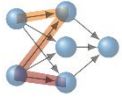


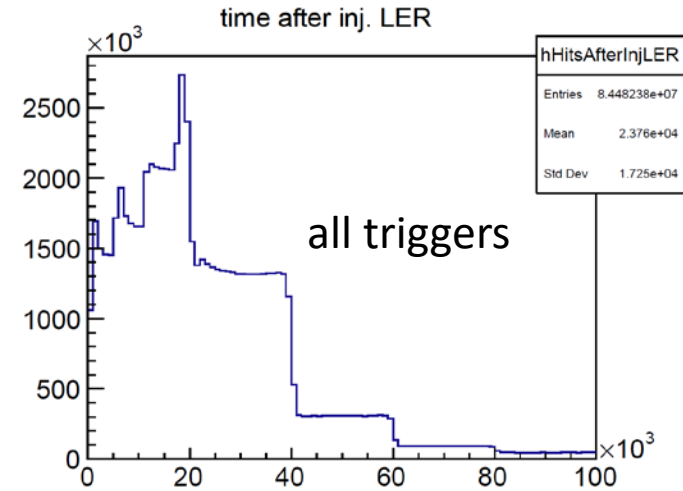
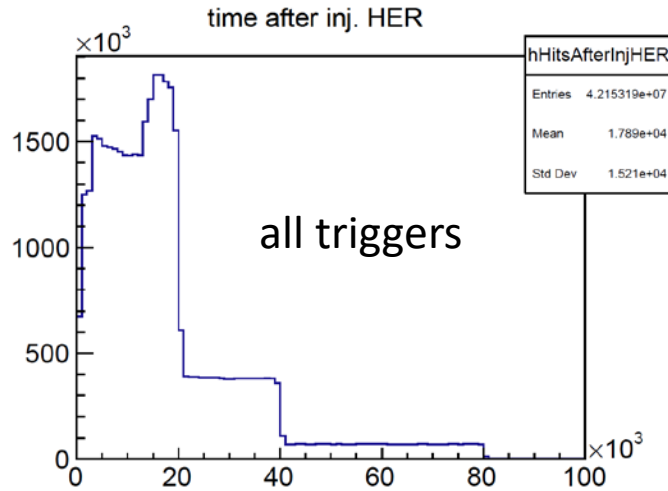
Some Trigger Studies during Christmas Holiday

- Compare special runs without HLT Filter to neuro skim files:
Runs 1766-1780 vs Neuro Skims runs 1700-end
+ Trigger Timing -> seems understood now
 - New features provided by Felix:
 - * New training with data from Exp. 26
 - * Select neural networks from Data Base
- Prediction of z/θ based on:
- > TS taken from HW preprocessing (test network performance)
 - > full simulation from CDC information (just the beginning)

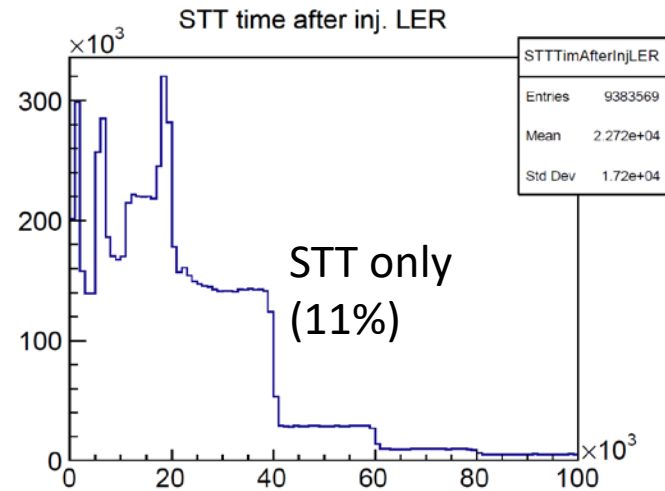
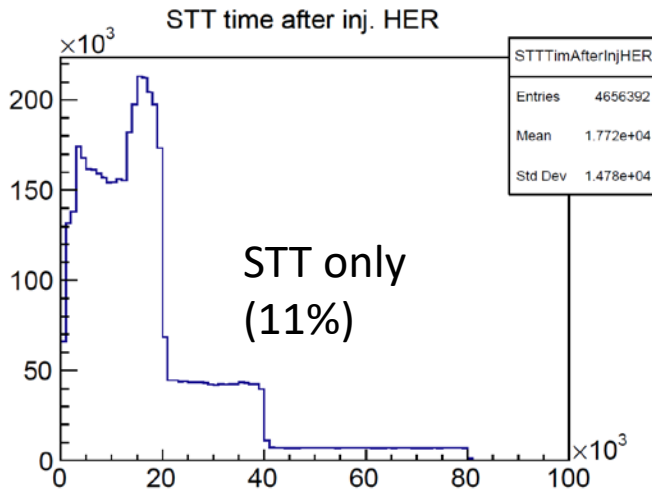


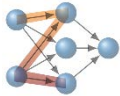
Exp 26, runs 1766-1780: No HLT Filter

Time scale is μs ! HER and LER are injected with 25 Hz each, alternating



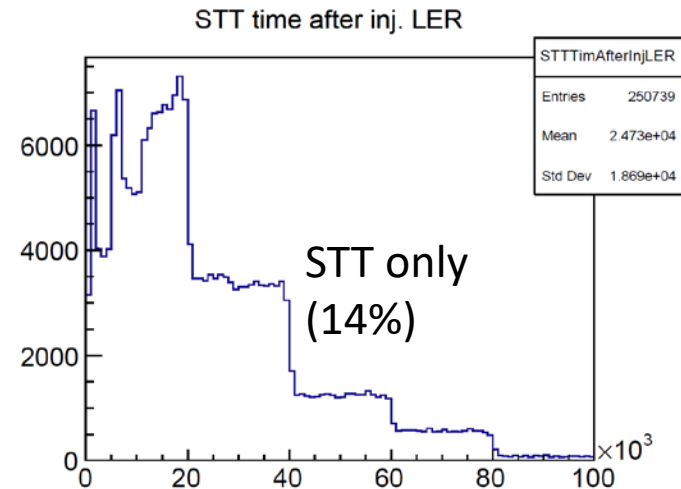
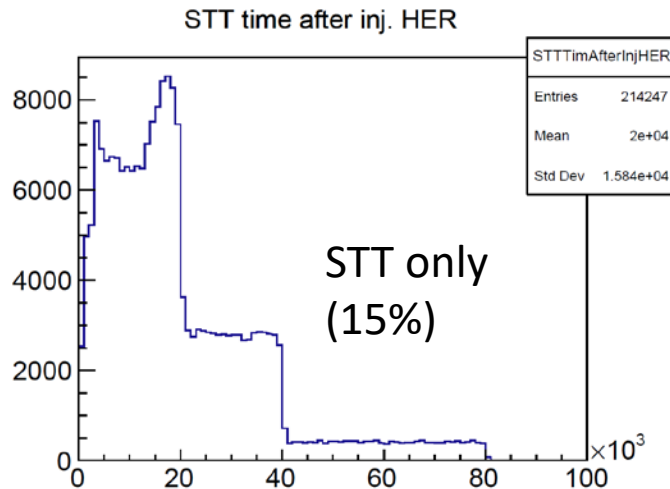
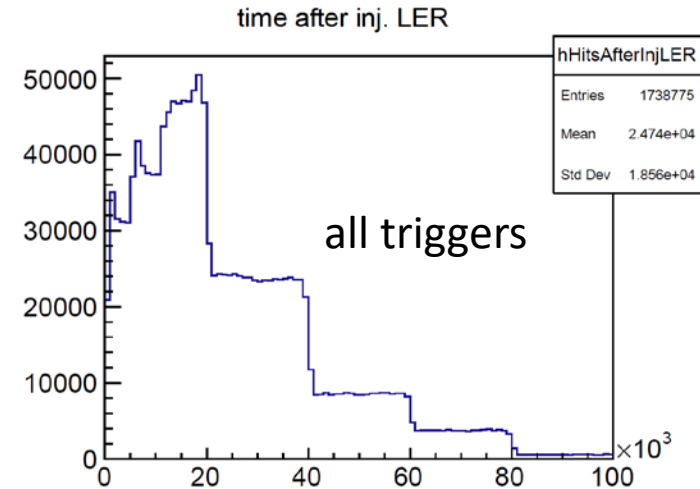
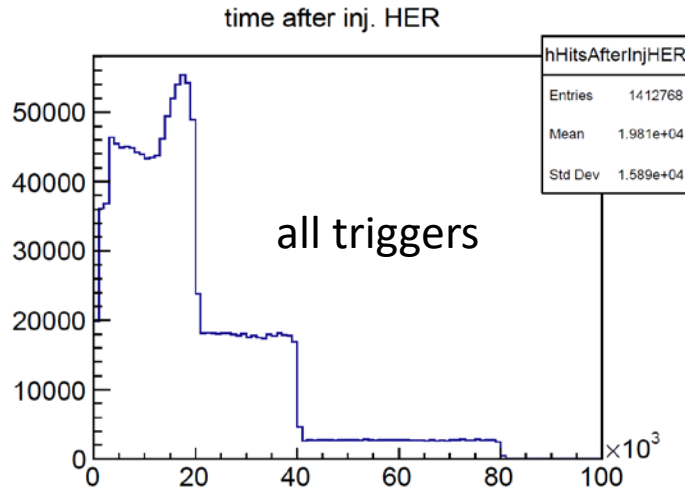
Steps expected each 20 ms !

