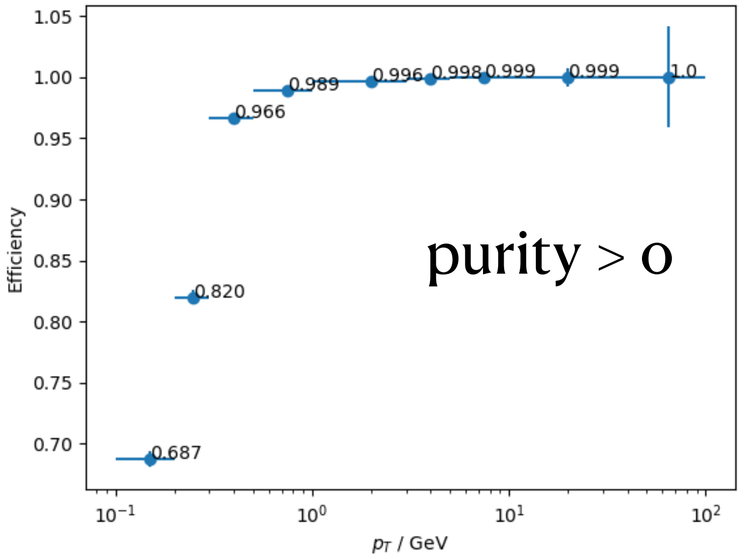
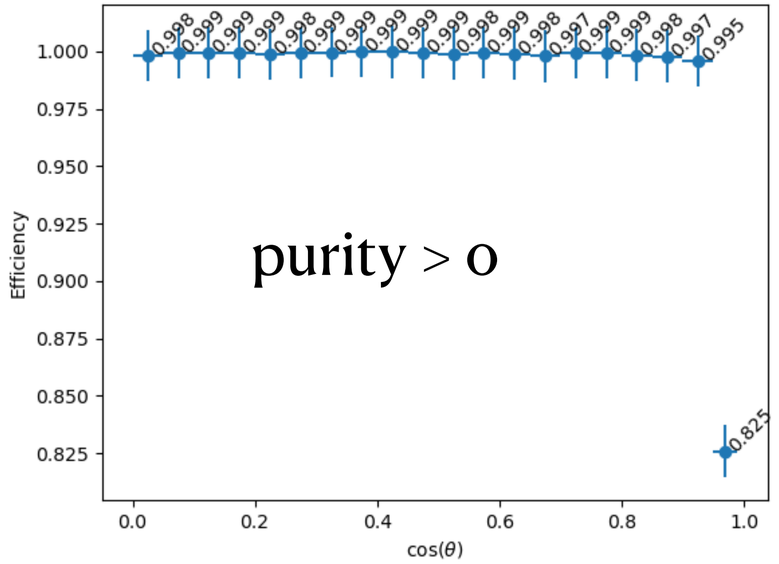
Trk & PID

