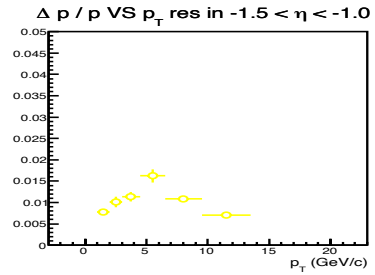
Track p_T > 1 GeV/c

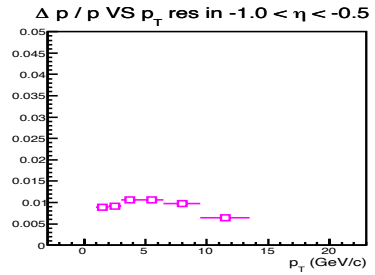


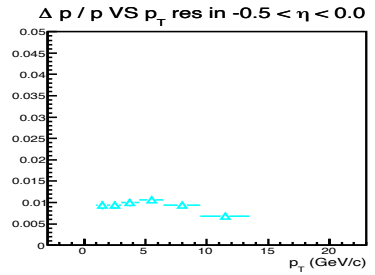




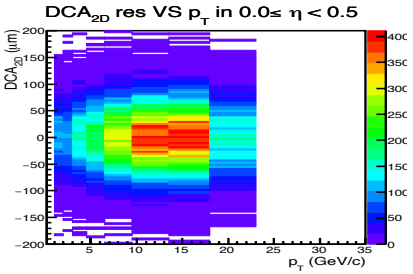


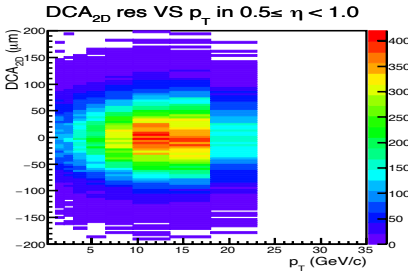


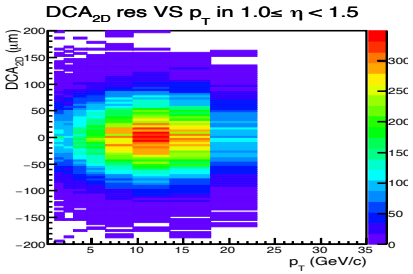


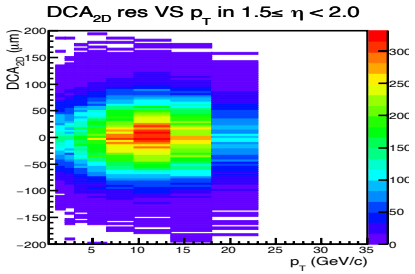


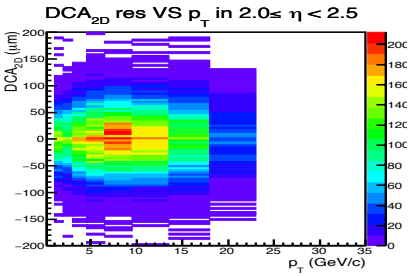
DCA_{2D} resolution VS p_T using single pion events (η>0)