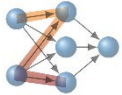




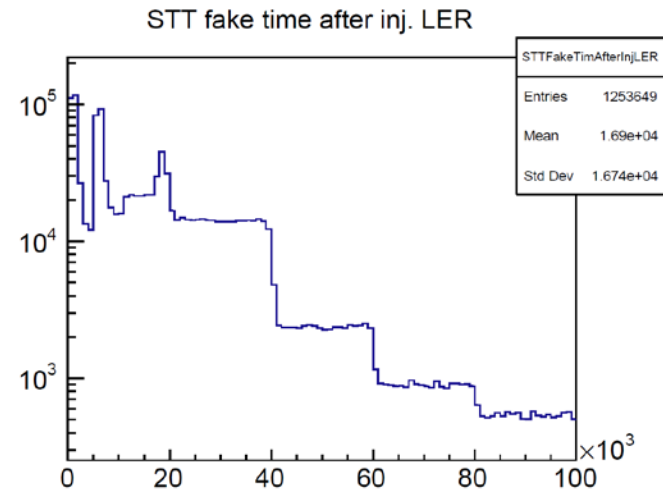
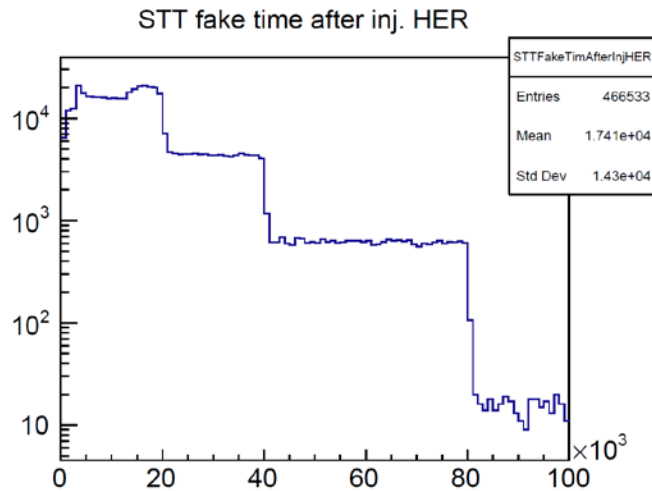
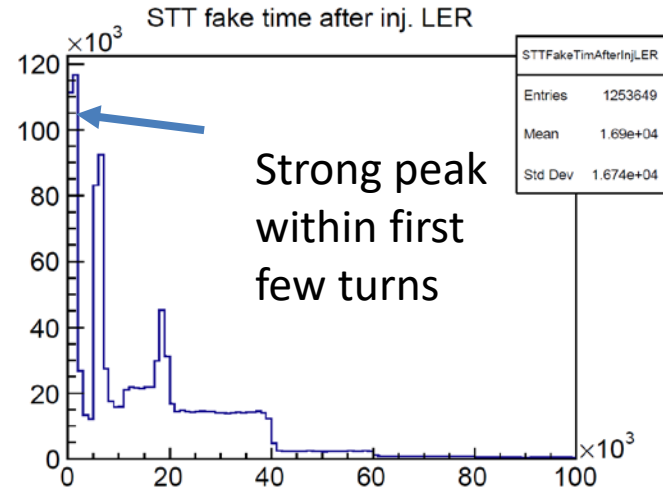
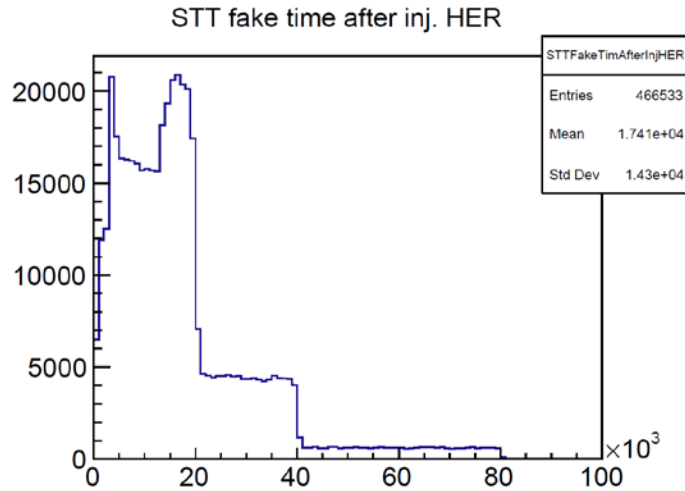
Exp 26, runs 1700-end: Neuro Skim

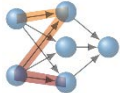
Statistics in Neuro Skim about only 3% of noHLT runs : full TRG readout required



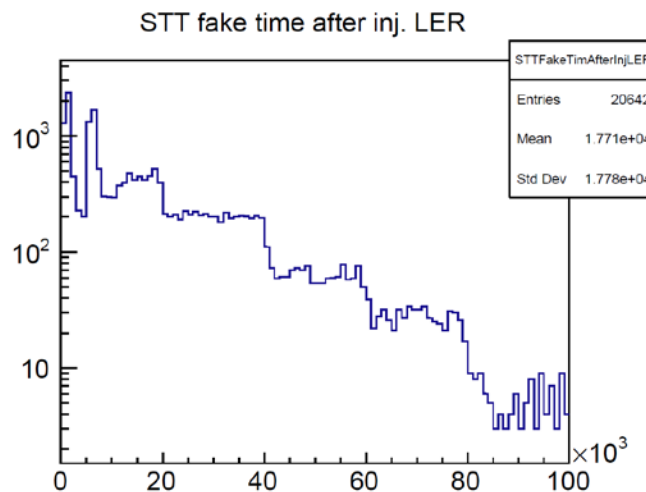
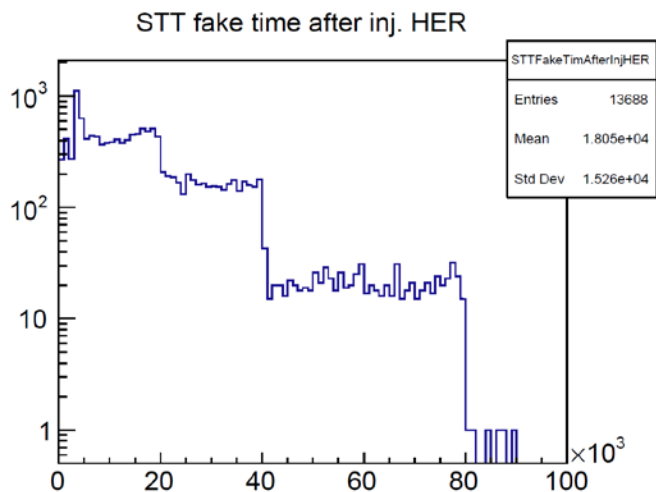
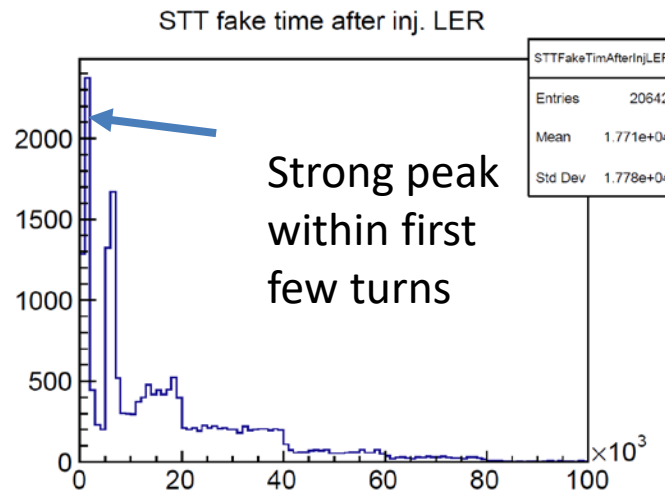
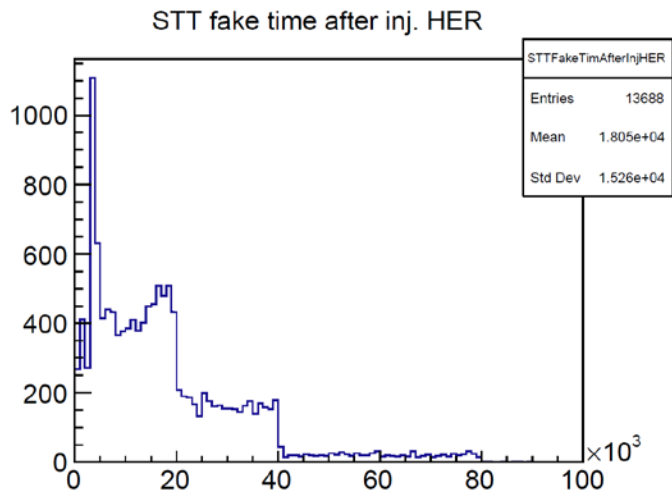


