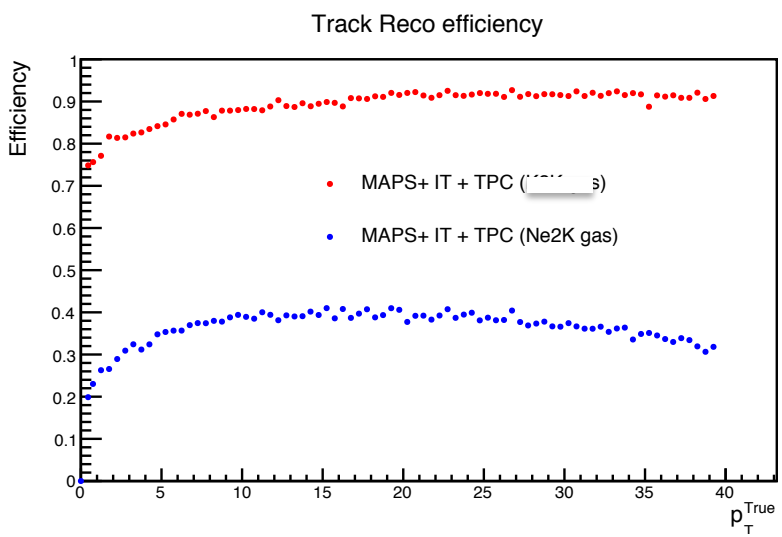
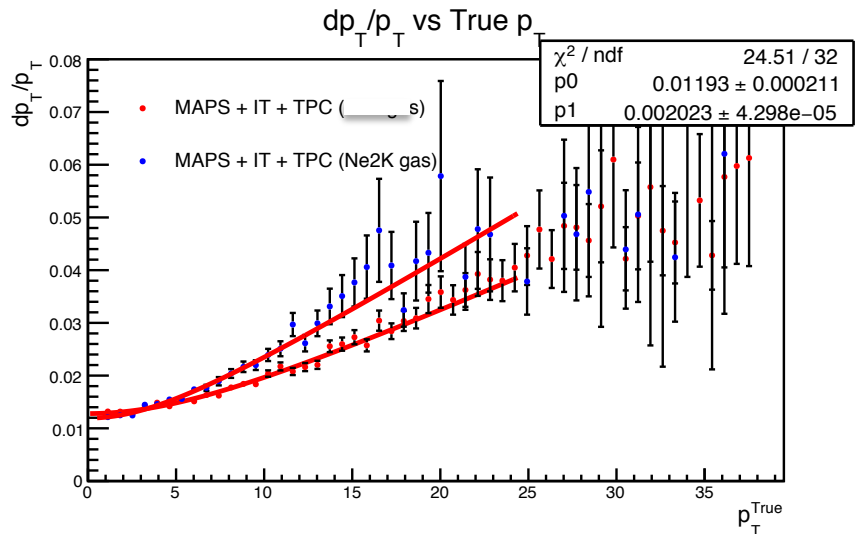
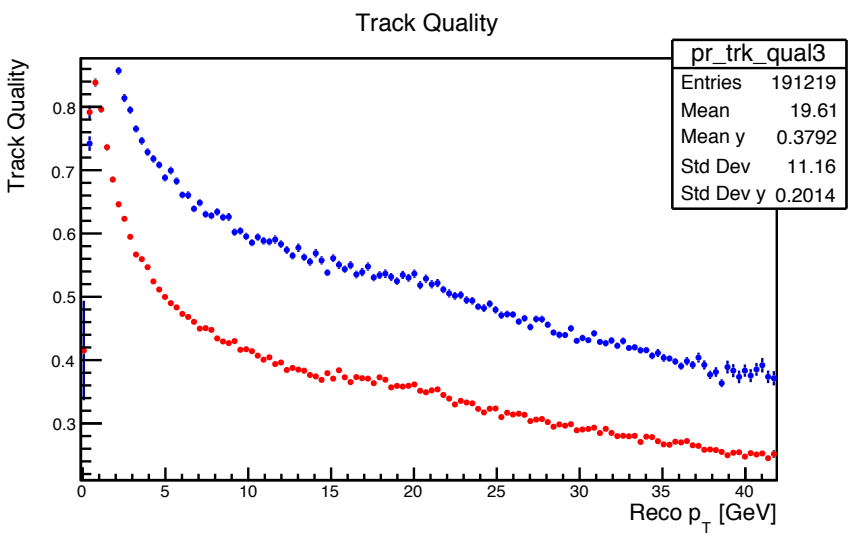
sPHENIX TPC software meeting
8th December 2016