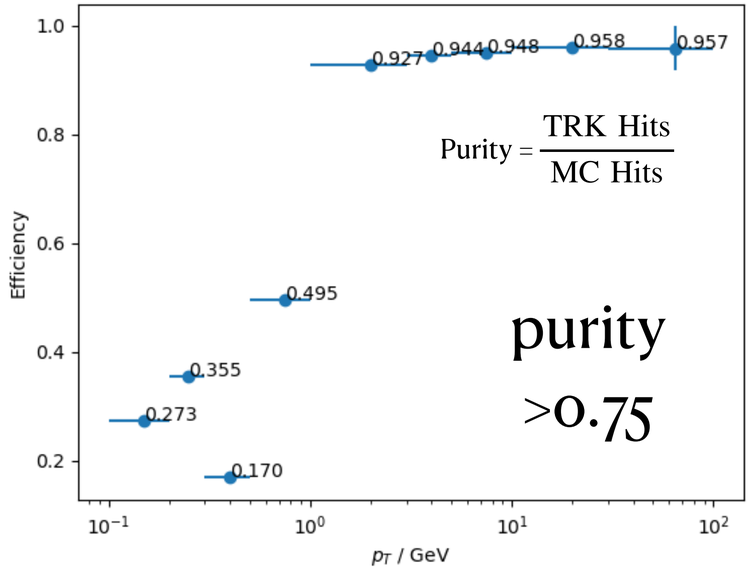
C.Zhang/20Jan2025

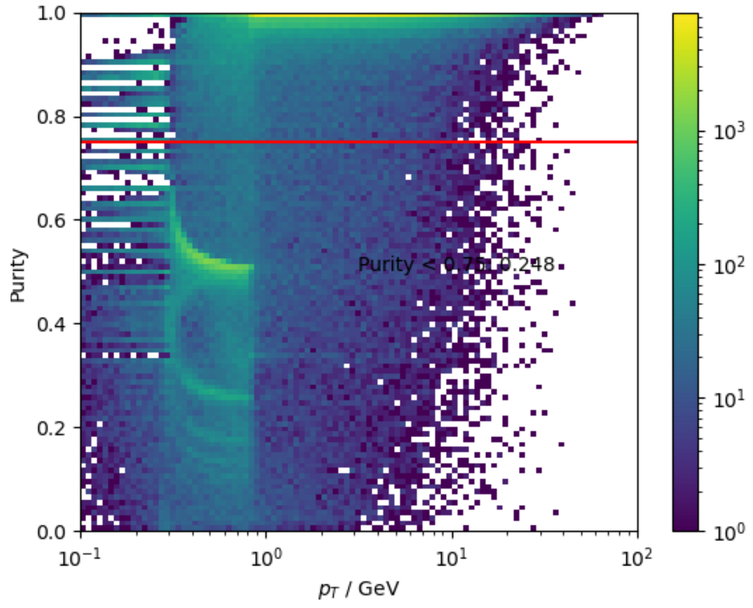
Trk Efficiency

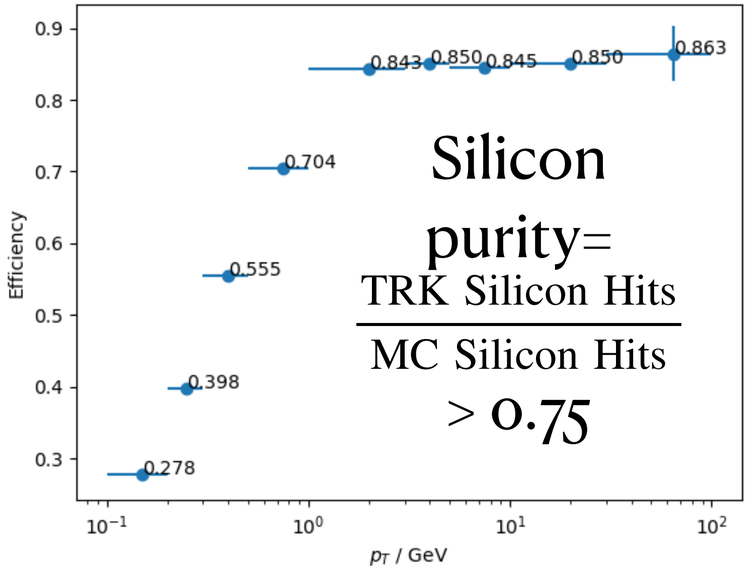
- Samples with 4 or more jets not available, **E124_nnHbb** used for now
- Treat Ntrk>1 as 1 for multiple-tracks
- Denominator: charged stable MC particle, **exclude**
  1. pT < 100 MeV
  2. cos(\theta) > 0.99
  3. starting-point to IP > 10 cm
  4. decayed in tracker
- Numerator: reconstructed tracks with purity > 0, 75 %





