

Momentum Resolution

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7 Aug 2024

Task Assigned: Reconstruction efficiency and resolution study(possible TDR plots)

Path to data-file: `eictest/EPIC/RECO/24.04.0/epic_craterlake/DIS/NC/18x275/minQ2=1000`

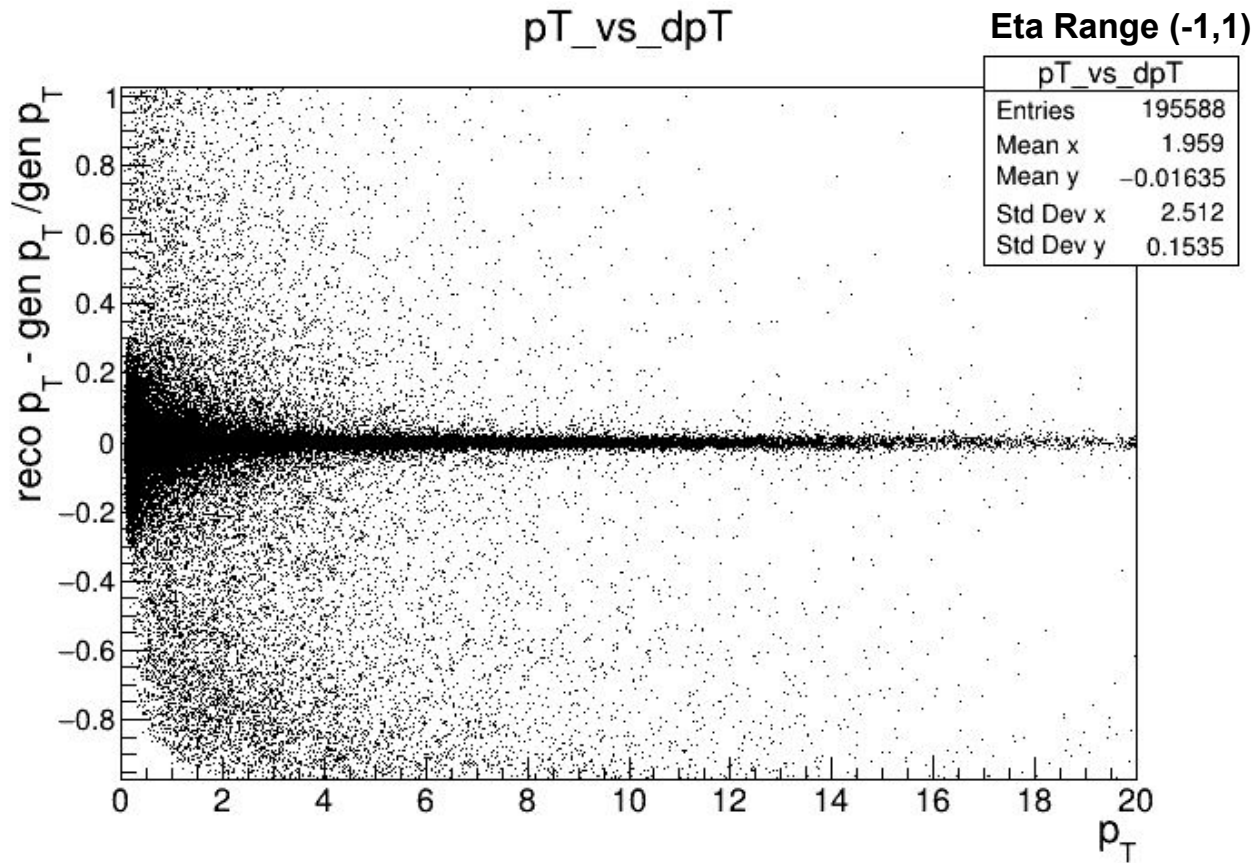
Data-files:

```
pythia8NCDIS_18x275_minQ2=1000_beamEffects_xAngle=-0.025_hiDiv_1.0000(-1.0200).eicrecon.tree.edm4eic.  
root
```