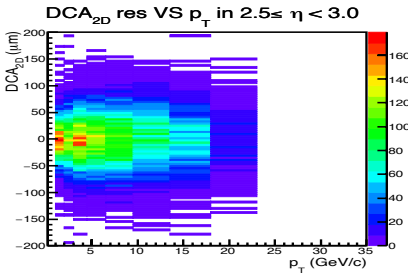


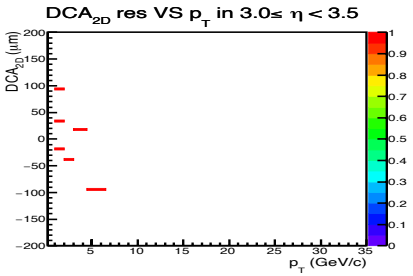




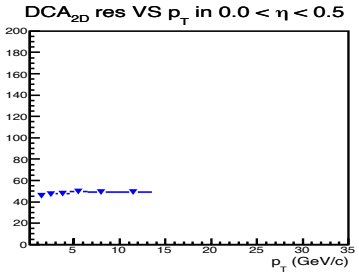


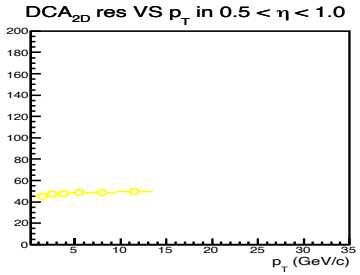


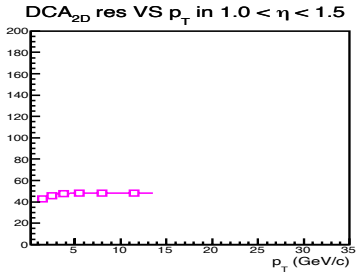


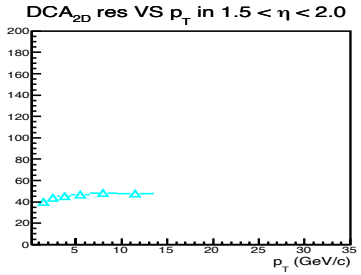


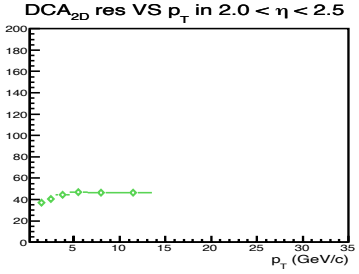
Track p_T > 1 GeV/c

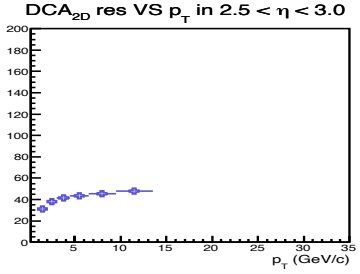


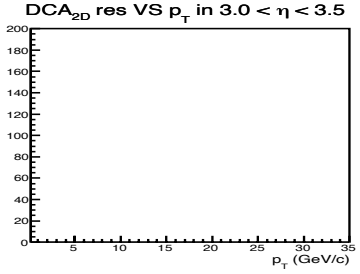




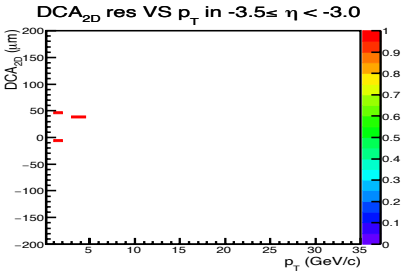


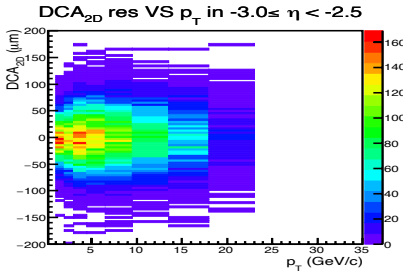


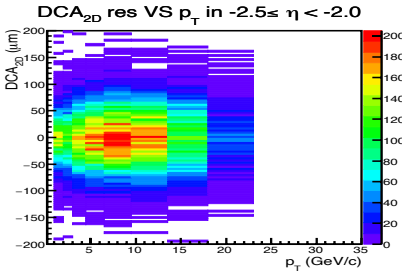


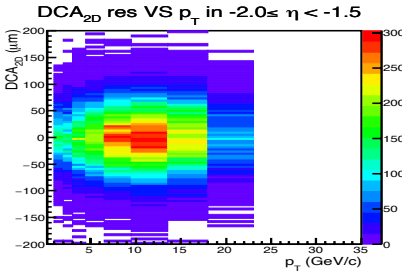


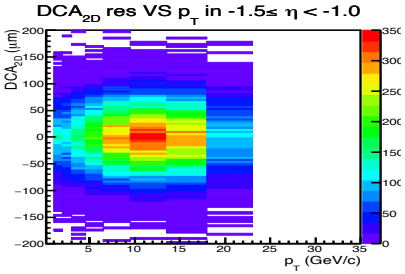
DCA_{2D} resolution VS p_T using single pion events (η<0)