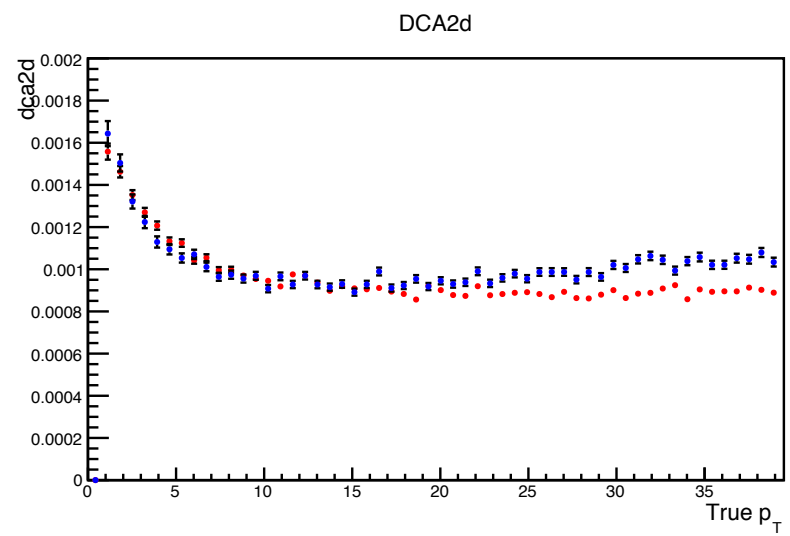
Sourav Tarafdar
Vanderbilt University

Tracking performance





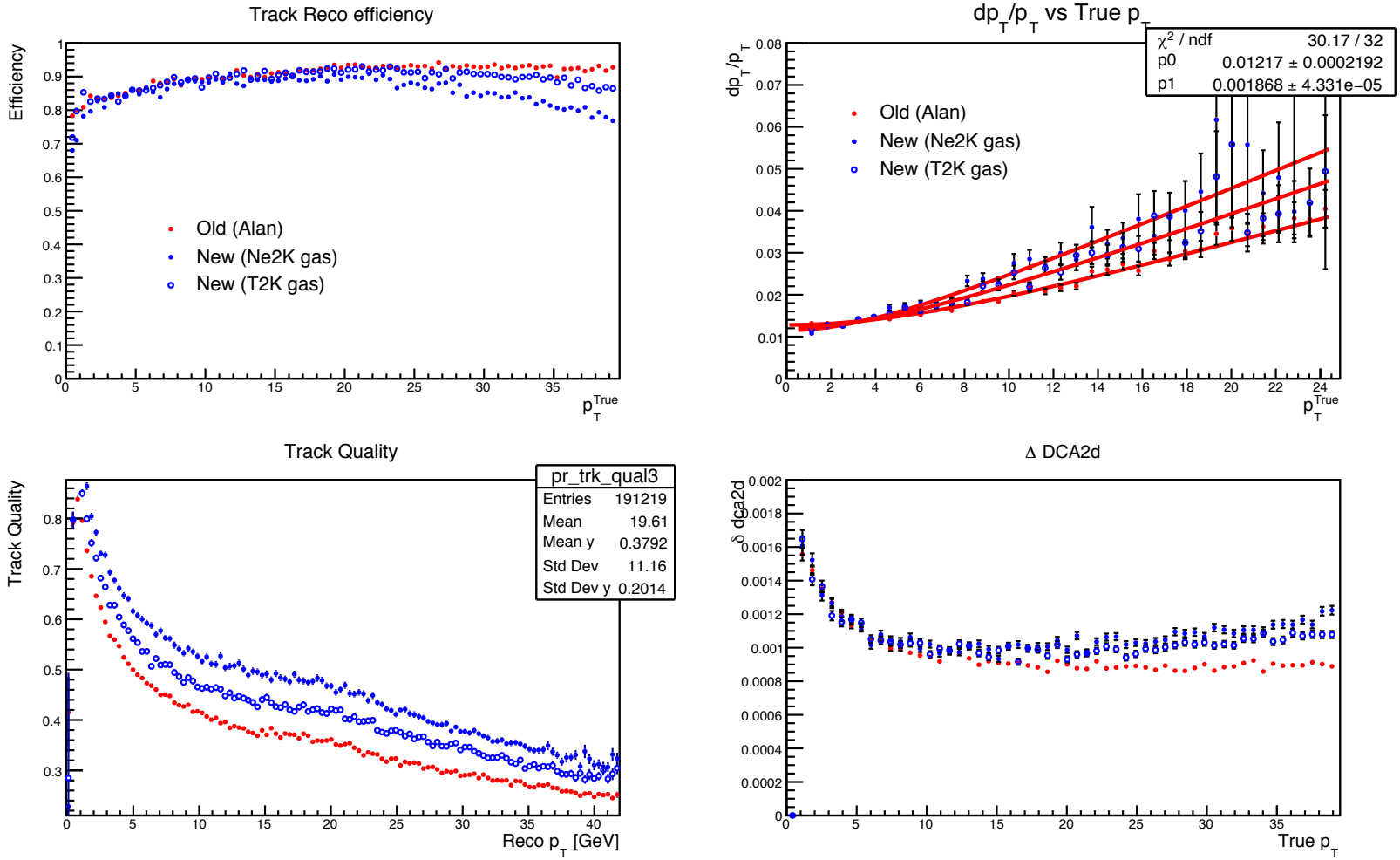