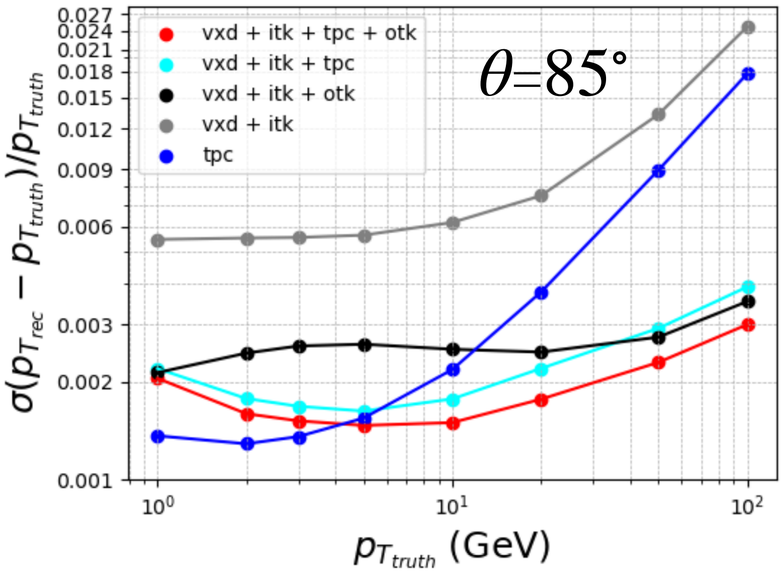


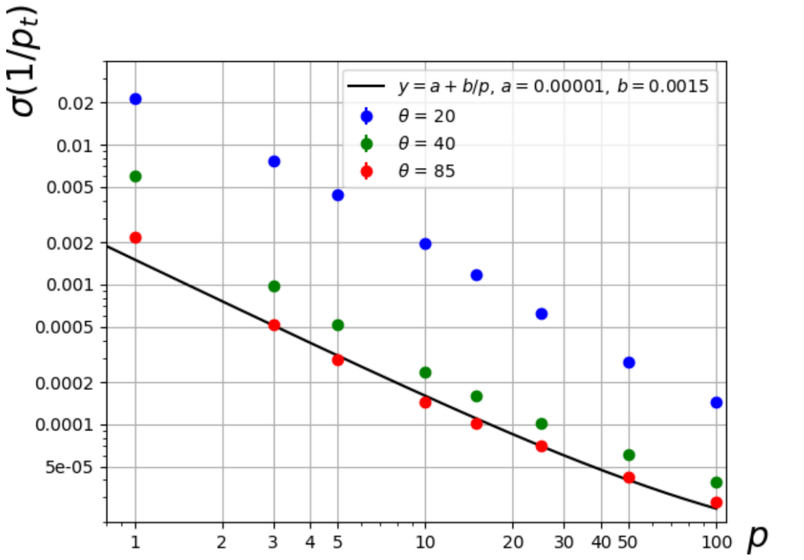




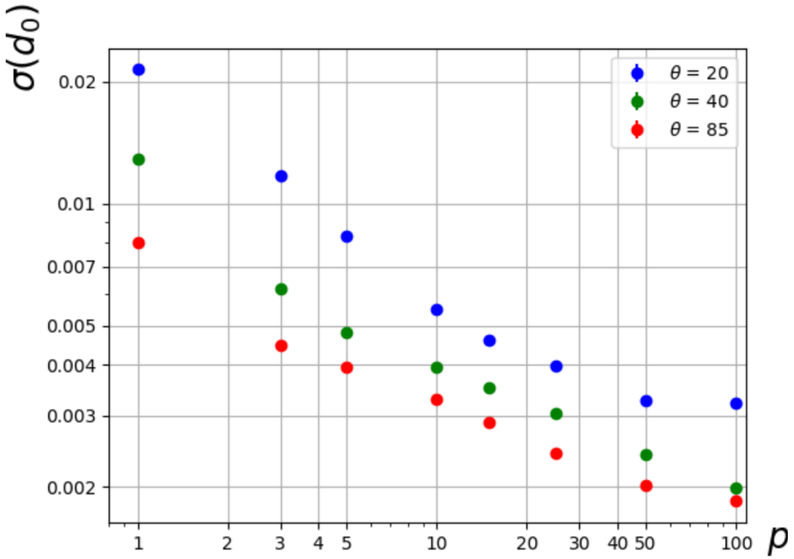
Trk Resolution

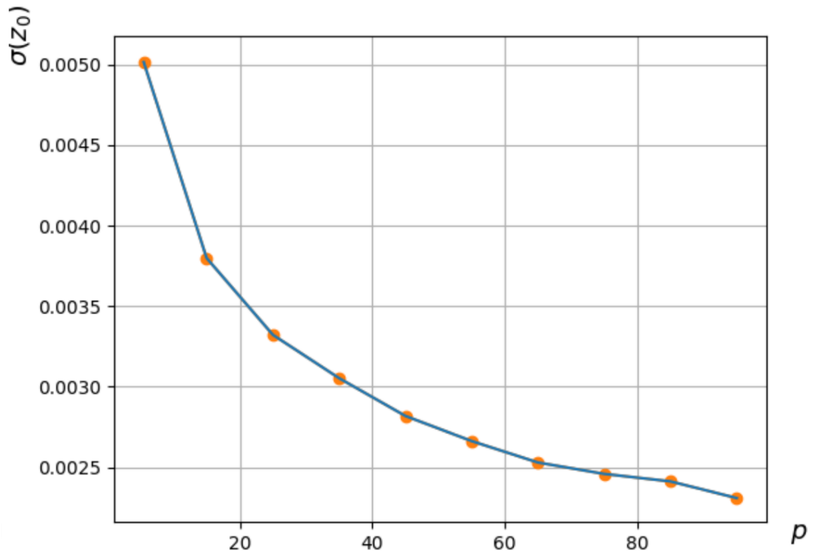
Zhuhao





Log-coordinate plot of momentum resolution at different angles