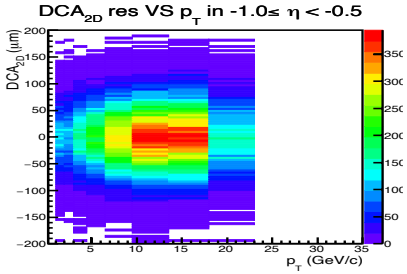


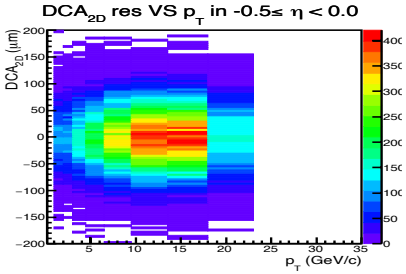




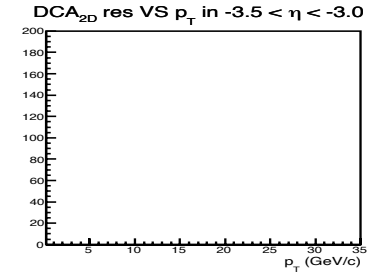


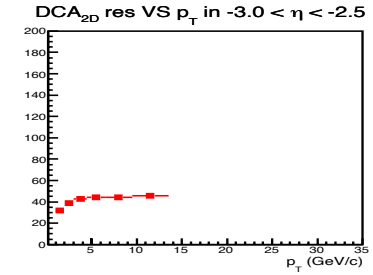


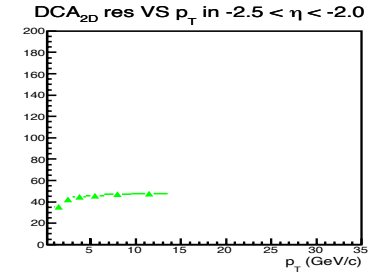


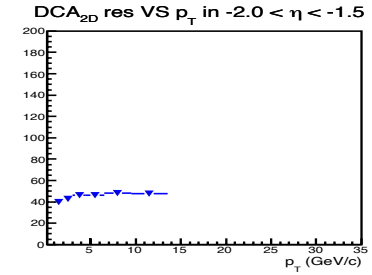


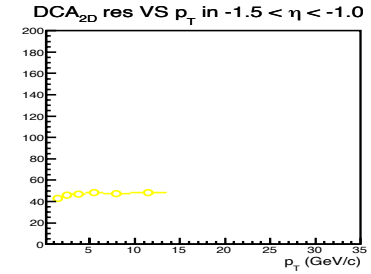
Track p_T > 1 GeV/c

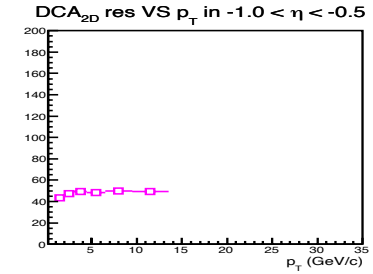