Default gas parameters and charge cloud sigma formulation

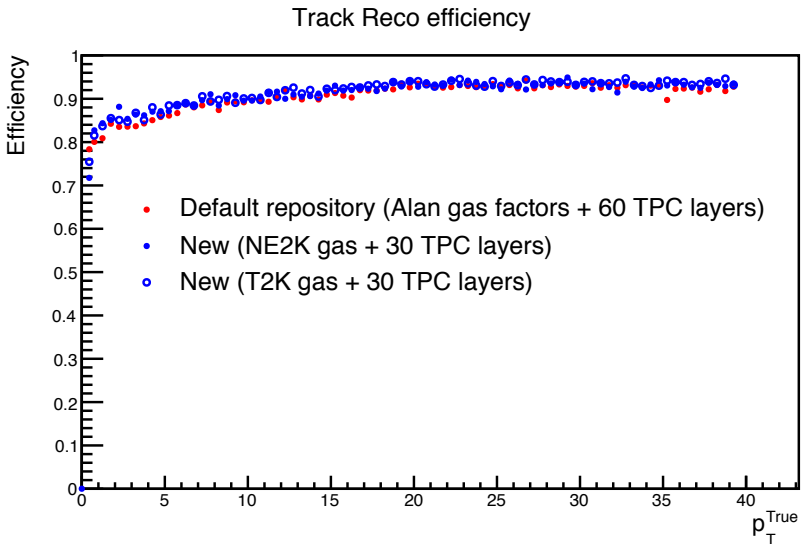
New gas parameters and default charge cloud sigma formulation