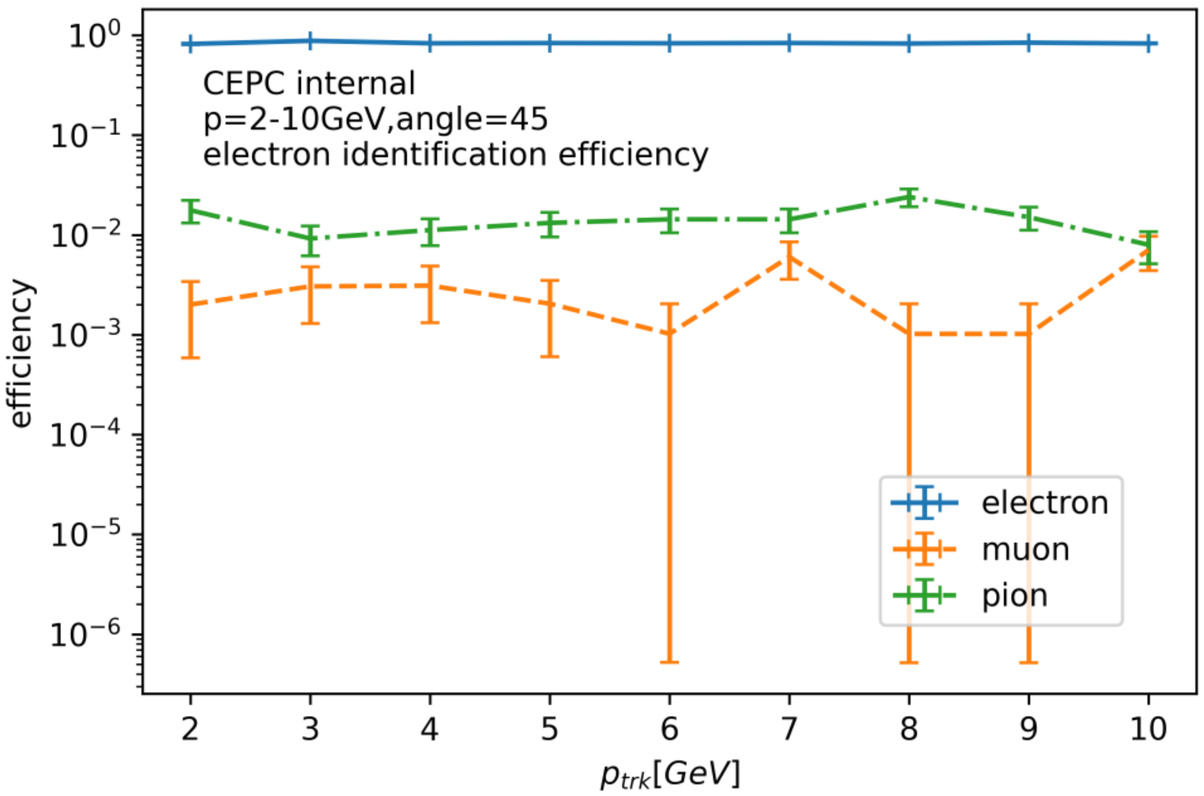


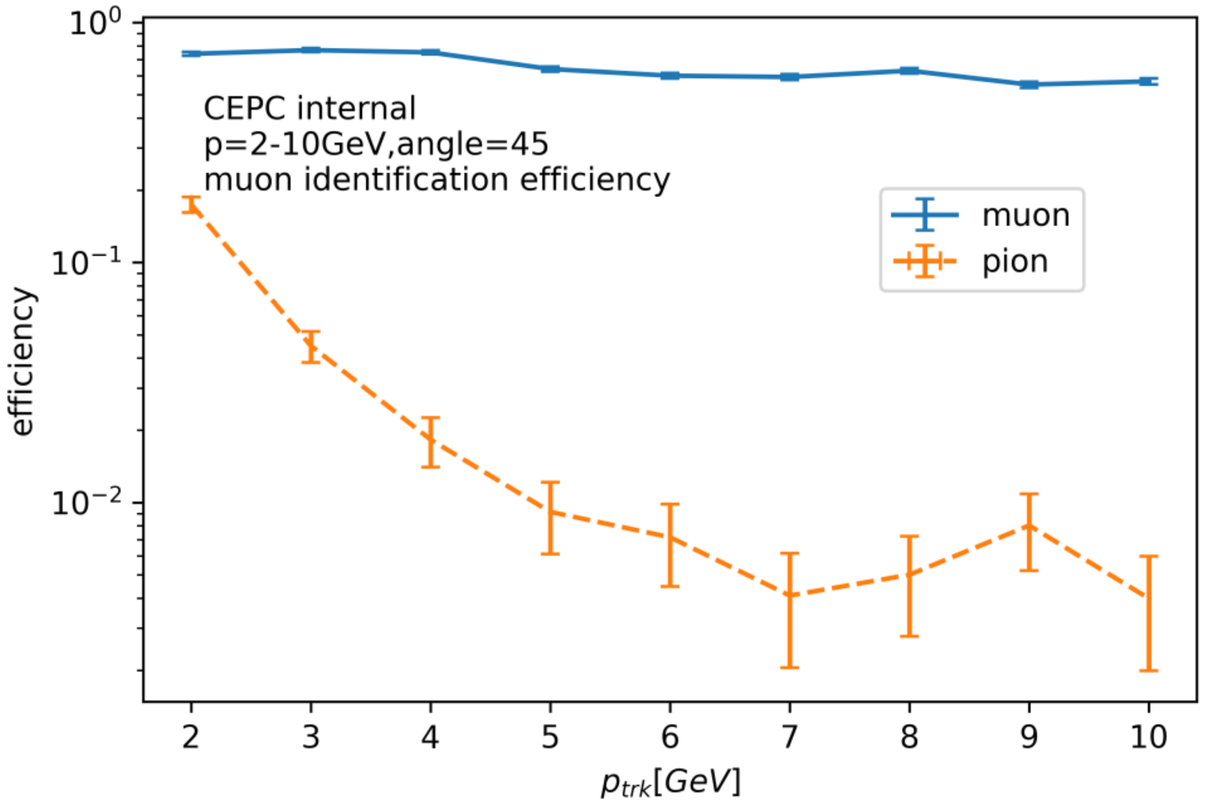
Log-coordinate plot of position resolution at different angles

- Single muon
- Fig(a), pT resolution issue at low pT region is still there
- Checked tracking resolution from other perspectives, overall its performance is fine
- To find a function describing d_0 vs . p
- More plot see Zhuhao' talk

Lepton PID

Ligang Xia, Changhua Hao (NJU)