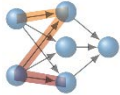
Exp 26, runs 1766-1780: No HLT Filter



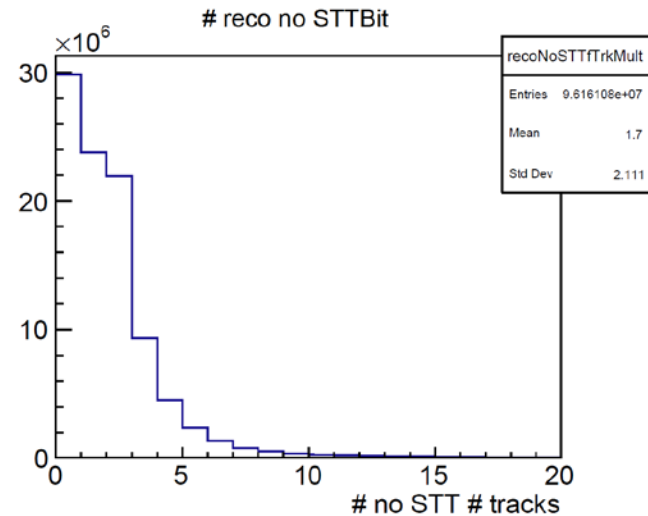
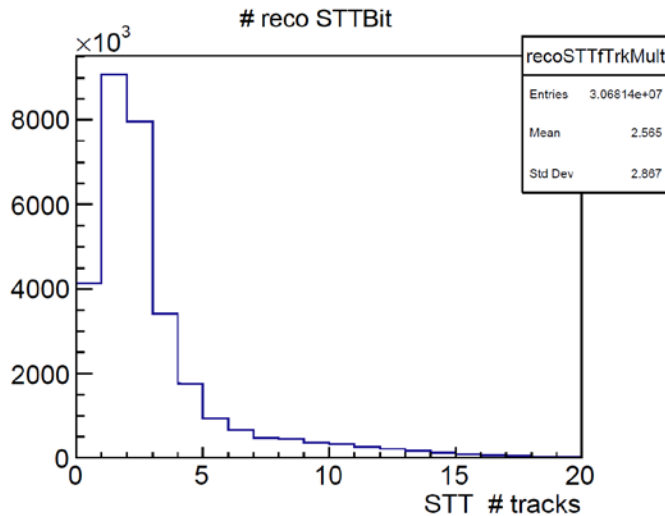
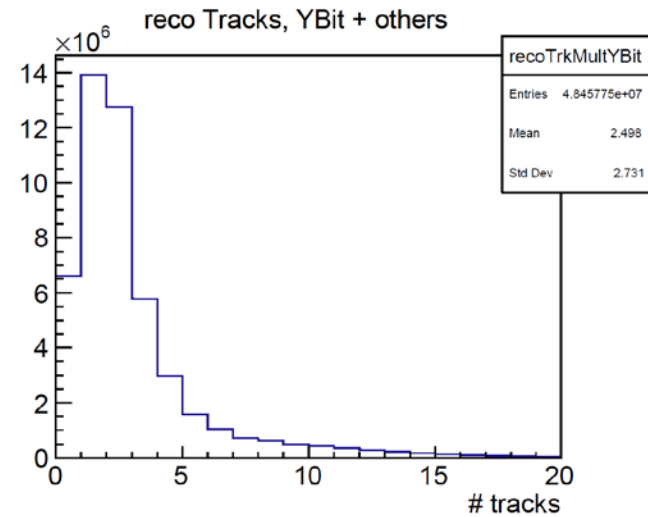
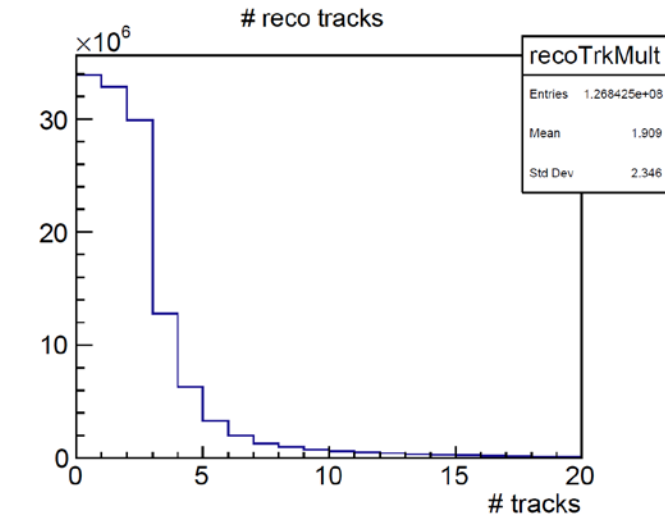


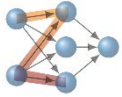
Exp 26, runs 1700-end: Neuro Skim



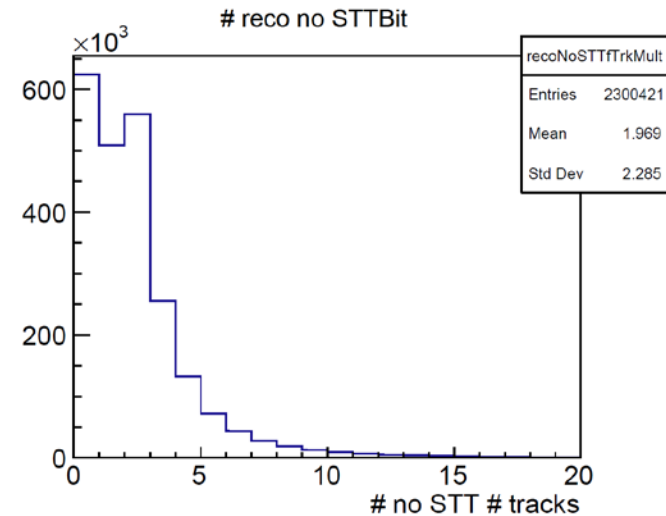
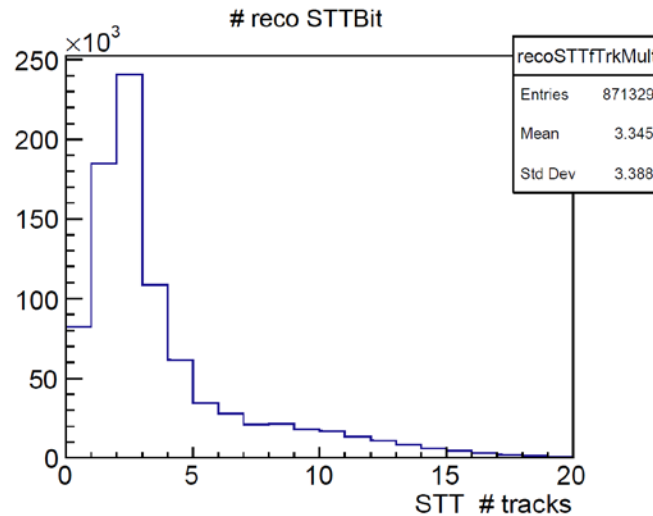
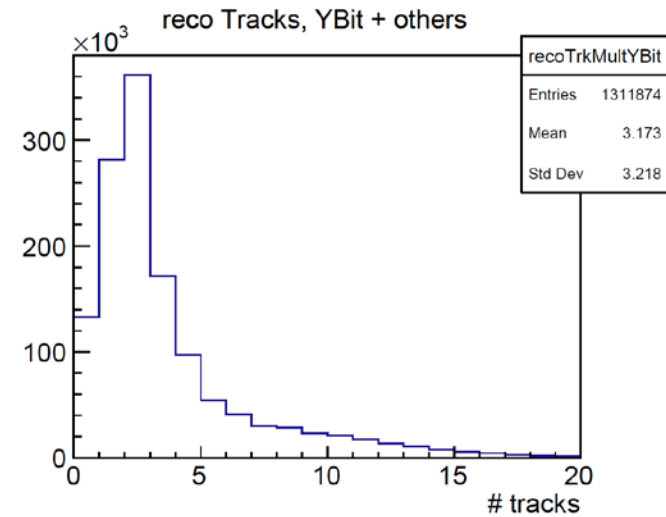
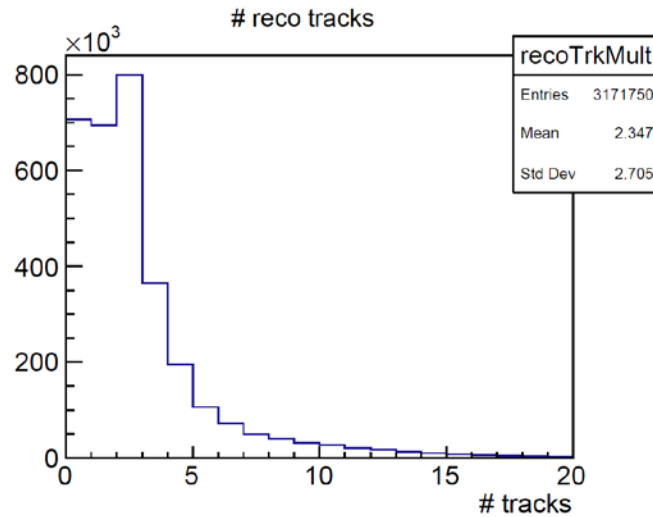


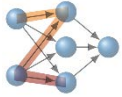
Exp 26, runs 1766-1780: No HLT Filter



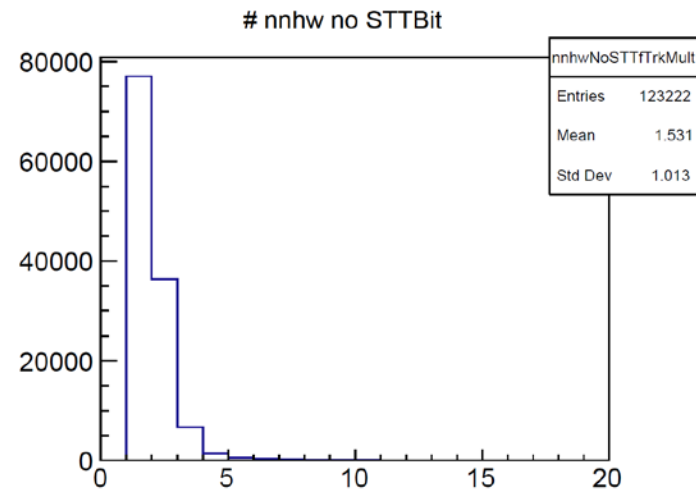
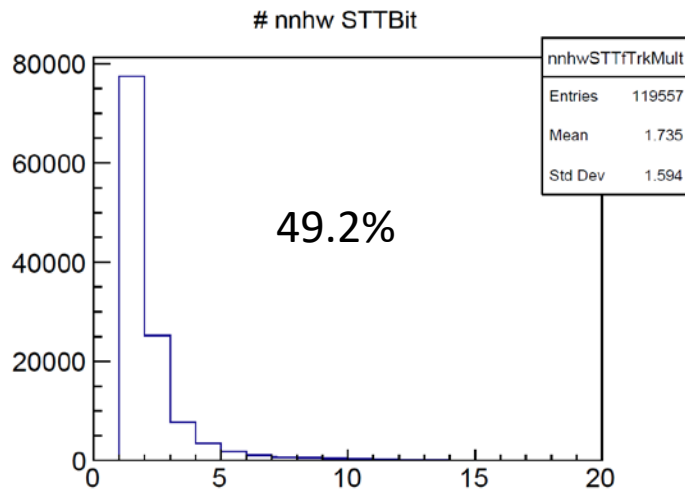
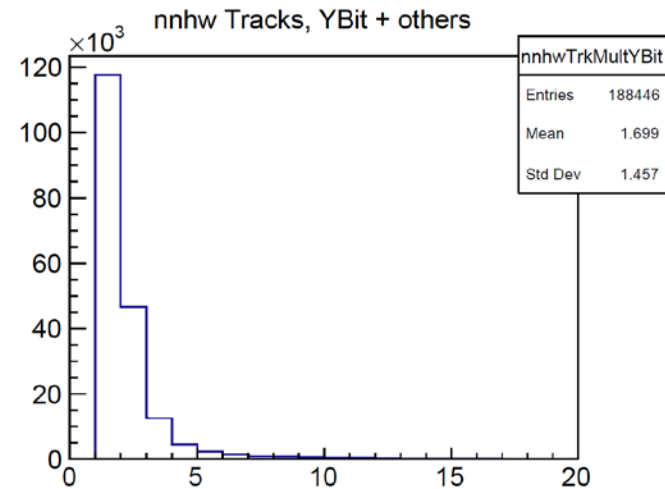
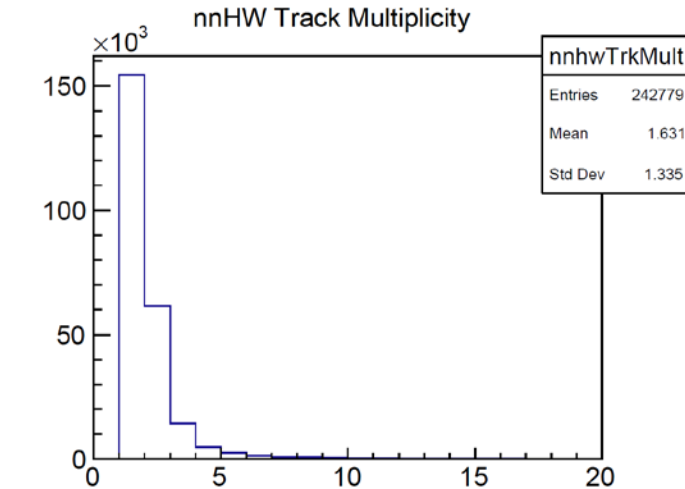