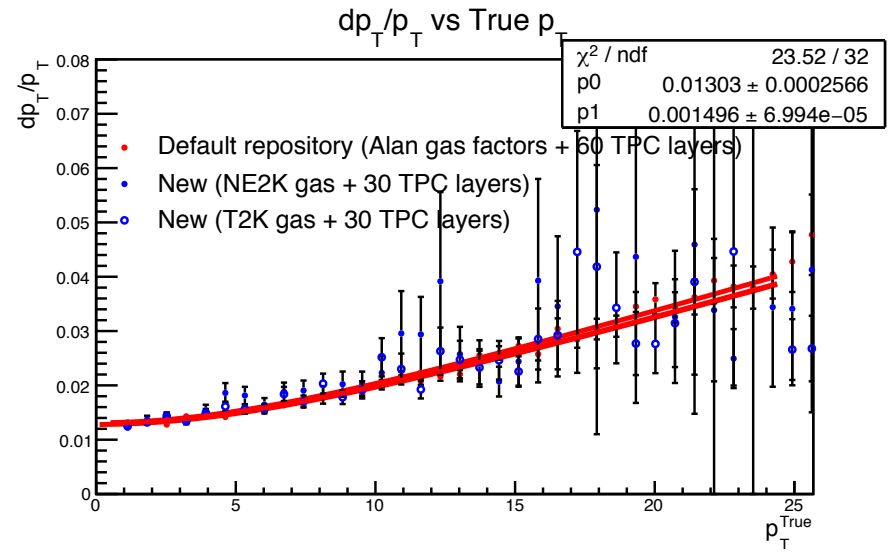
MAPS + IT+ TPC configuration tracking quality plots (Alan vs new cloud sigma formulation)

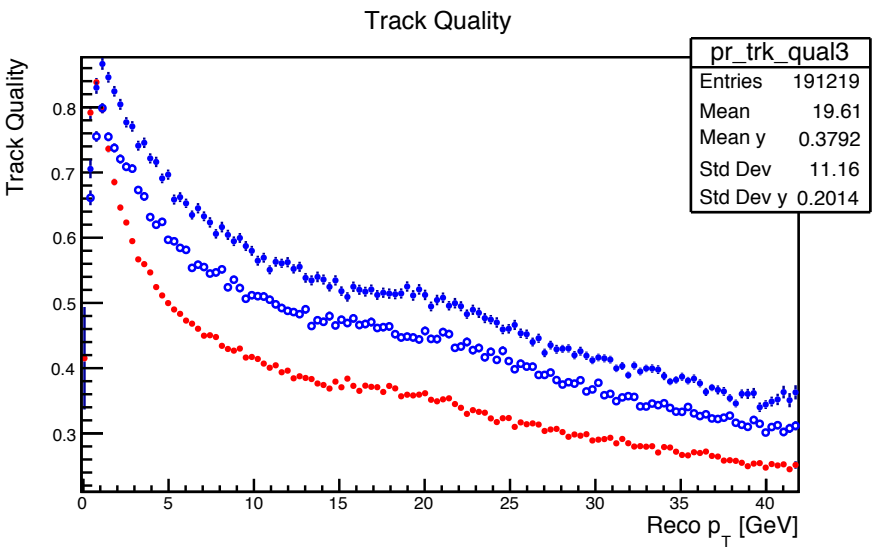


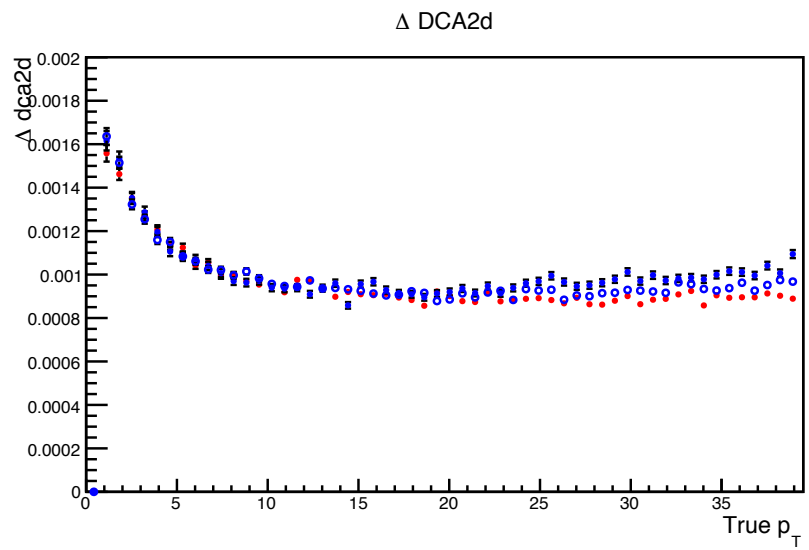
- New formulism of charge cloud sigma shows almost same single track efficiency for T2K with respect to older version in code upto true pt ~ 20 GeV. Then it drops down gradually.
- Ne2K gas shows almost same single track efficiency upto pT ~ 15 GeV with respect to older version.