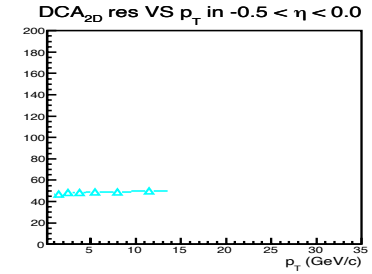






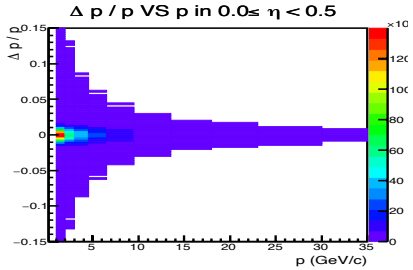


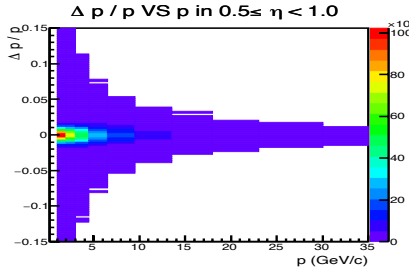


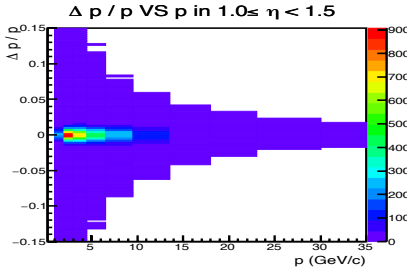


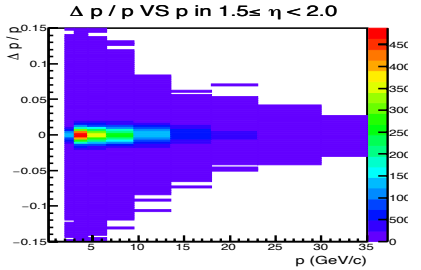
SIDIS high Q^2 events

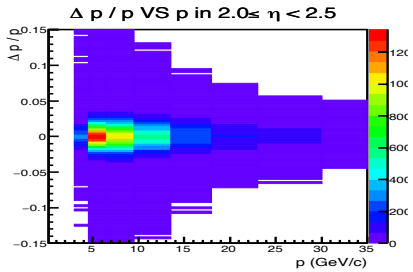
Momentum resolution VS momentum using SIDIS high Q^2 events (η>0)