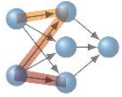
Exp 26, runs 1700-end: Neuro Skim



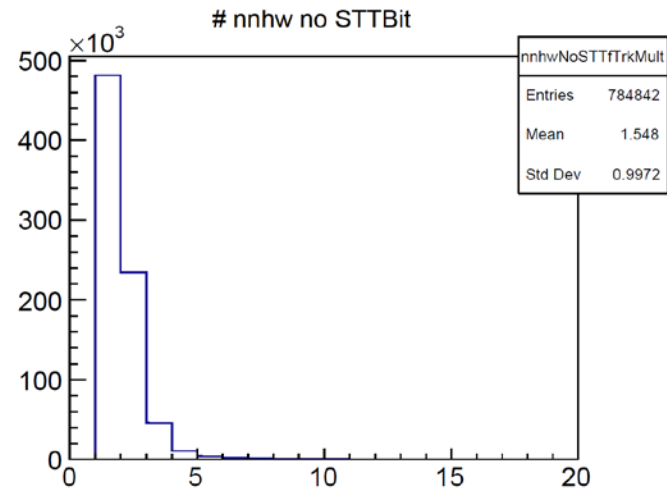
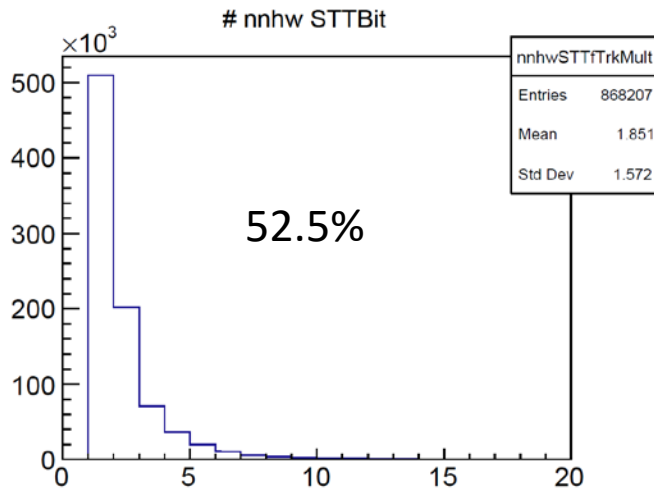
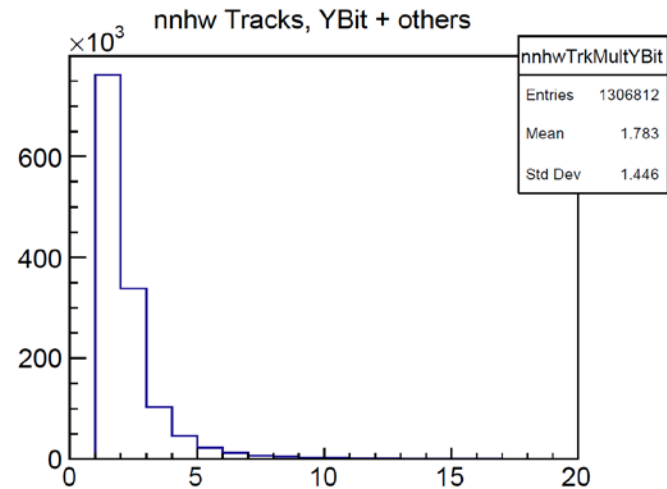
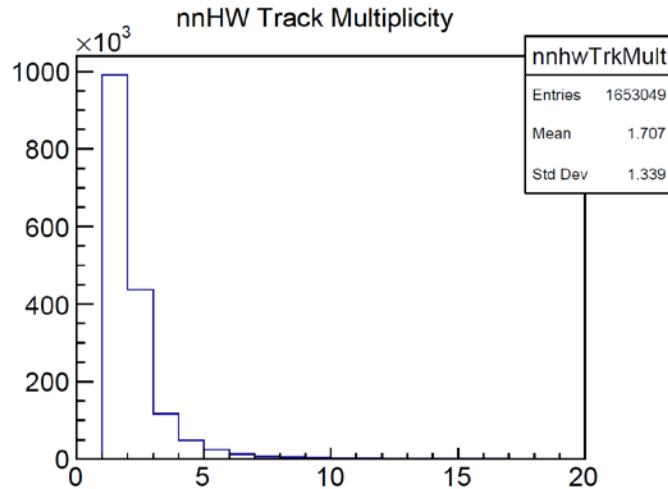


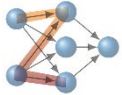
Exp 26, runs 1766-1780: No HLT Filter



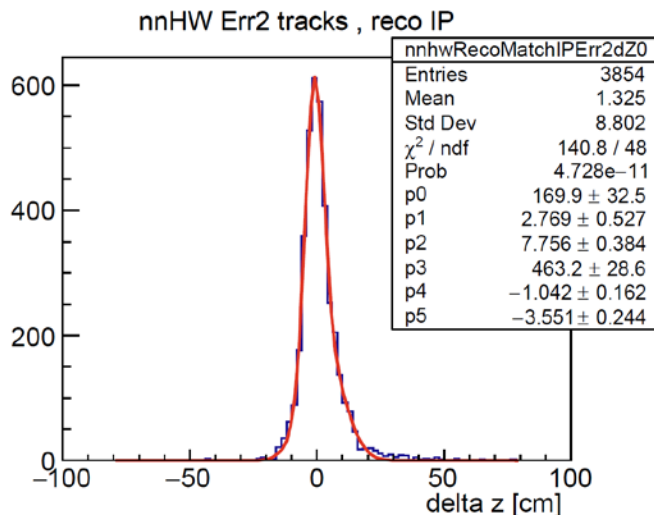
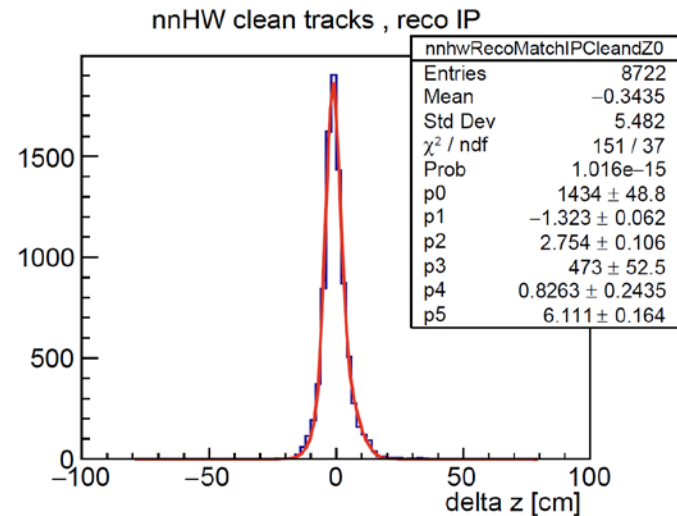
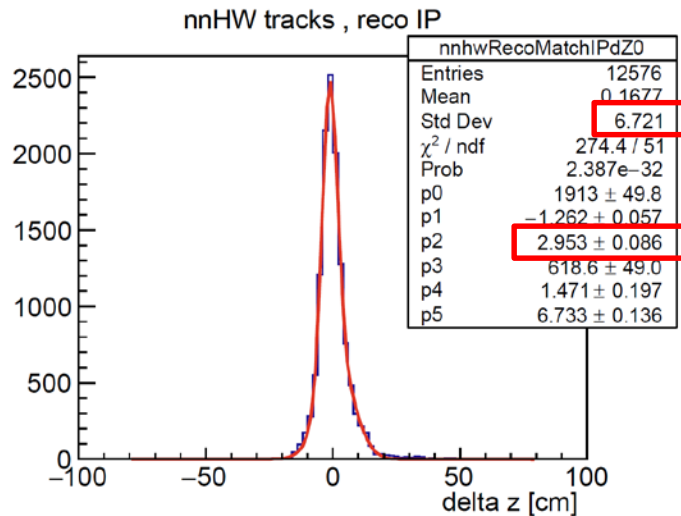


