Update of signal reconstruction($^{3}_{\Lambda}H$) in Run2020 FXT Au-Au 5.2GeV

yulou

PID for he3&he4 (5.2GeV)

Event selection:

198<Vz<202cm

$$\sqrt{(Vx + 0.3) * (Vx + 0.3) + (Vy + 2) * (Vy + 2)} < 2$$

Trigger:750000

Badrun:21034002,21034007

Track quality:
 nHitsFit>15 NHitsFit2Poss>0.52
dedxerror:0.01~0.15

Good events:
            ~51M   no rotation
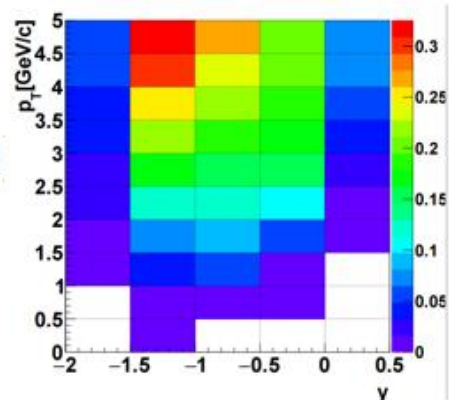Good events:
            ~94M with he3 once rotation
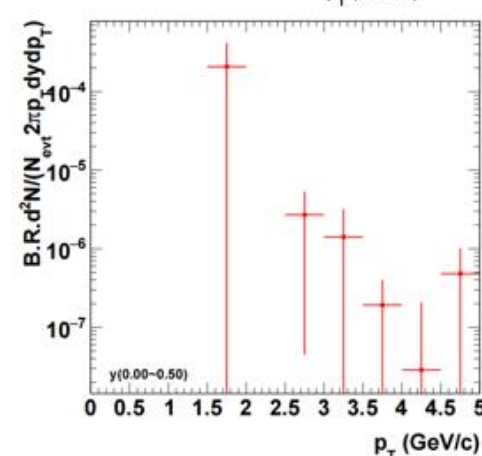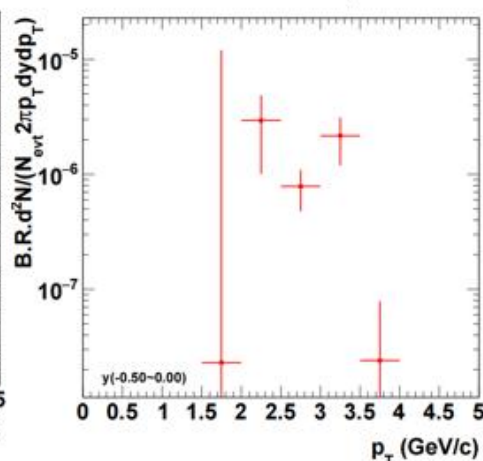
Cen:0-80%.

nevents after cen weight:5.597141e+07

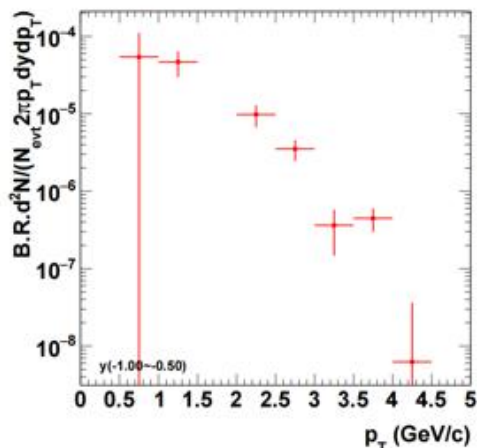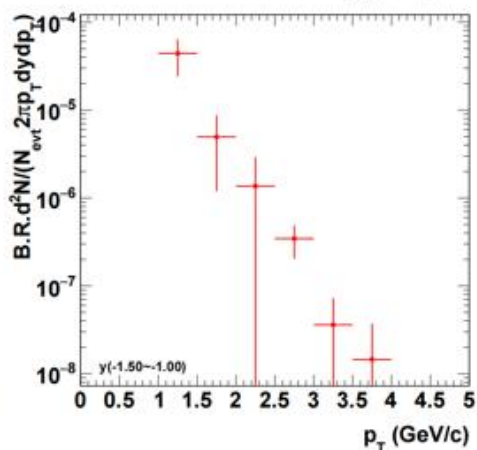Mass window:(fitmean-fitsigma)~(fitmean+fitsigma

pt_bin:0.5

y_bin:0.5

cent1:8.33734e+06
cent2:7.05082e+06
cent3:7.11492e+06
cent4:6.85787e+06
cent5:6.82793e+06
cent6:6.66432e+06
cent7:6.49614e+06
cent8:3.36134e+06
cent9:3.26073e+06