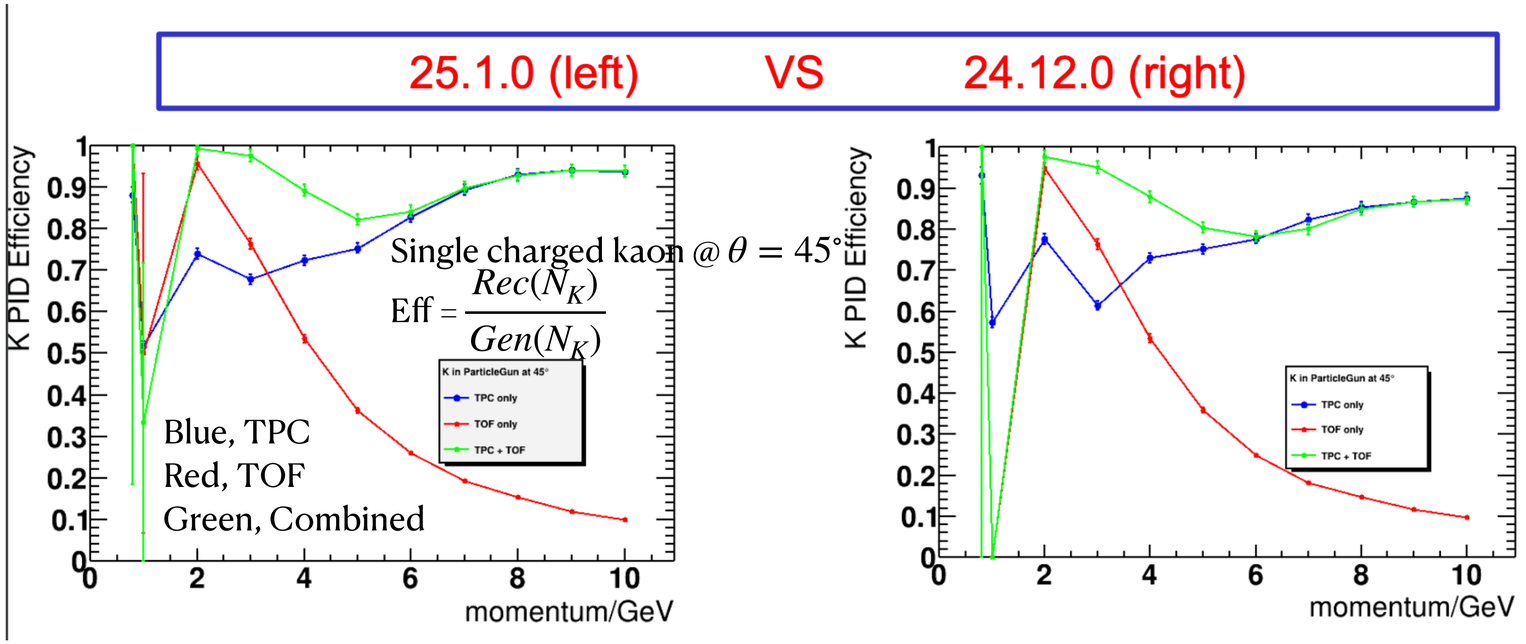


- Electron working point: E(ecal)/p(trk) > 0.9
- Muon working point: $\chi^2_{ECAL} < 3$ & $\chi^2_{HCAL} < 3$
  - $\chi^2_{\mathrm{HCAL}}(2\mathrm{GeV}) = (\frac{\mathrm{E_{HCAL}} - 0.348}{0.066})^2, \chi^2_{\mathrm{ECAL}}(2\mathrm{GeV}) = (\frac{\mathrm{E_{ECAL}} - 0.05}{0.0083})^2$
- To-do: More info./tech. can be used for further improvement; Combination with TPC&TOF

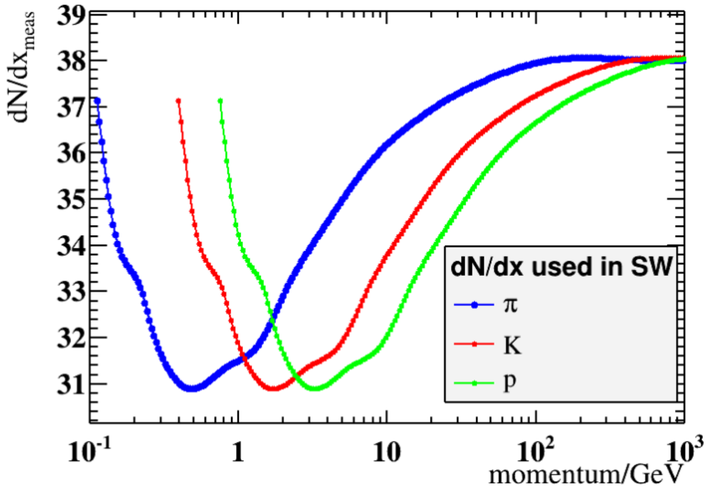
Hadron PID

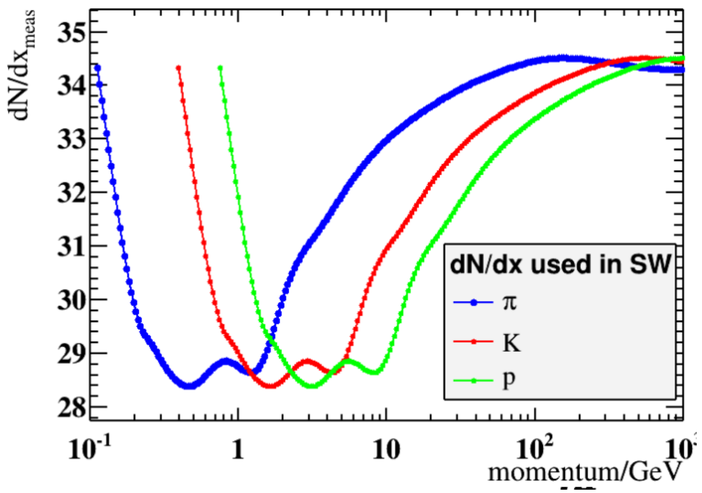
Xiaotian Ma, Jinxian Zhang

25.1.0 (left) VS 24.12.0 (right)



dNdx curves from LUT, $\theta = 45^\circ$,40°





- New dNdx algorithm available
  - Improvement in high momenta region is clear
  - New issue in the LUT around 1-10 GeV, working in progress