Exp 26, runs 1700-end: Neuro Skim



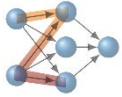


Exp 26, runs 1766-1780: No HLT Filter

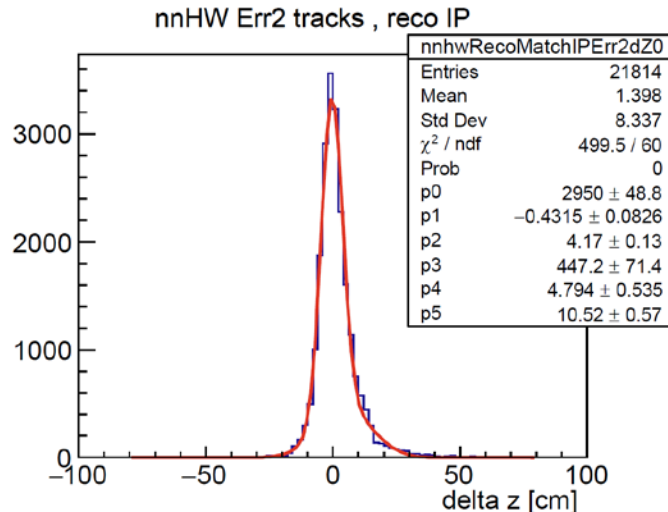
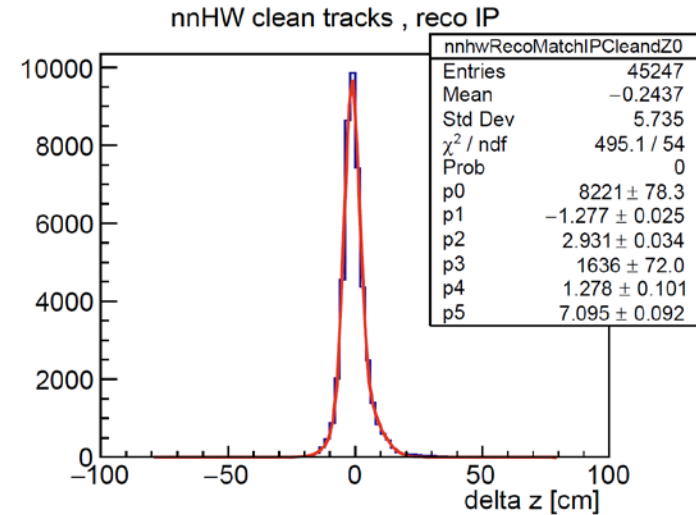
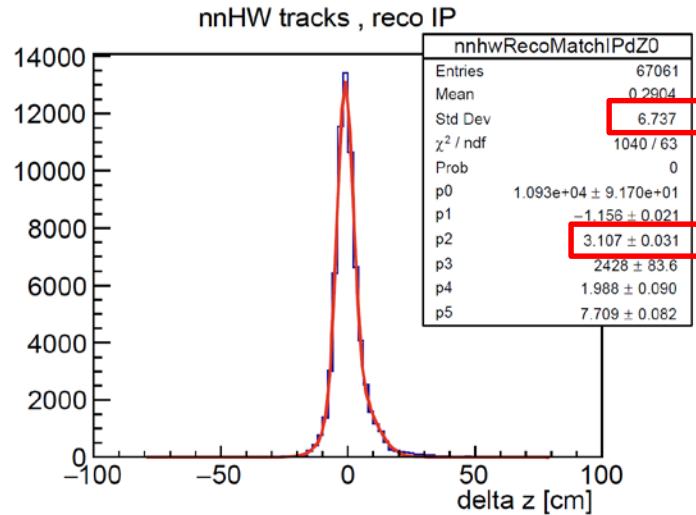


matched neuro tracks
in single prongs:
10.5%

rms resolution : 6.72



Exp 26, runs 1700-end: Neuro Skim

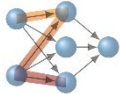


matched neuro tracks
in single prongs:
7.7%

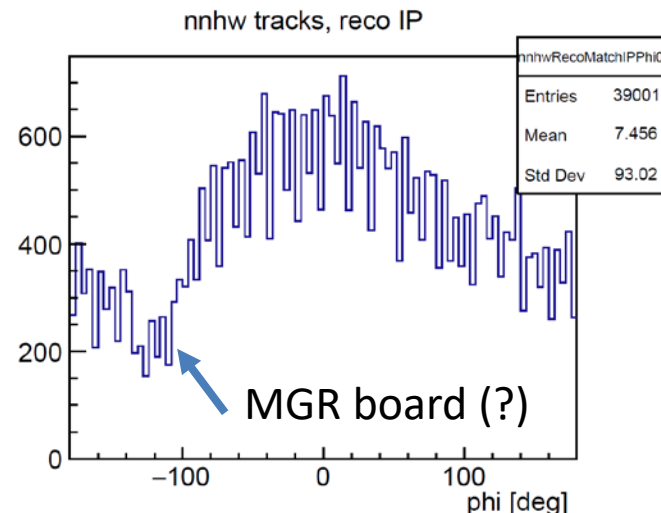
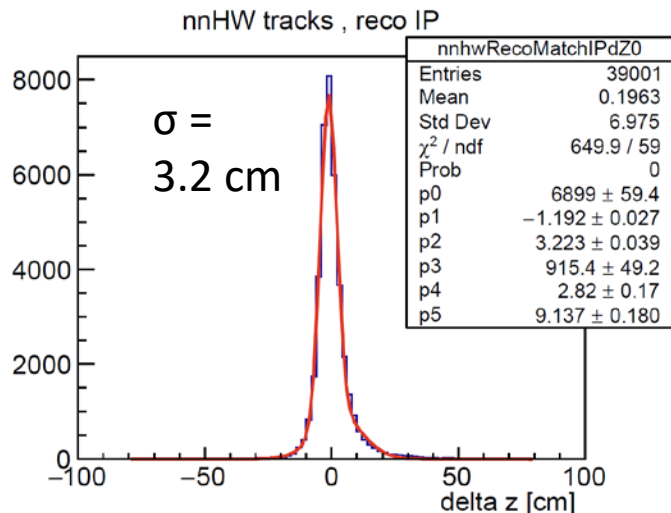
rms resolution : 6.74

Conclusion:
neuro skim corresponds to noHLT filter

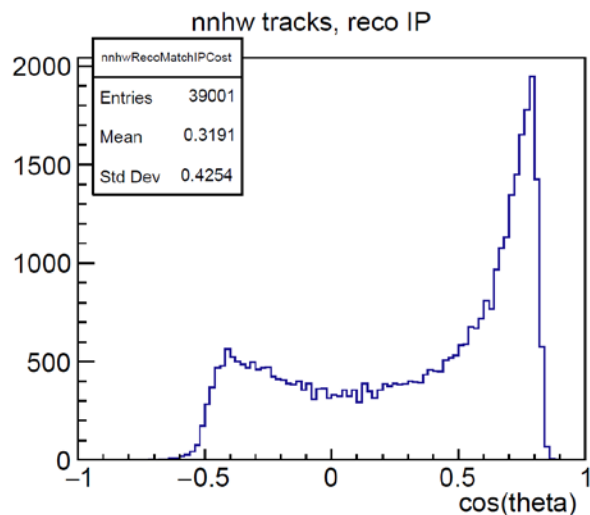
**-> continue with neuro skim cross checks
after shut down**



Exp 26 (runs 0-200), Single Reco Tracks



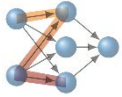
Results from high background



Gaussian fits to neuro tracks
associated with reco tracks from IP
($|z| < 1 \text{ cm}$, $d < 1.5 \text{ cm}$)

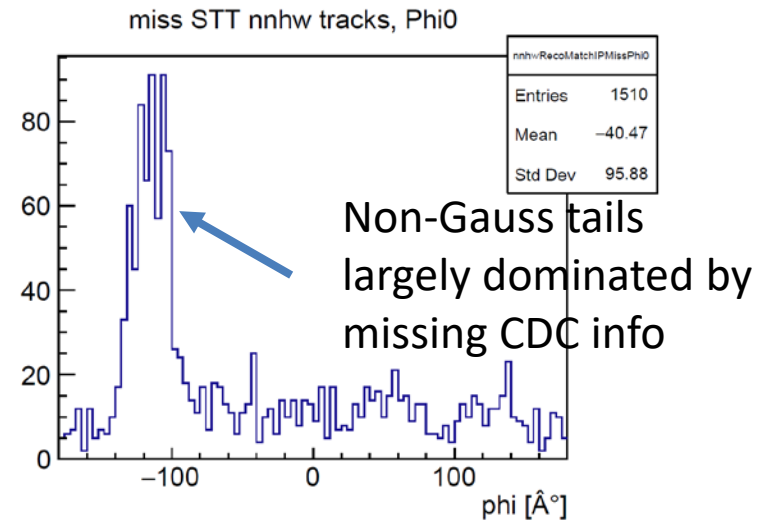
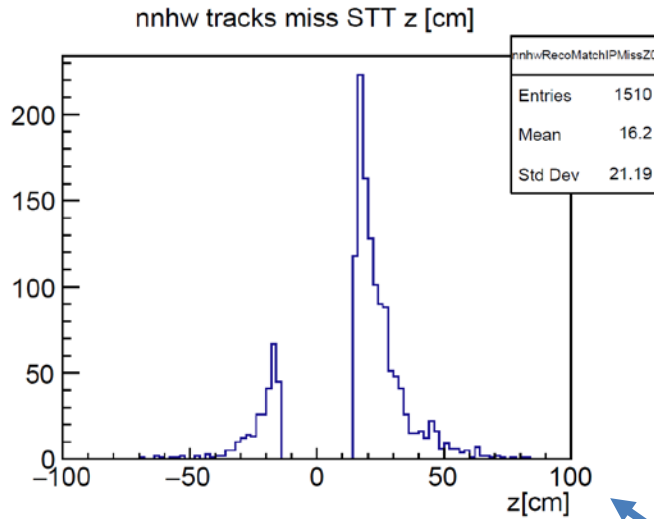
Central Gauss: $\sigma = 3.2 \text{ cm}$