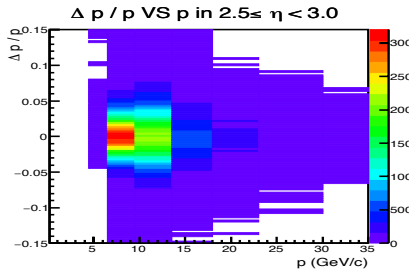


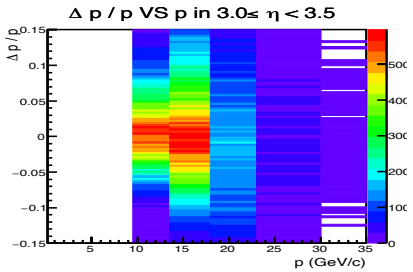




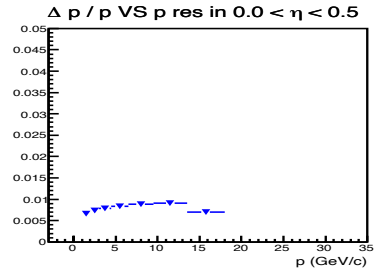


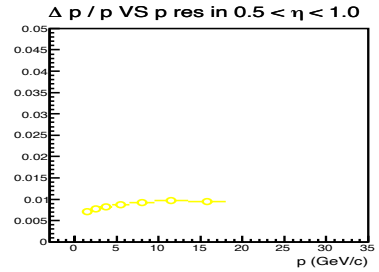


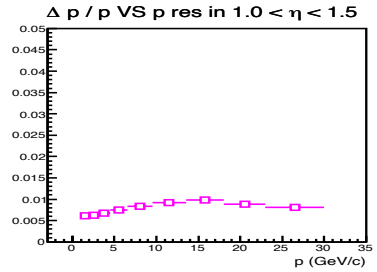


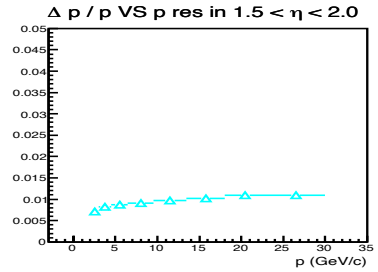


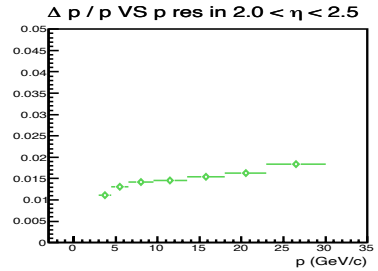
Track p_T > 1 GeV/c

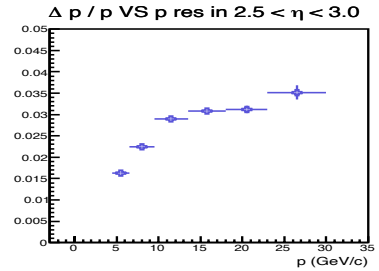


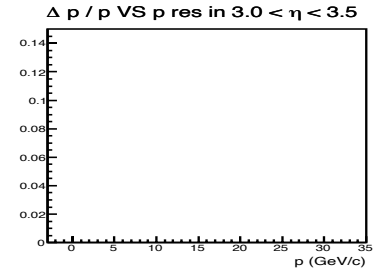




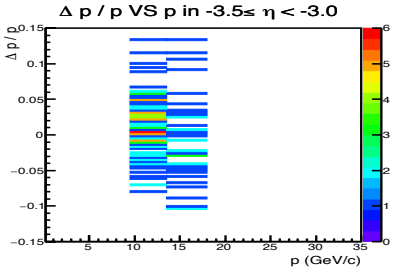


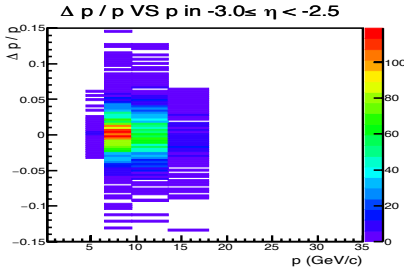


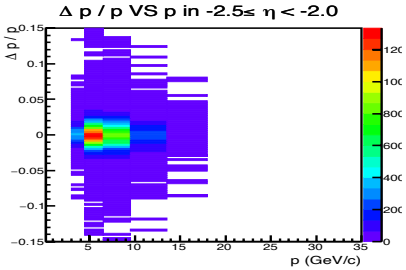


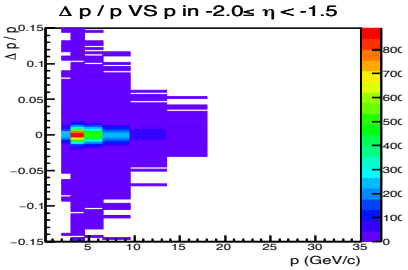


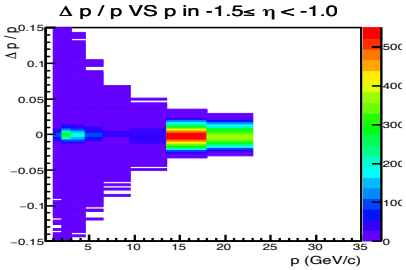
Momentum resolution VS momentum using SIDIS high Q^2 events (η<0)