MAPS + IT + TPC



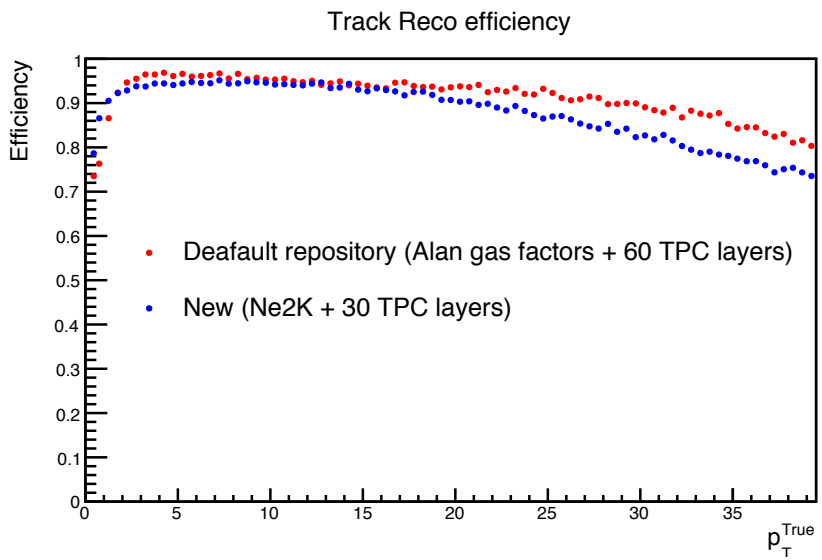


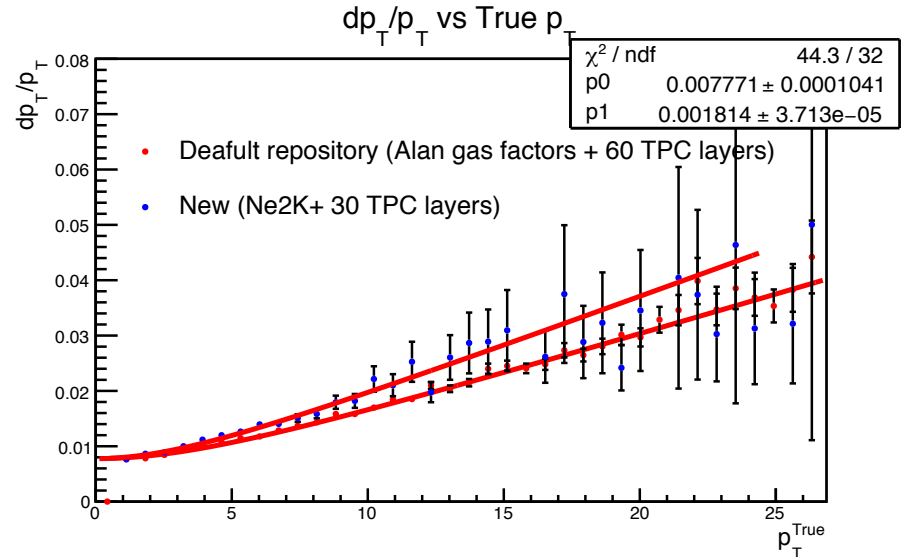


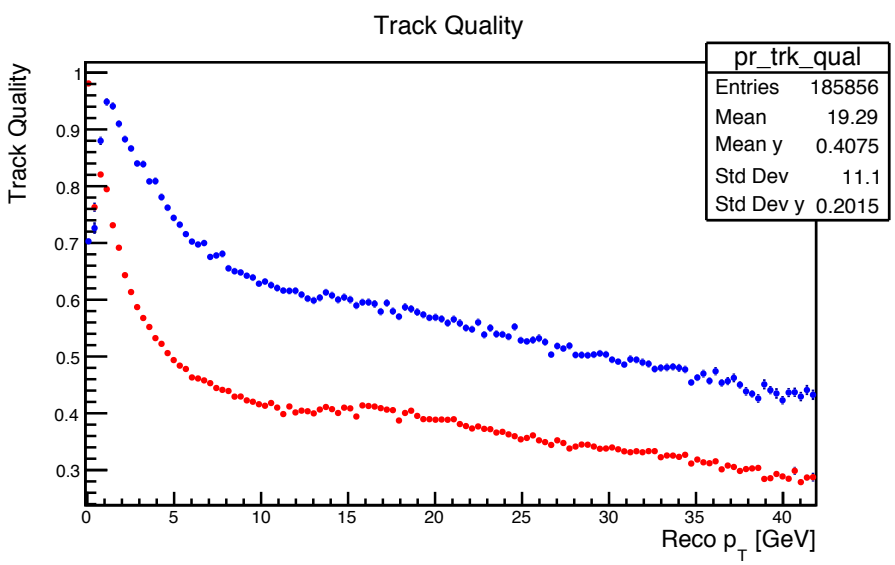


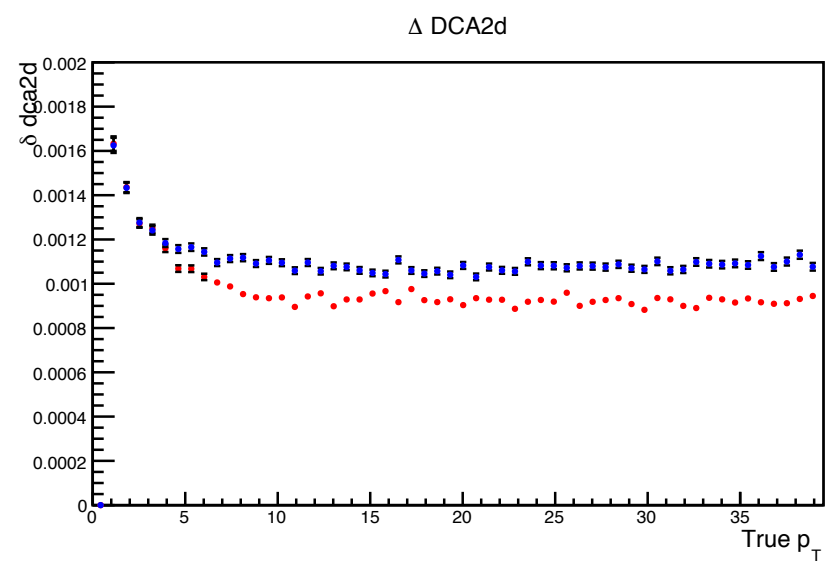
- Change in number of TPC gas layers based on future proposal : Reduced from 60 to 30.
- Hough Transform hit requirement : Default version -> 3 MAPS + 4 IT + 30 TPC
  New version -> 3 MAPS + 4 IT + 13 TPC