2nd Gauss: $\sigma = 9.1 \text{ cm}$

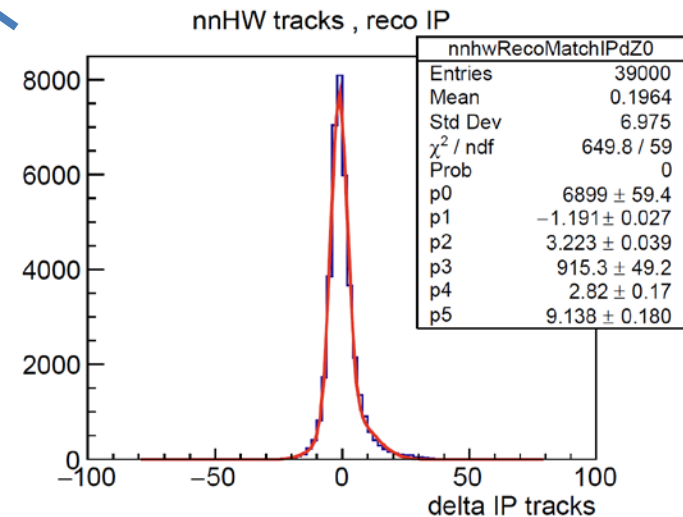
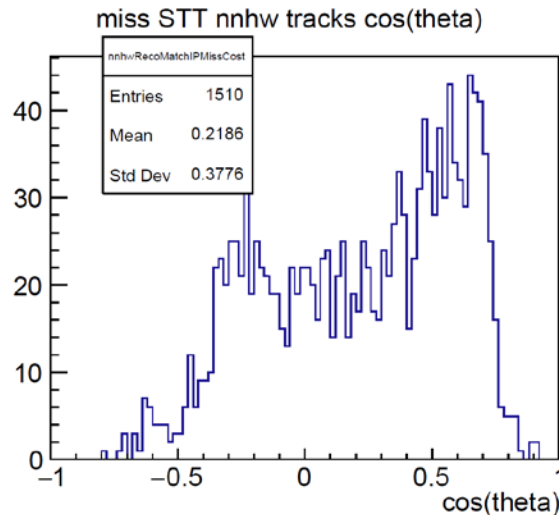


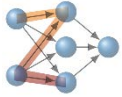
Exp 26 (Runs 0-200) ->

NN IP
tracks
failing STT

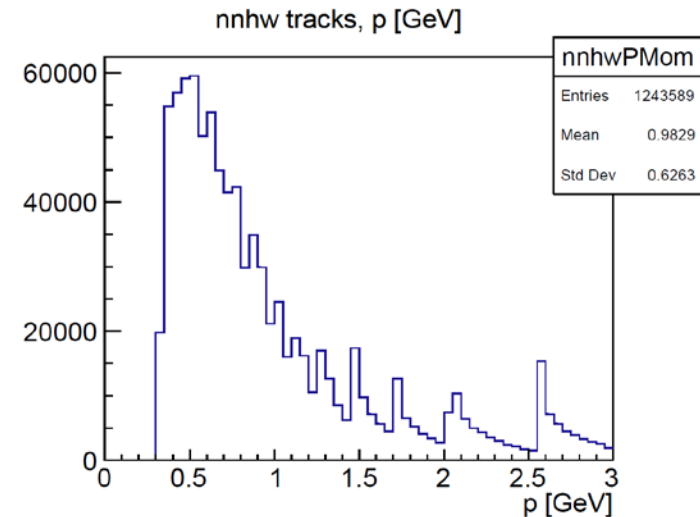
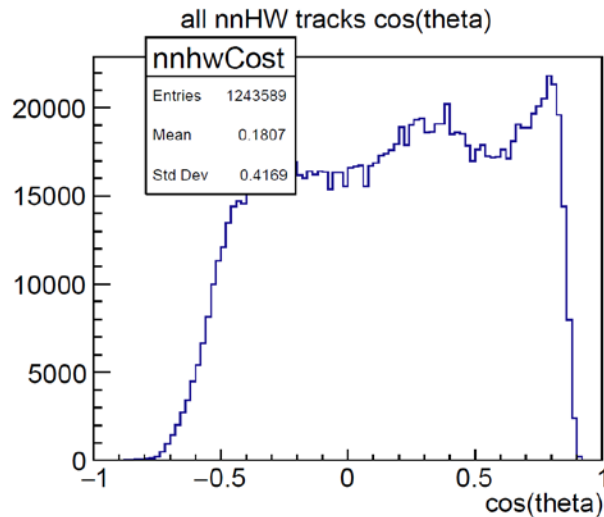
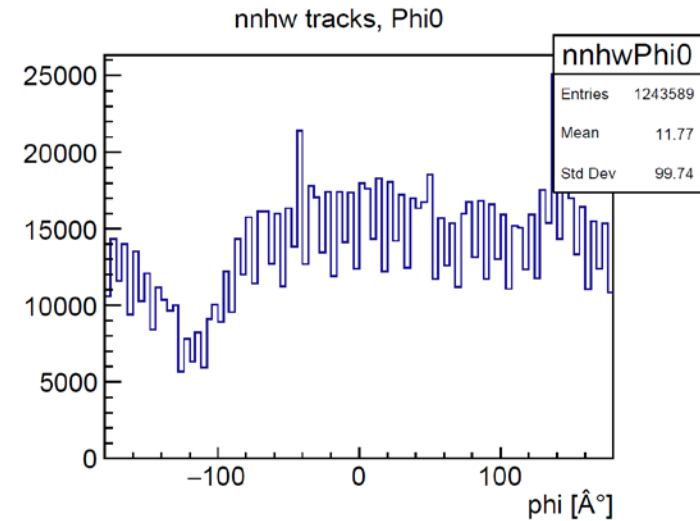
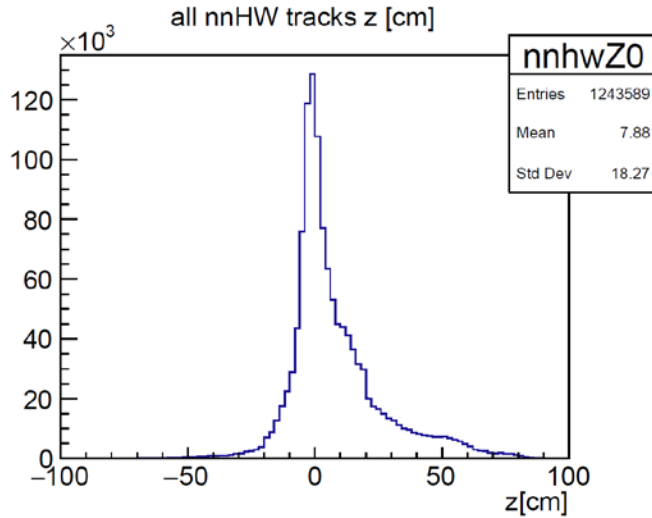


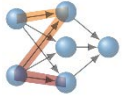
subset



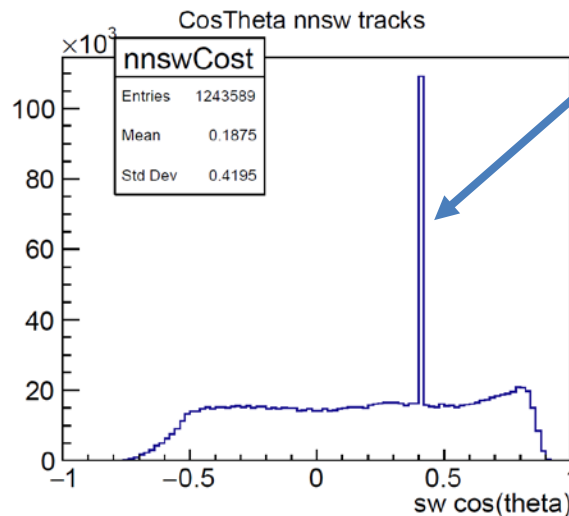
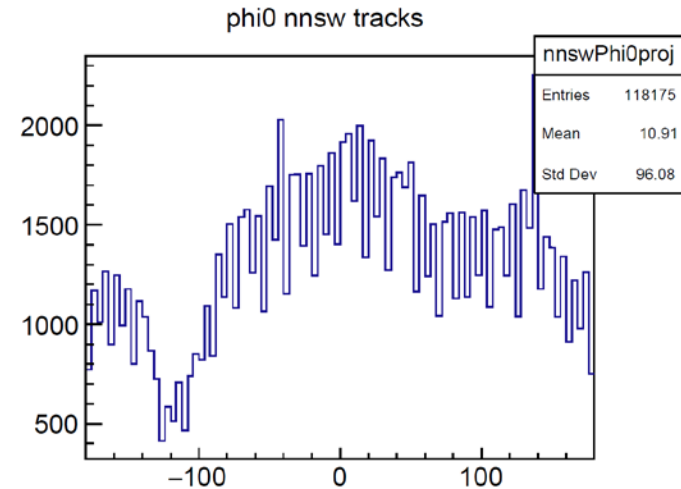
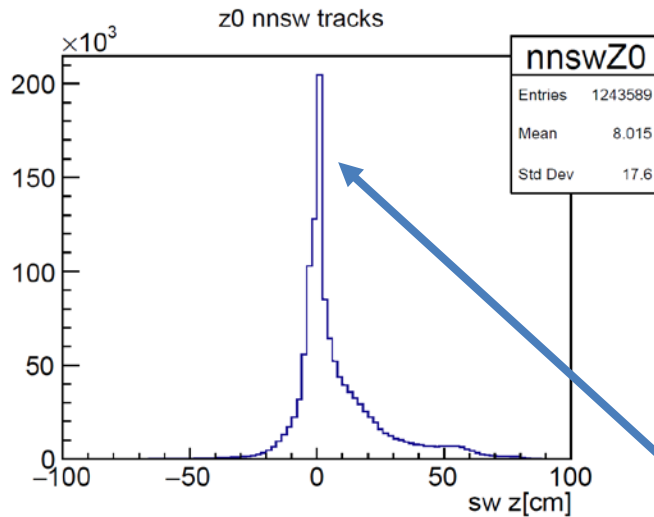


Exp 26 Standard HW (all tracks)

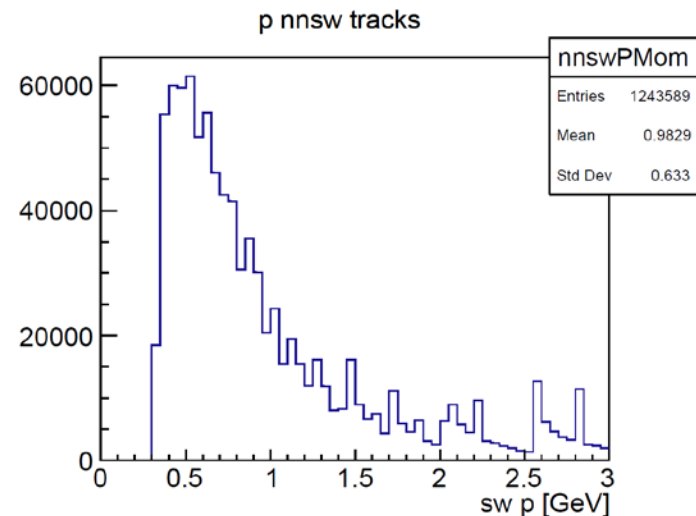




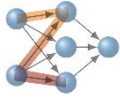
Exp 26 Standard SW (all tracks)



