Fit result of the K0s reconstruct mass distribution

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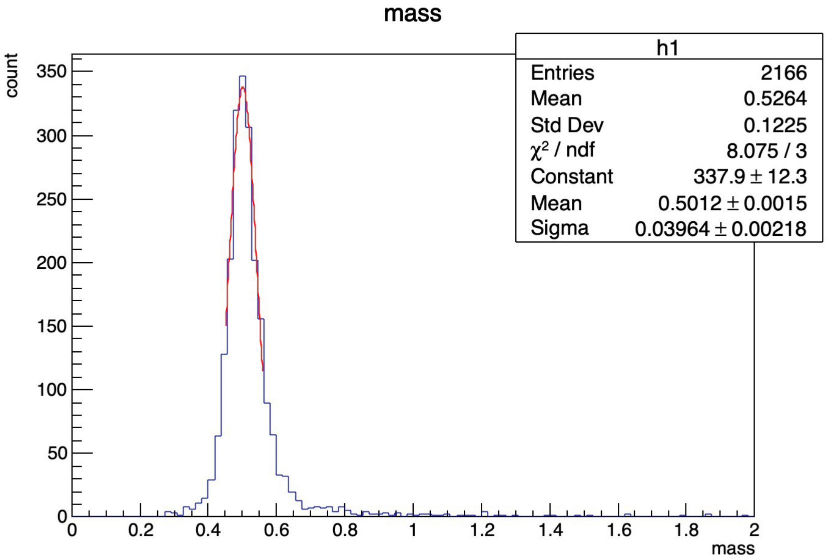
Status

- Previous MT, I created k0s mass distribution.
- This time I did Gaussian fitting on the distribution.
- I research how the width and peak of this distribution change with the pair's transverse momentum.

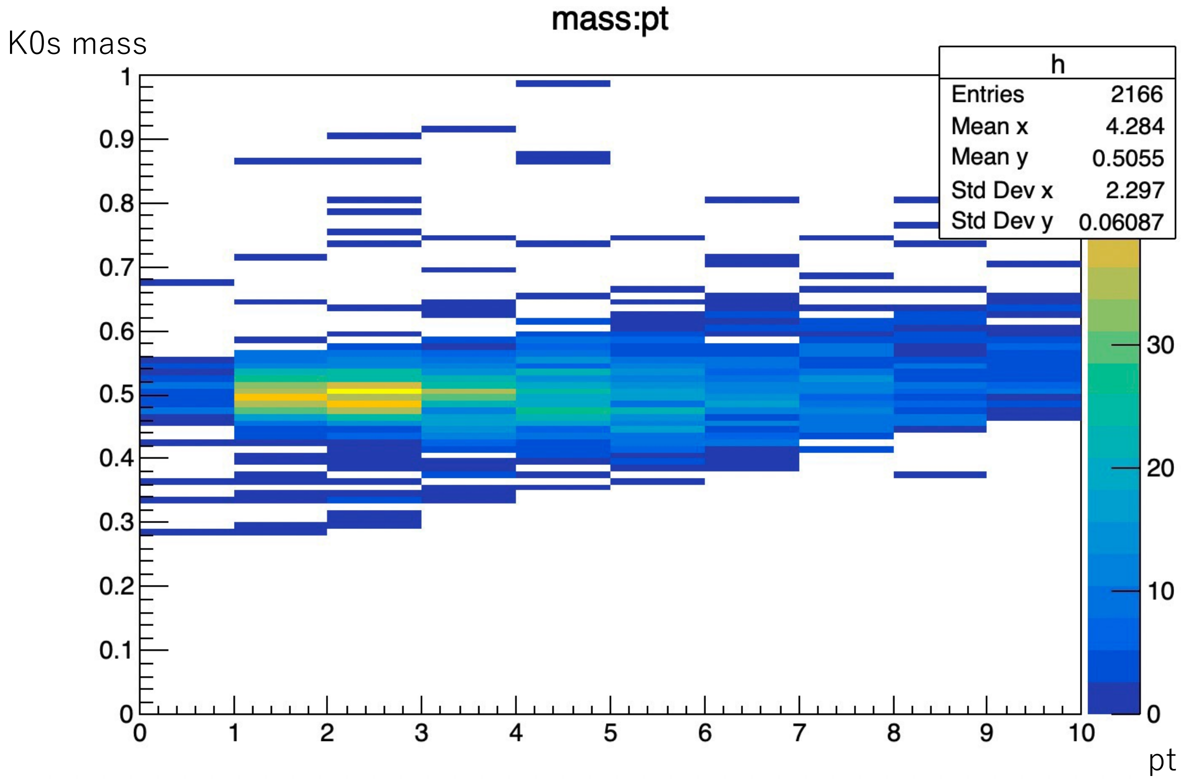


data:
/gpfs/mnt/gpfs02/sphenix/user/hachiya/INTT/INTT/general_codes/hachiya/SiliconSeeding/ana_macro/analyze_SiSeedPair_k0s.C

output:
dphi_distribution_k0s.root

Correlation between pt and mass

ntp_pair->Draw("mass:pt>>h(10,0,10,100,0,1)","", "colz");