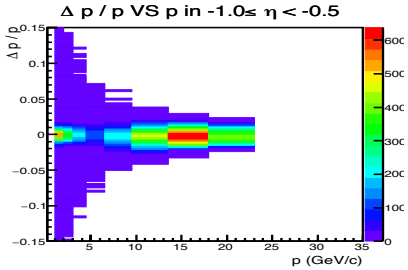


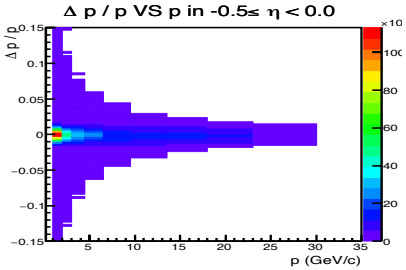




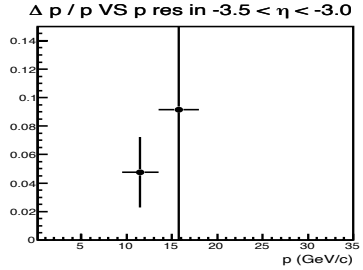


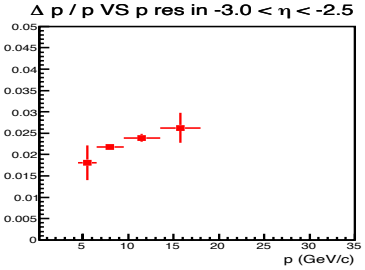


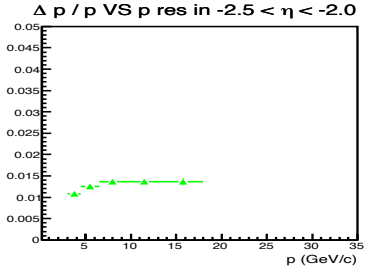


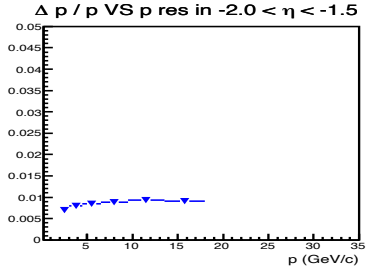


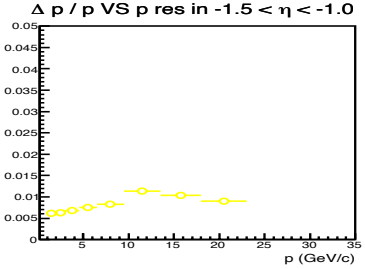
Track p_T > 1 GeV/c

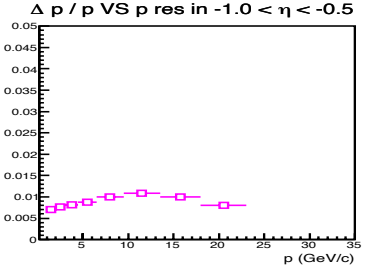


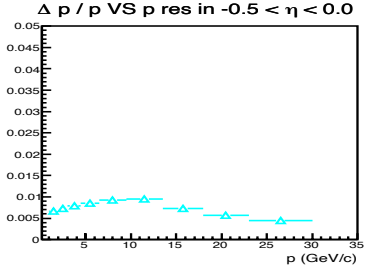




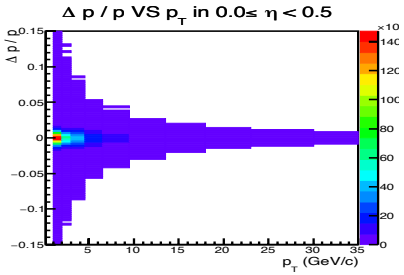


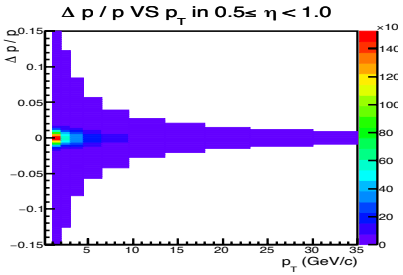


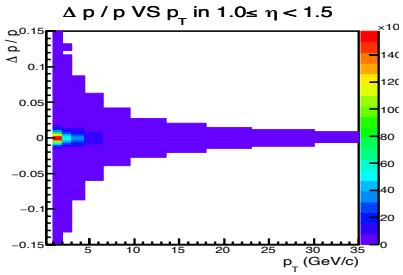


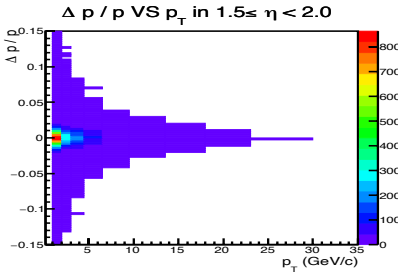


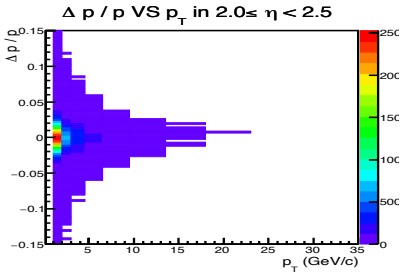
Momentum resolution VS p_T using SIDIS high Q^2 events (η>0)