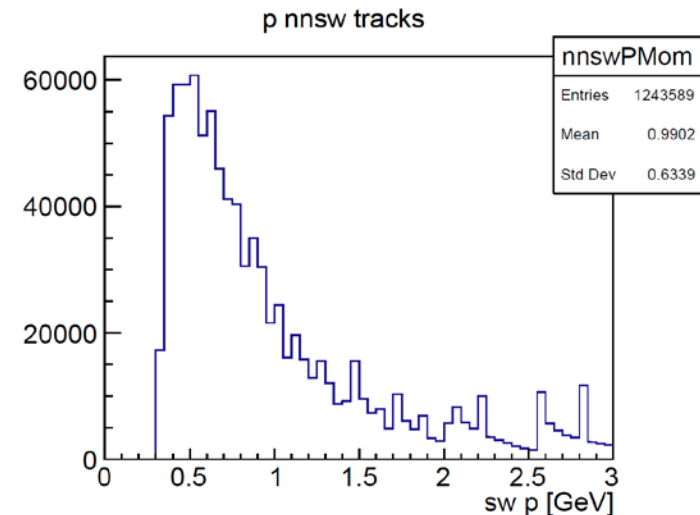
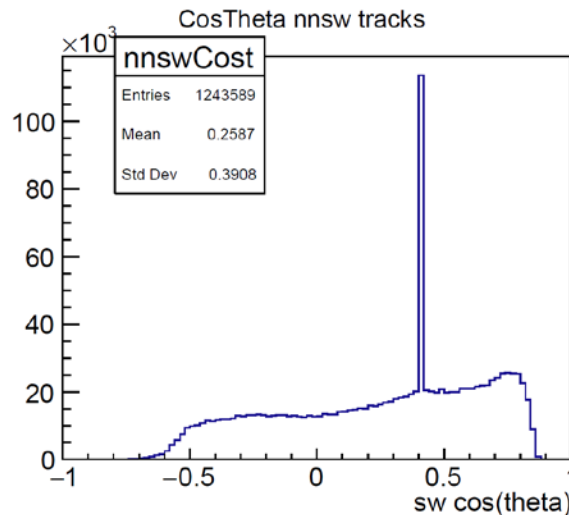
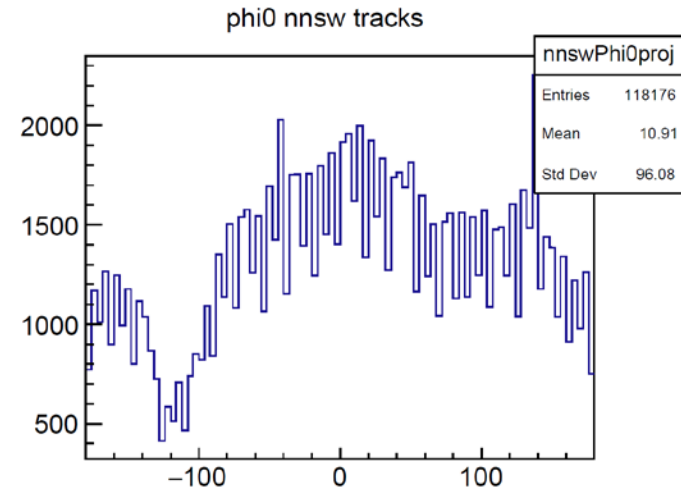
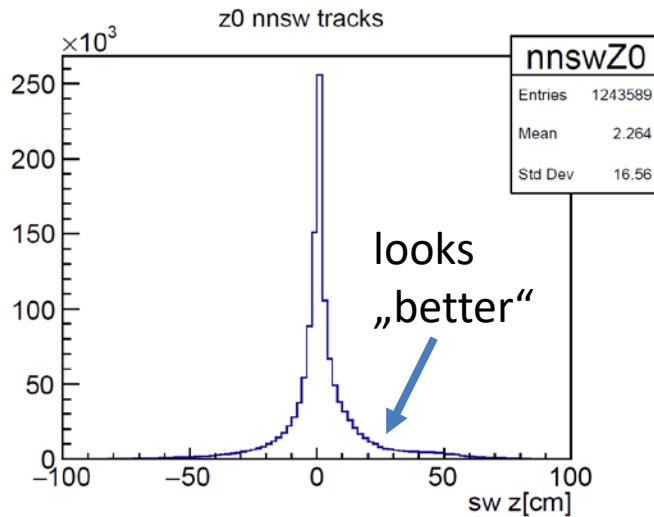
Spikes @ small z and cos(θ) from zero inputs !

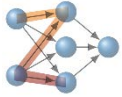


SW calculation with HW TS input (small deviations)

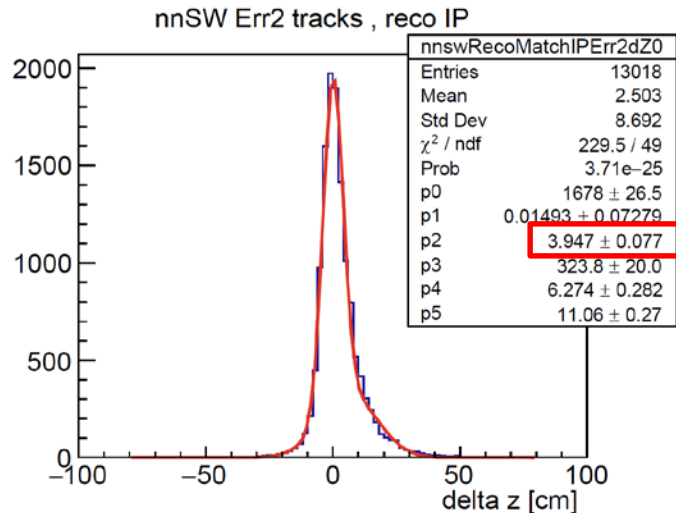
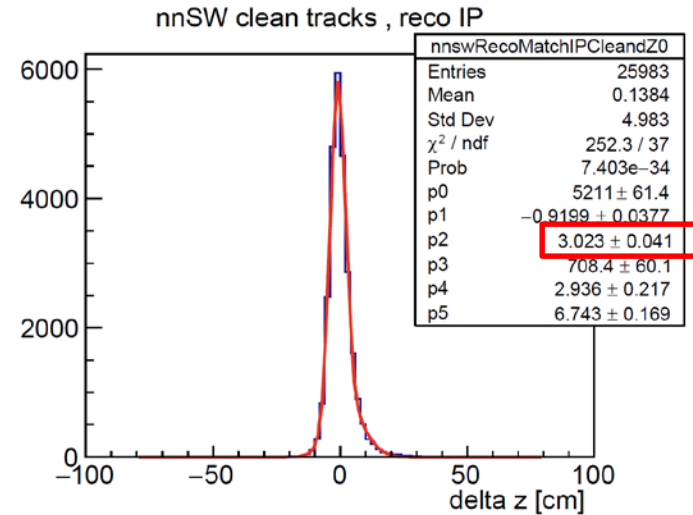
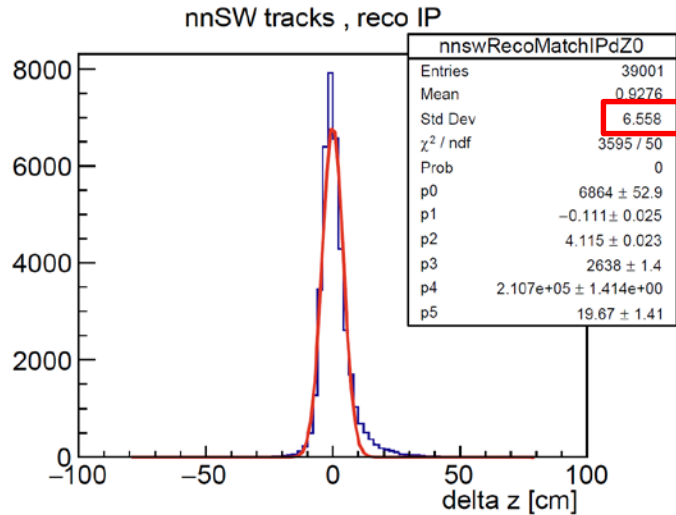


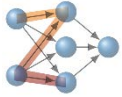
Exp 26 Retraining by Felix (all tracks)