MAPS + TPC

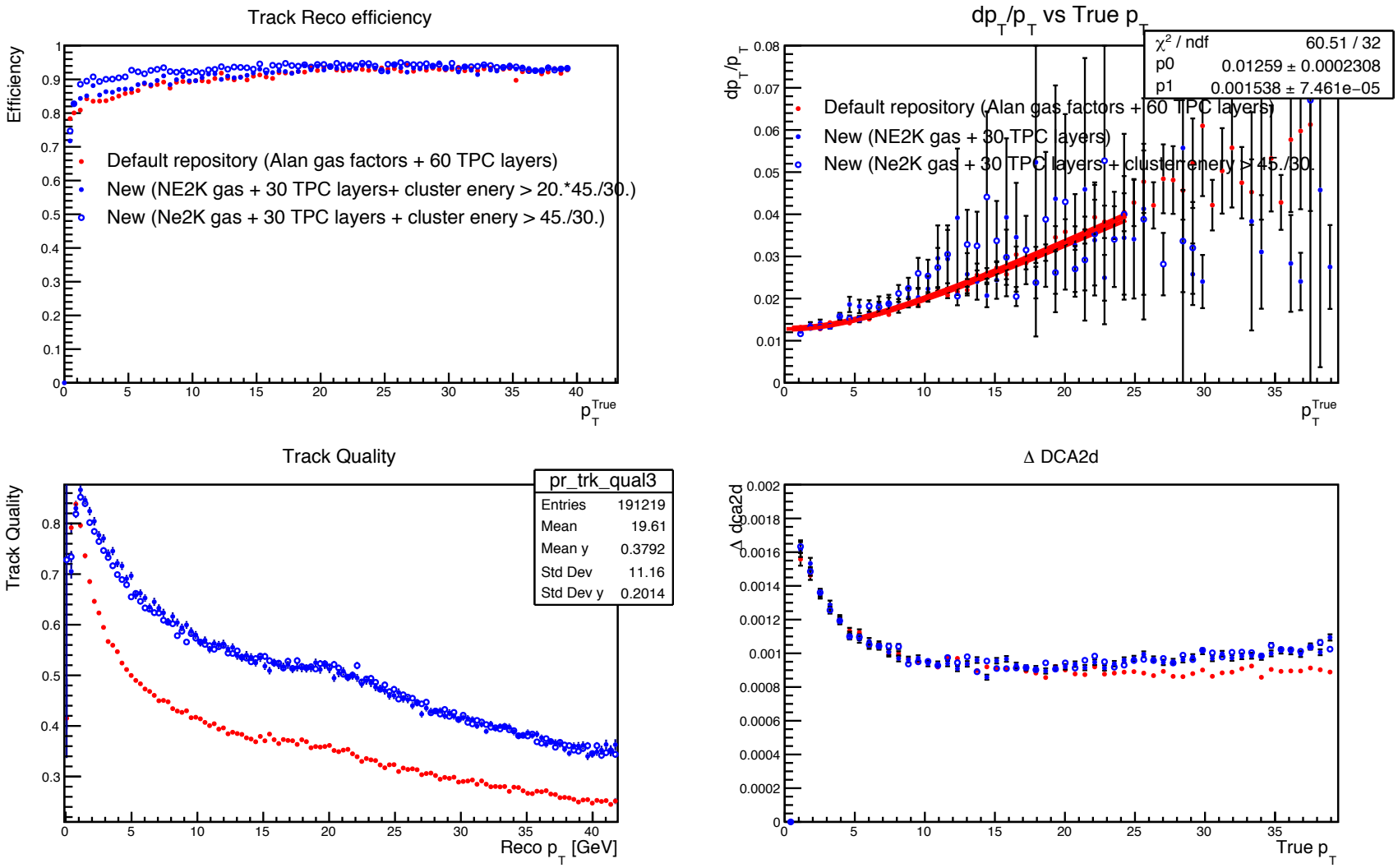

Track Reco efficiency
Efficiency
Deafault repository (Alan gas factors + 60 TPC layers)
New (Ne2K + 30 TPC layers)
p_T^{True}


dp_T/p_T vs True p_T
χ^2 / ndf 44.3 / 32
p0 0.007771 ± 0.0001041
p1 0.001814 ± 3.713e−05
dp_T/p_T
Deafult repository (Alan gas factors + 60 TPC layers)
New (Ne2K+ 30 TPC layers)
p_T^{True}


Track Quality
pr_trk_qual
Entries 185856
Mean 19.29
Mean y 0.4075
Std Dev 11.1
Std Dev y 0.2015
Track Quality
Reco p_T [GeV]


Δ DCA2d
δ dca2d
True p_T

MAPS + IT + TPC



- Change in number of TPC gas layers based on future proposal : Reduced from 60 to 30.
- Hough Transform hit requirement : Default version -> 3 MAPS + 4 IT + 30 TPC
  New version -> 3 MAPS + 4 IT + 13 TPC
- Changing cluster threshold energy for TPC gas layers from 60 to 30 affects tracking eff