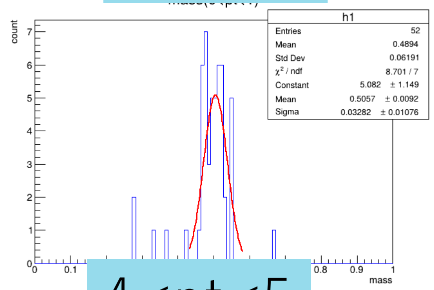


I studied the correlation between the parent particle's reconstructed mass and the daughter particles' transverse momentum (pT).
For each pT range($0 < pT < 1$, $1 < pT < 2$,,,)
I obtained the σ value by fitting the mass distribution.

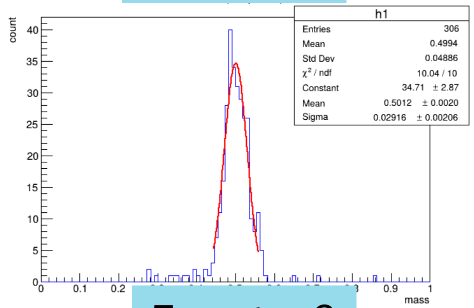
Fitting distribution

- Fit range: ±2 σ
- the distributions look sharper for smaller pT.

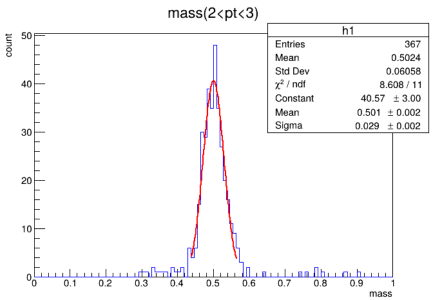
0<pt<1



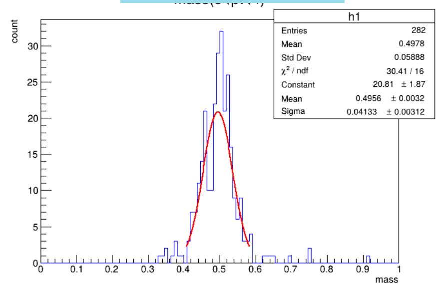
1<pt<2



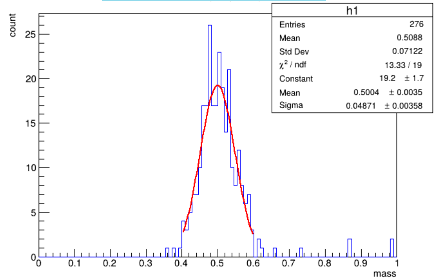
2<pt<3



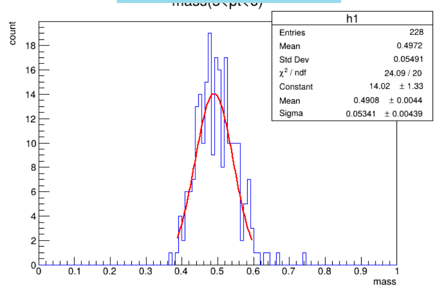