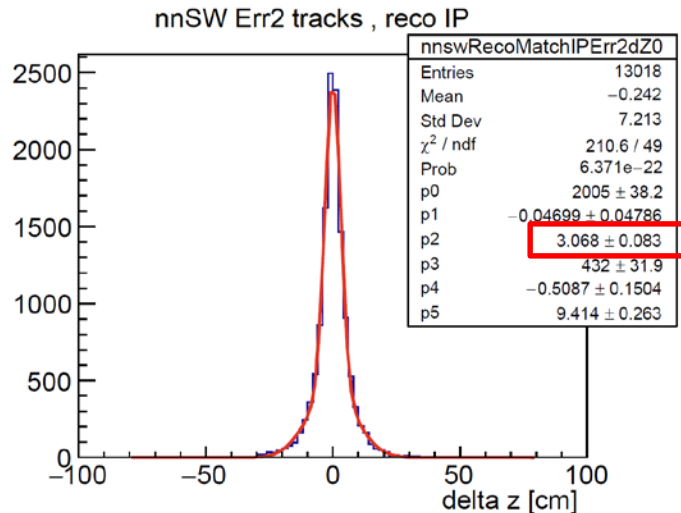
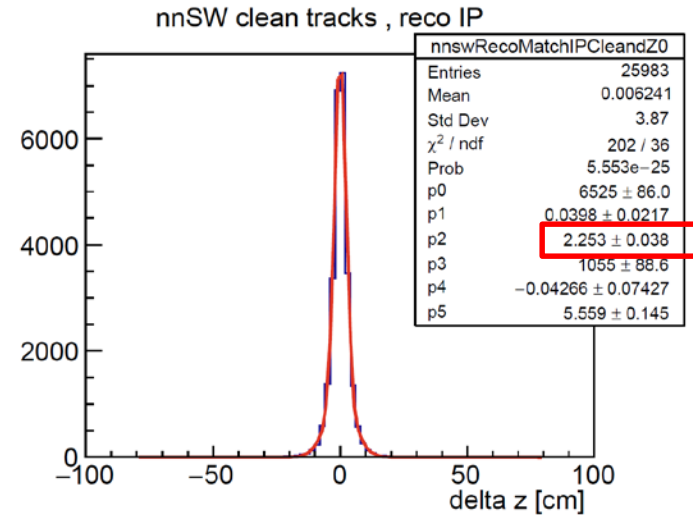
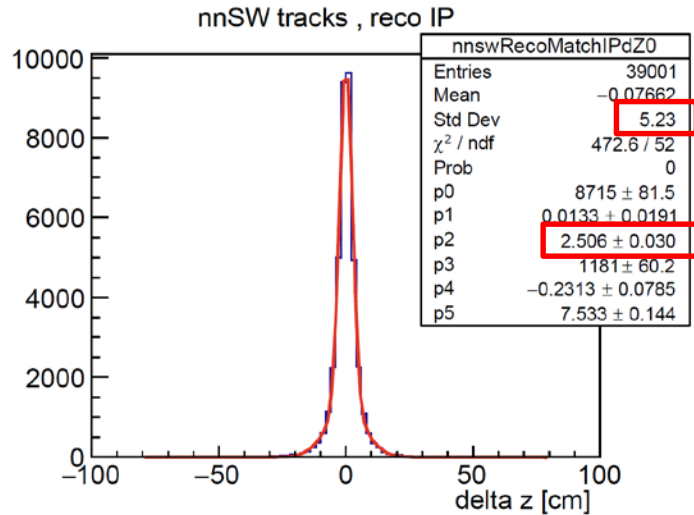


Exp 26 „Standard“ (Runs 0-200)





Exp 26 Retraining by Felix

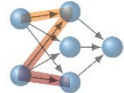


Conclusion:

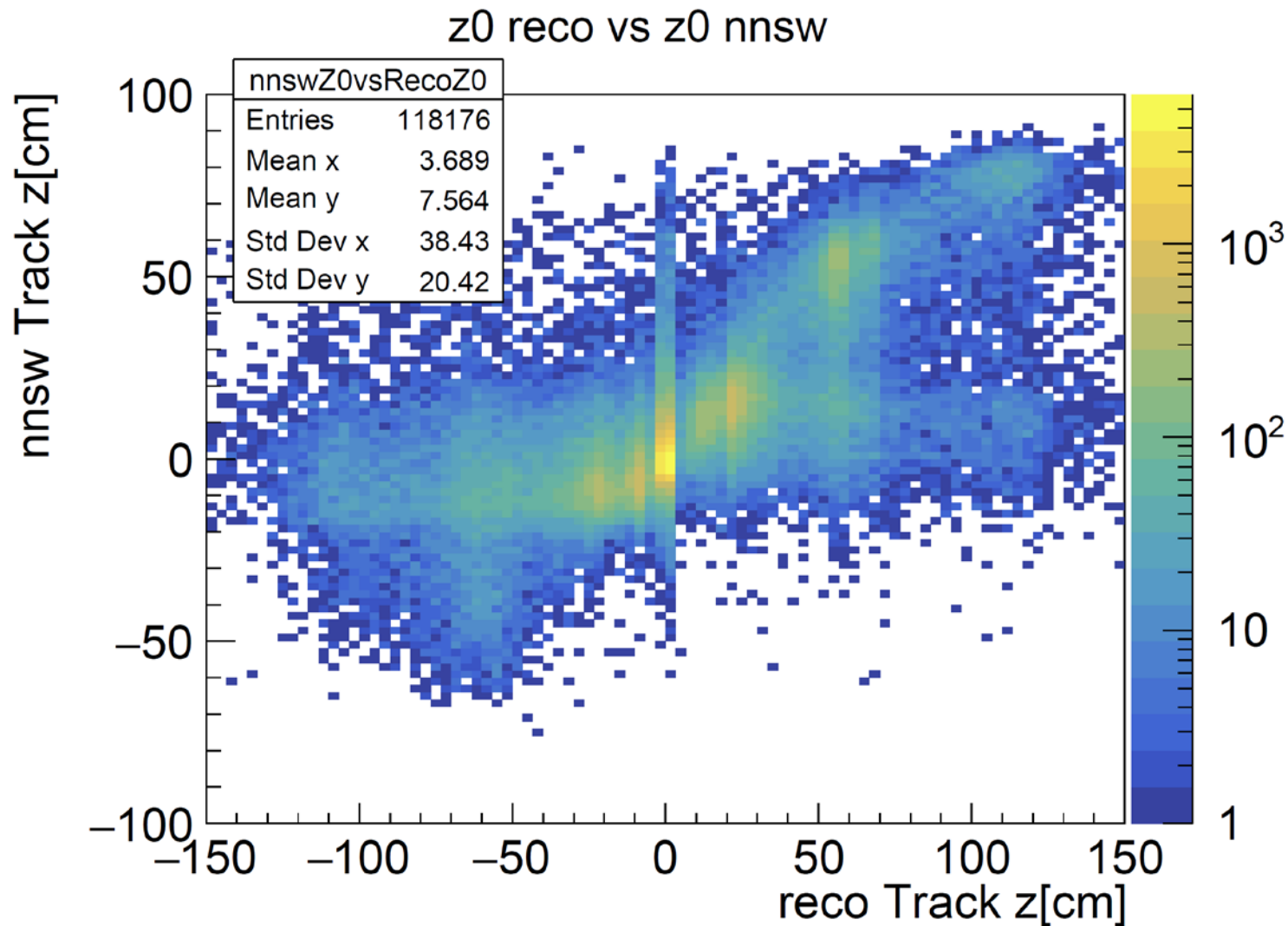
Felix' retraining is improving the resolution of IP tracks by at least 25%

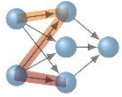
Study for large $|z|$ still to be done

(reminder: fake tracks seem not be statistically relevant)

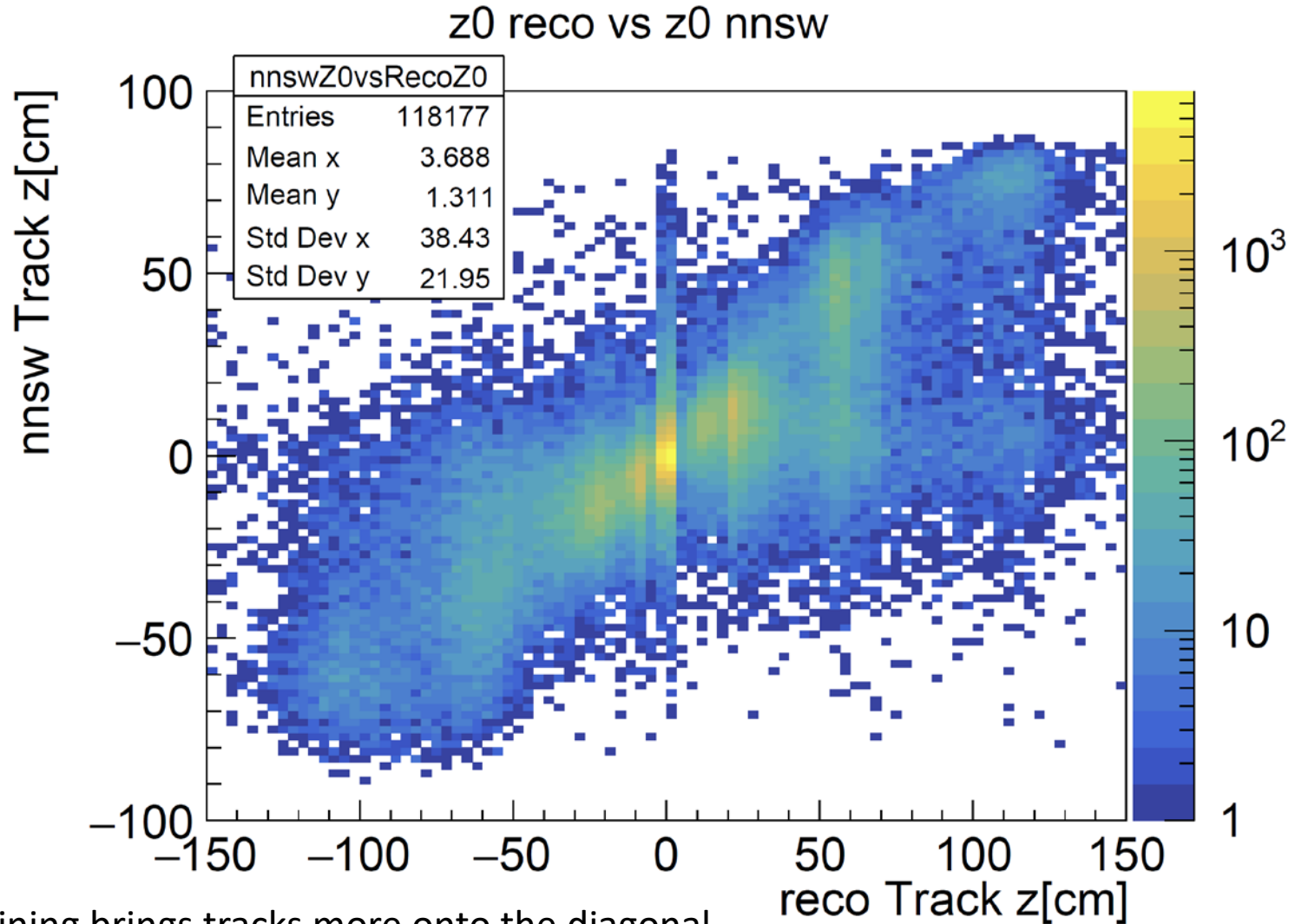


Exp 26 Standard Training





Exp 26 Retraining by Felix



New training brings tracks more onto the diagonal

**Retraining also reduces
feed-down!**