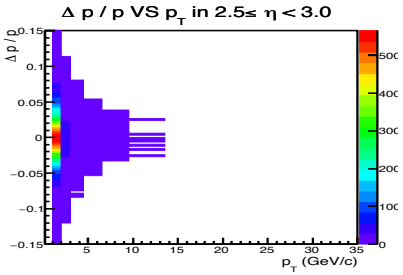


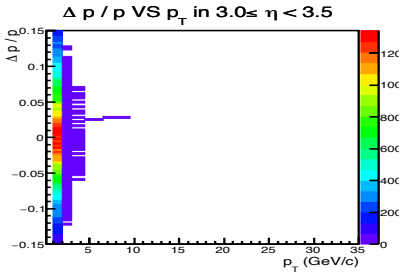




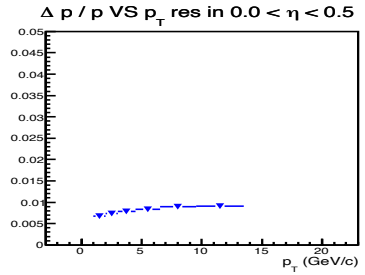


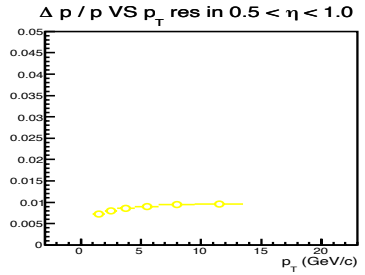


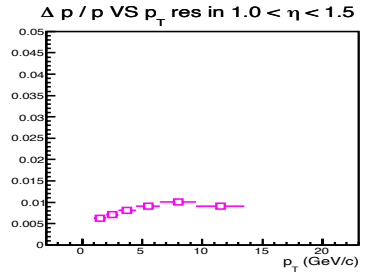


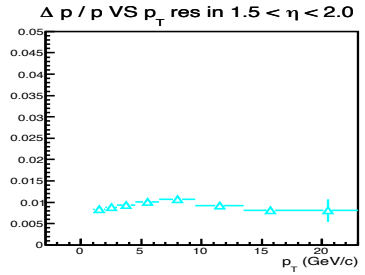


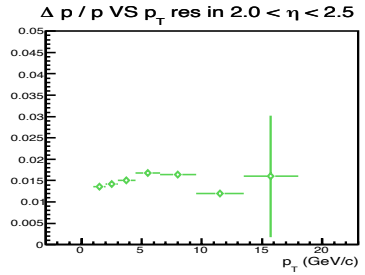
Track p_T > 1 GeV/c

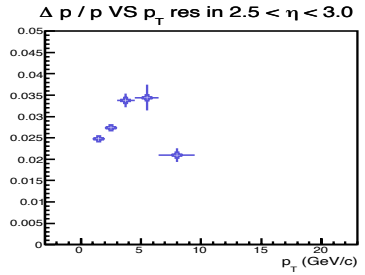


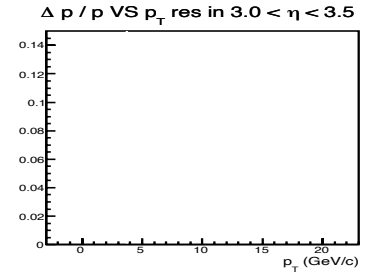




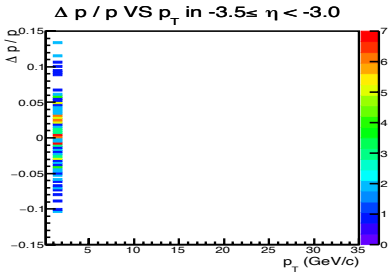


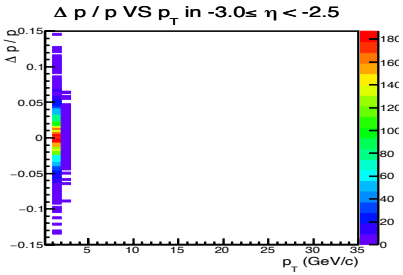


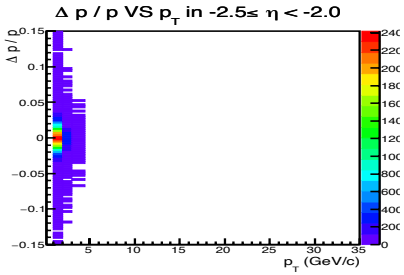


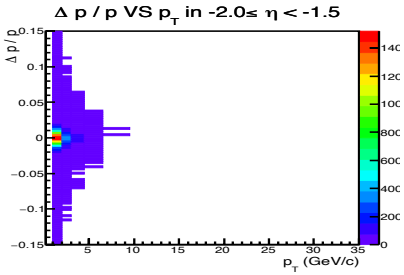


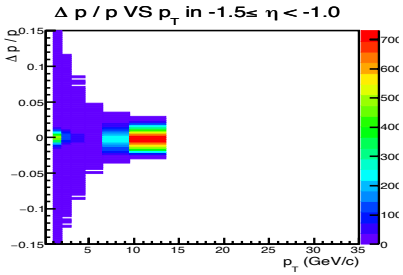
Momentum resolution VS p_T using SIDIS high Q^2 events (η<0)