3<pt<4



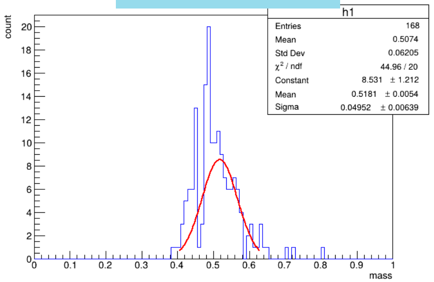
4<pt<5



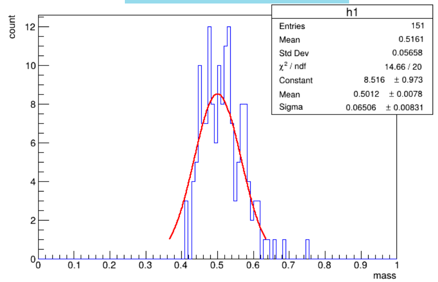
5<pt<6



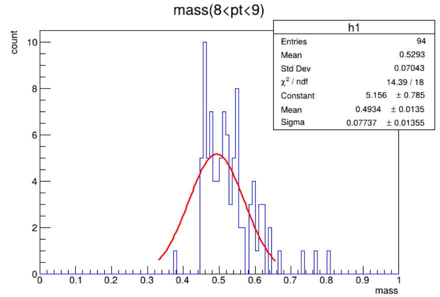
6<pt<7



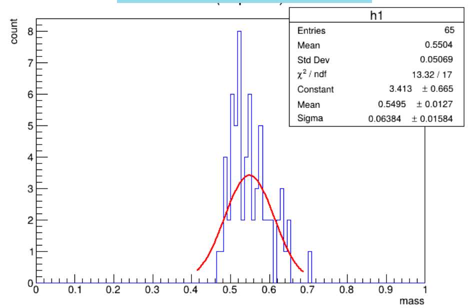
7<pt<8



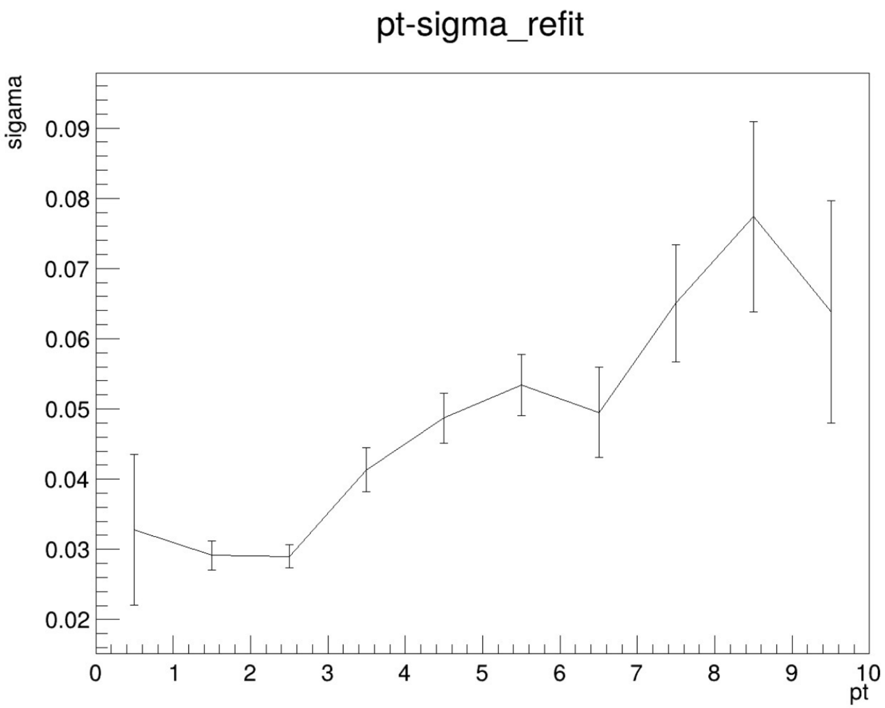
8<pt<9

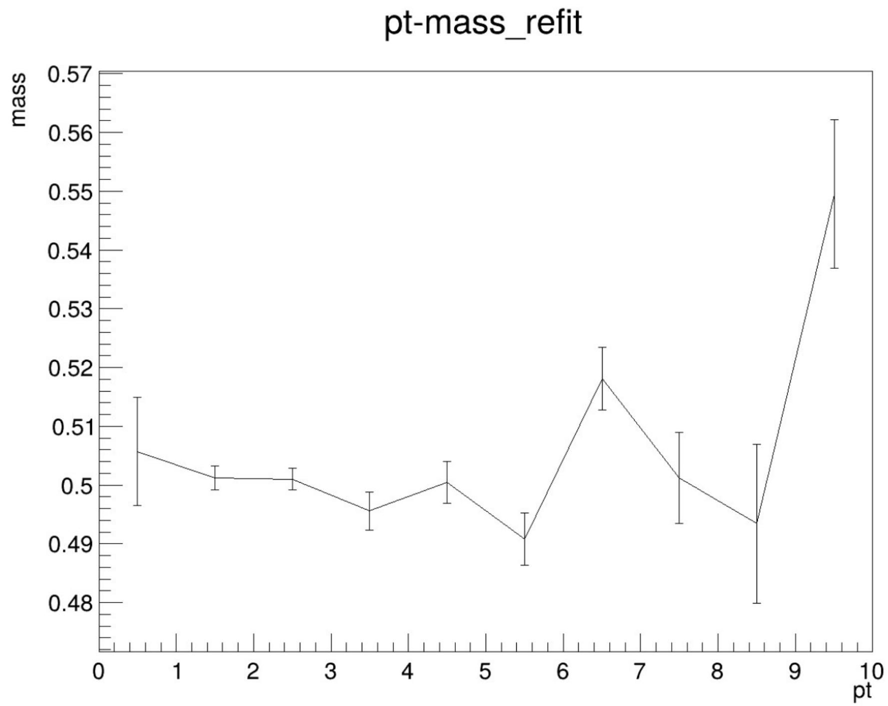


9<pt<10



pt-sigma, pt-mass(peak)





As pT increases, we can see that the σ value also increases.
Mass distribution we expect that even when applying a pT cut, the mass value itself does not change significantly.
The K0s mass stays stable between 0.48 and 0.56 GeV.

To do

- increase the number of events