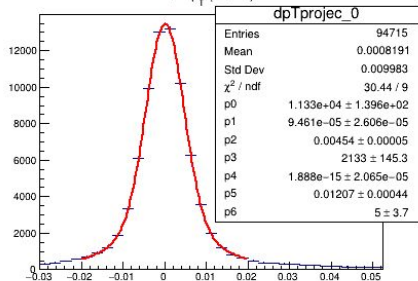
Particle Used: **Charged Pions**

Eta Range: **Mid Rapidity (-1,1)**

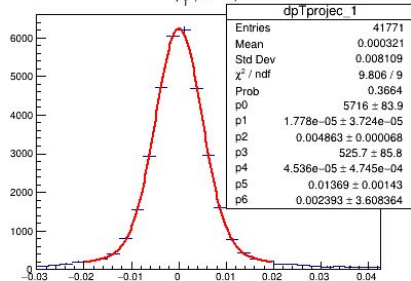
Momentum resolution for charged Pions



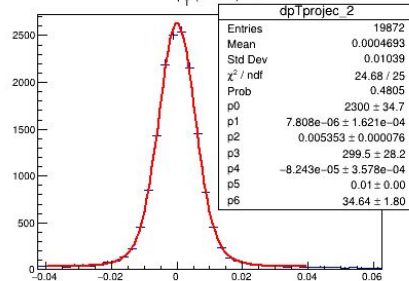
0 < p_T (GeV/c) < 1



1 < p_T (GeV/c) < 2

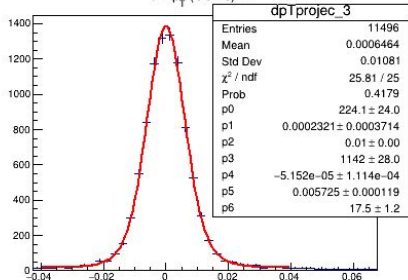


2 < p_T (GeV/c) < 3

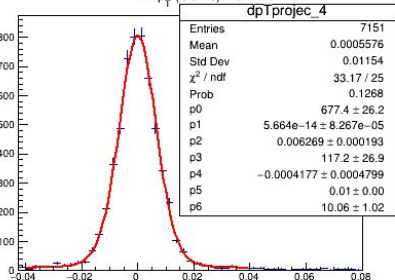


Fitting Function: **Double Gaussian**

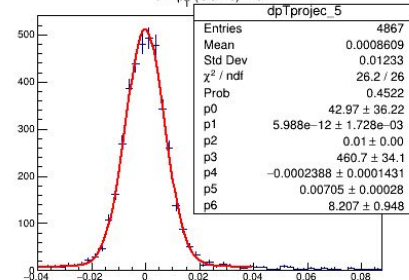
3 < p_T (GeV/c) < 4



4 < p_T (GeV/c) < 5



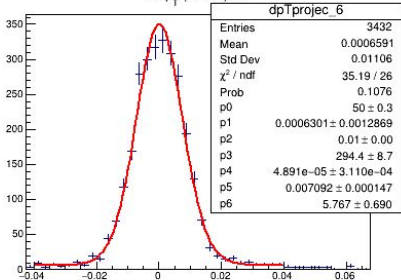
5 < p_T (GeV/c) < 6



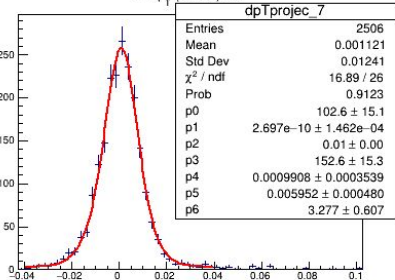
Effective Sigma is:

$$\sigma_{eff} = \sqrt{\frac{A_1\sigma_1^2 + A_2\sigma_2^2}{A_1 + A_2}}$$

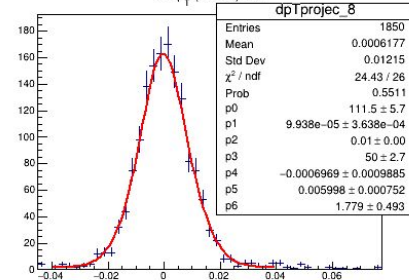
6 < p_T (GeV/c) < 7



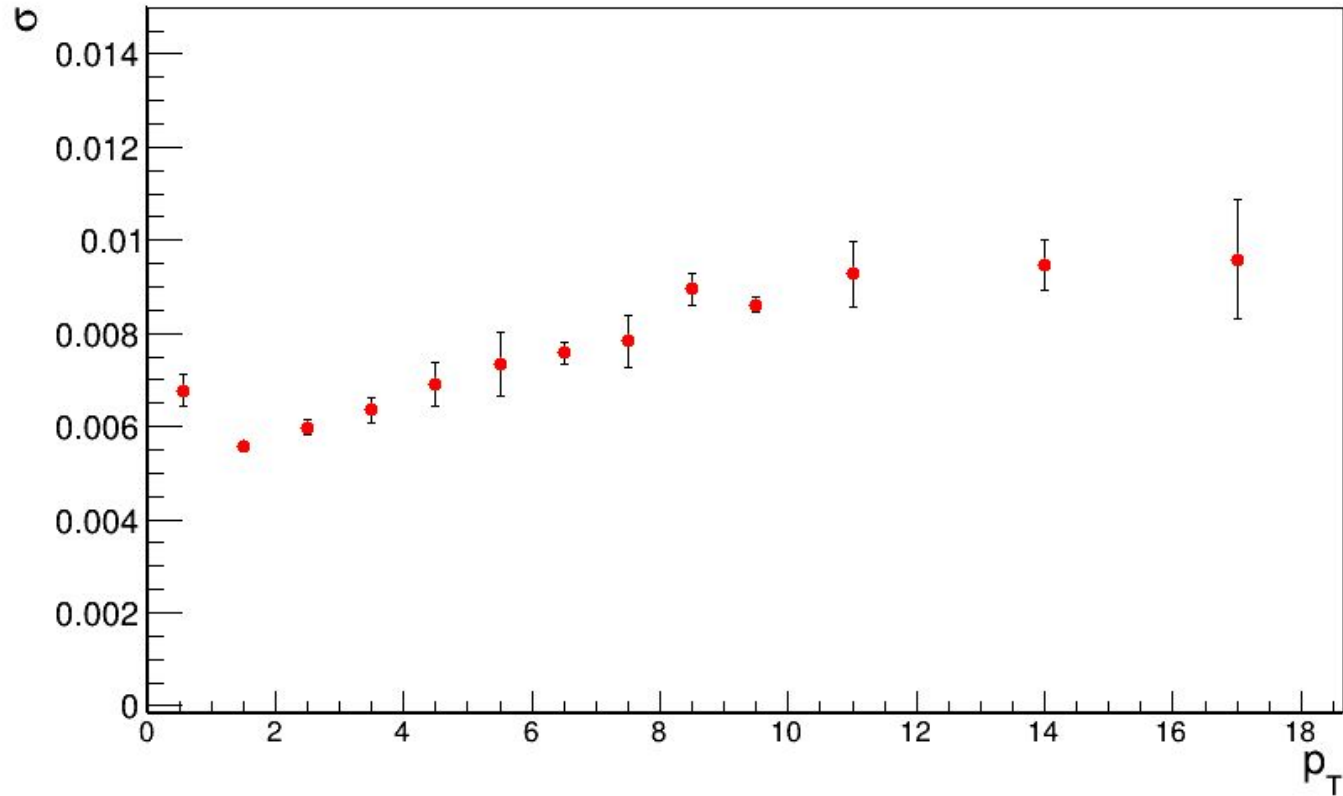
7 < p_T (GeV/c) < 8



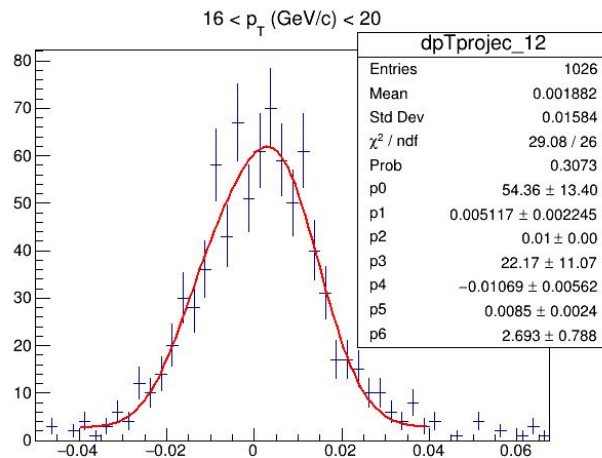