Tune cuts

0-80%
l >1, ldl>3
chi2topo<5.5,
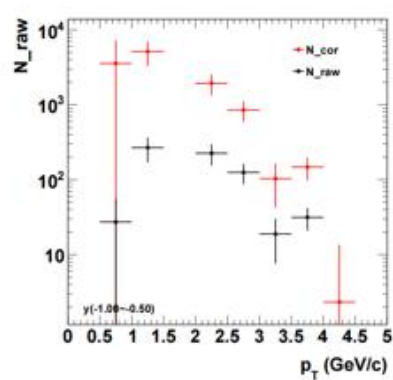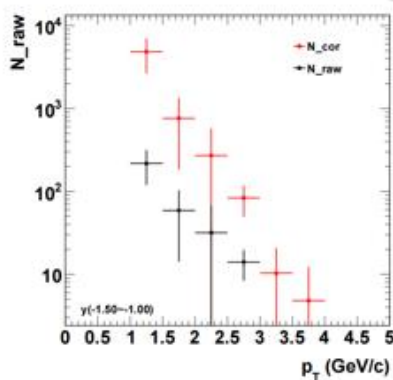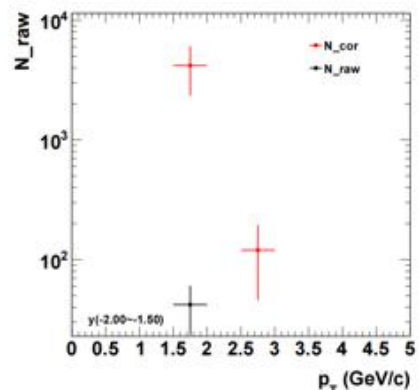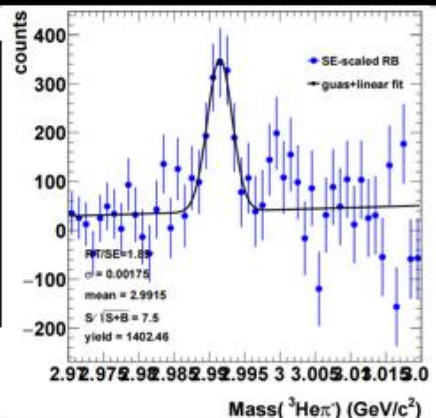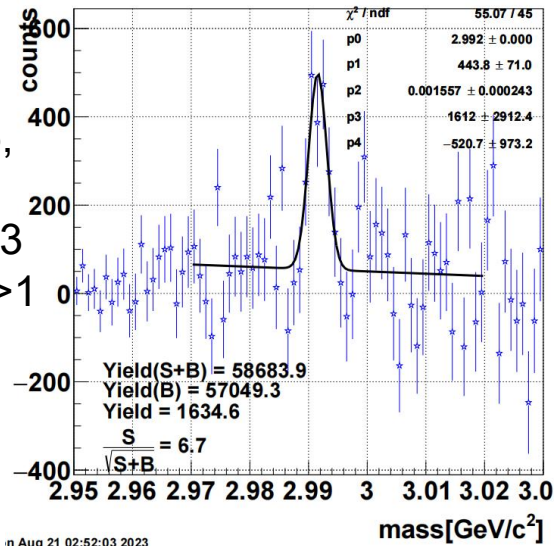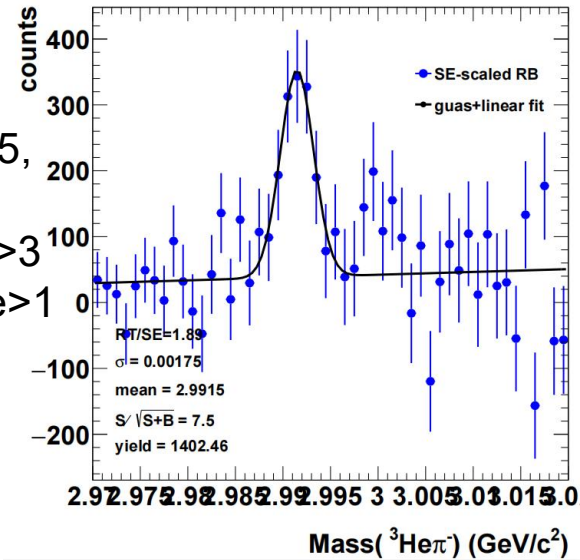chi2ndf<4
chi2prim_pi>3
chi2prim_he>1

pt_pi>0.1

χ^2/ndf 55.07 / 45
p0   2.992 ± 0.000
p1   443.8 ± 71.0
p2   0.001557 ± 0.000243
p3   1612 ± 2912.4
p4   −520.7 ± 973.2