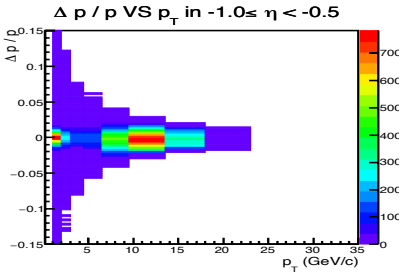


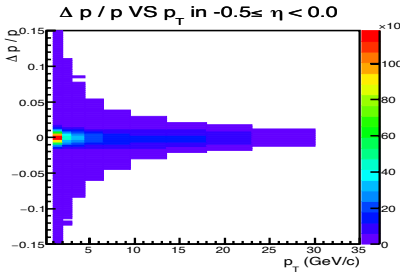




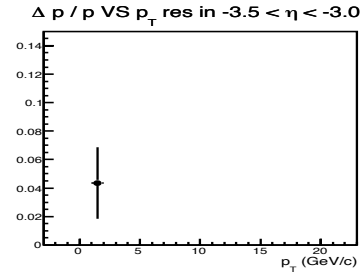


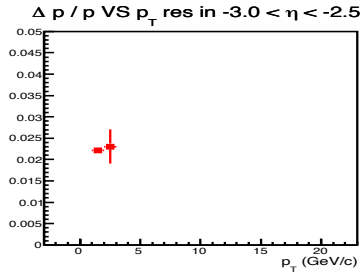


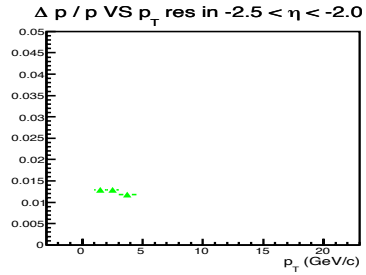


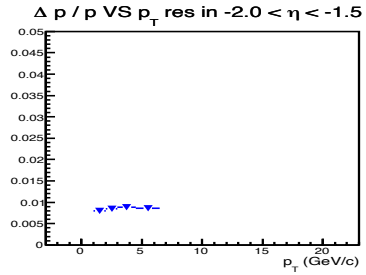


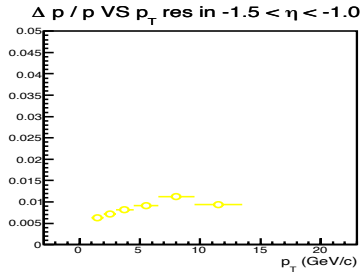
Track p_T > 1 GeV/c

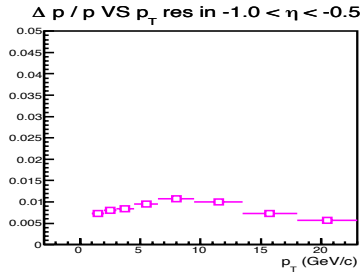


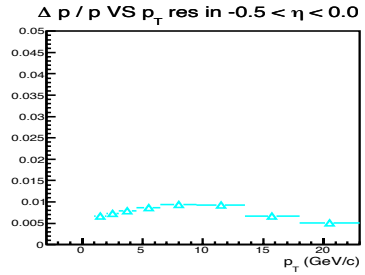












Summary and Outlook

- The tracking performance has been evaluated with both single pion and SIDIS high Q^2 events.
- Tracking momentum resolution with the current ECCE integrated detector looks good.
- Working on the reproduction with displaced vertex enabled and will work on the DCA resolution.