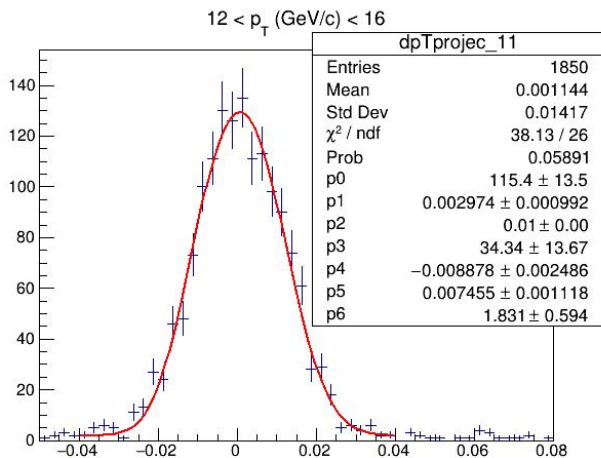
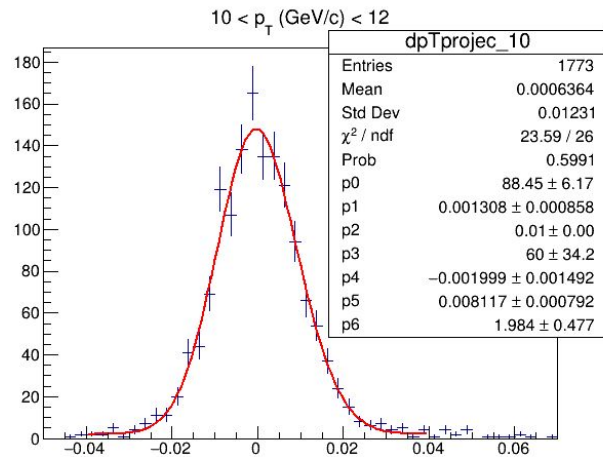
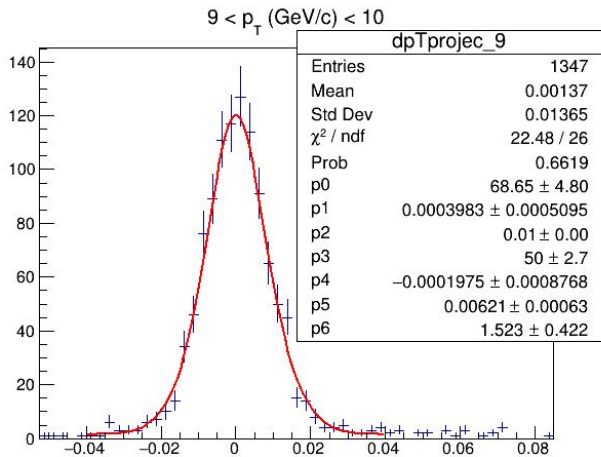
8 < p_T (GeV/c) < 9



Momentum resolution for charged Pions



THANK YOU



pT_vs_dpT