Yield(S+B) = 58683.9
Yield(B) = 57049.3
Yield = 1634.6
$\frac{S}{\sqrt{S+B}}$ = 6.7

mass[GeV/c^2]
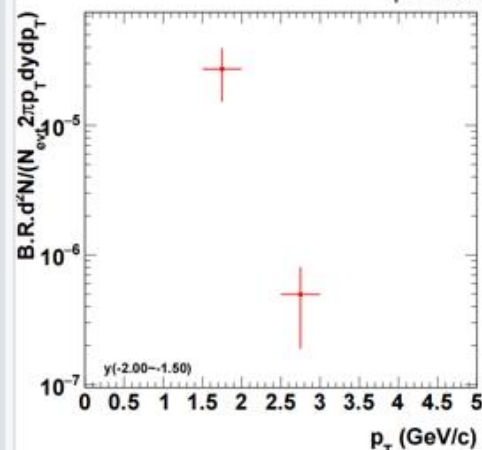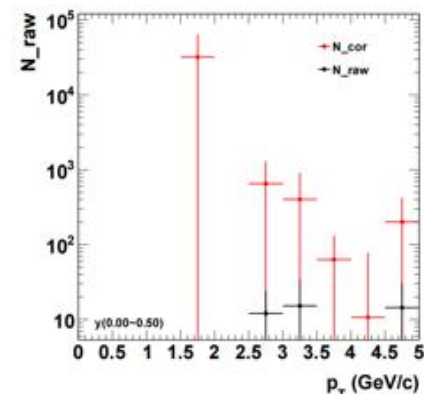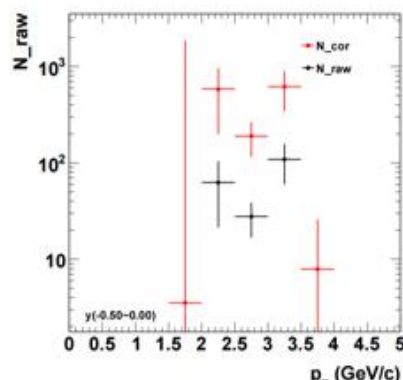
n Aug 21 02:52:03 2023

0-80%
l >1, ldl>3
chi2topo<5.5,
chi2ndf<4
chi2prim_pi>3
chi2prim_he>1

pt_pi>0.15

SE-scaled RB
guas+linear fit

RT/SE=1.89
σ = 0.00175
mean = 2.9915
S/$\sqrt{S+B}$ = 7.5
yield = 1402.46

Mass(^{3}Heπ$^-$) (GeV/c^2)

0-80%
l >1, ldl>3
chi2topo<3.,
chi2ndf<3.
chi2prim_pi>2.5
chi2prim_he>30

pt_pi>0.15

SE-scaled RB
guas+linear fit

RT/SE=1.91
σ = 0.00155
mean = 2.9916
S/$\sqrt{S+B}$ = 10.1
yield = 775.26

Mass(^{3}Heπ$^-$) (GeV/c^2)

yulou   4
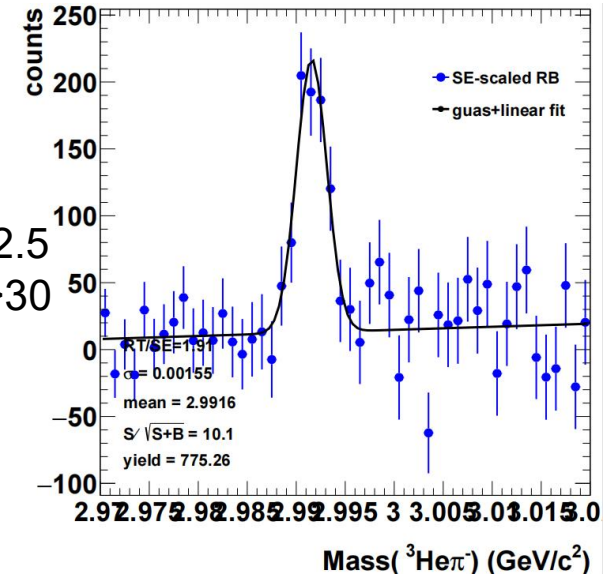
Summary

1.Rebin y and pt,get new P_T spectra and raw counts also counts with efficiency correction(Cen:0-80%)
2.tune cuts (6.7->10.1)
3.solved the problem that the error bar is to big(when use 2d efficience TH2 to project,the error changed,which is not equal to the original setting error,but the sqrt root counts of each bin)

Next
1.Rebin y and pt to get bigger significance in each bin
2.Regenerate minitree (finding file with 3011 error)
3....