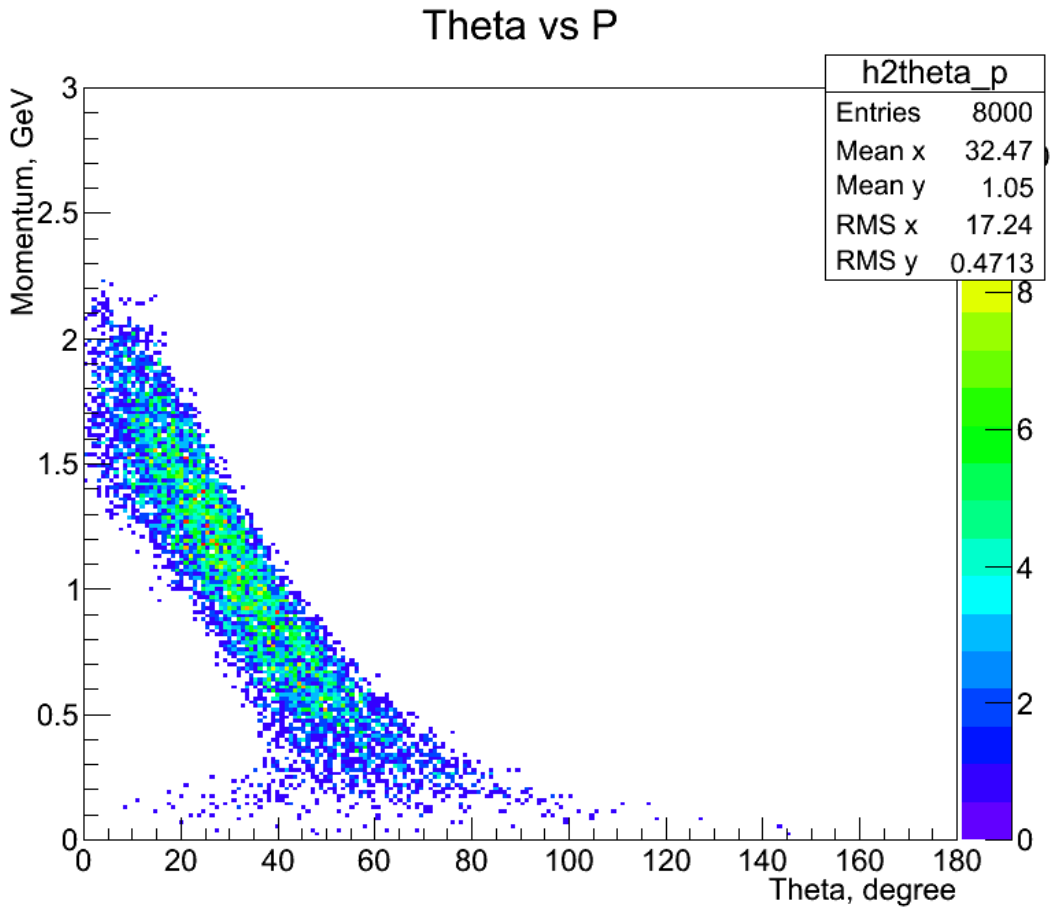
Kinematics of the reaction

$$p\bar{p} \rightarrow \eta_c \rightarrow \phi\phi \rightarrow K^+K^-K^+K^-,$$

E_{CM}=2980 MeV, p_z=3677 MeV

67 % of events have one K with $\theta < 20^\circ$

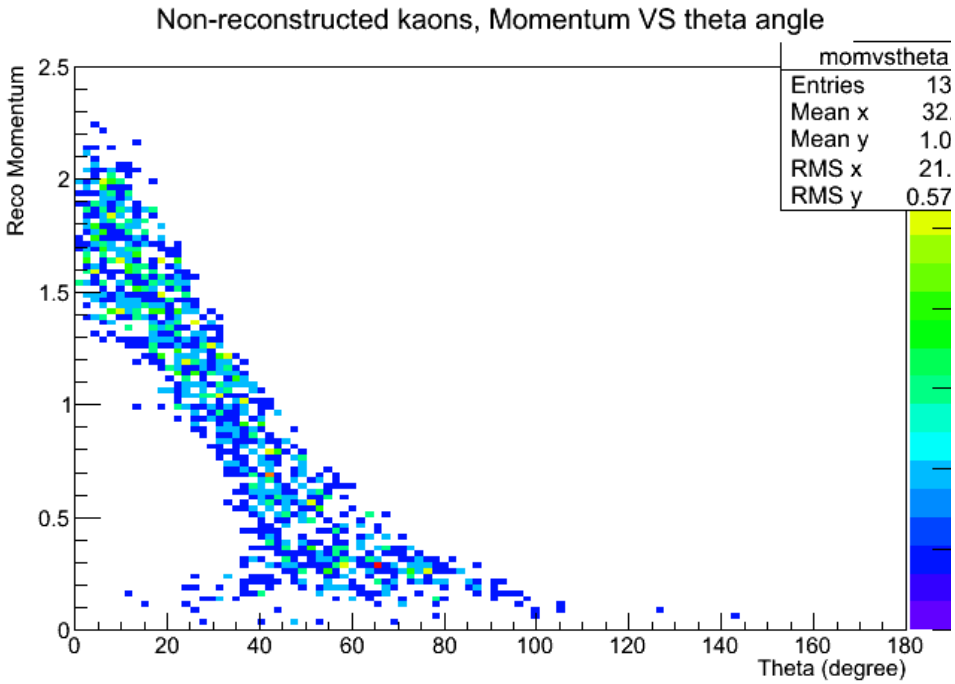
8 % of events have one K with $\theta < 5^\circ$



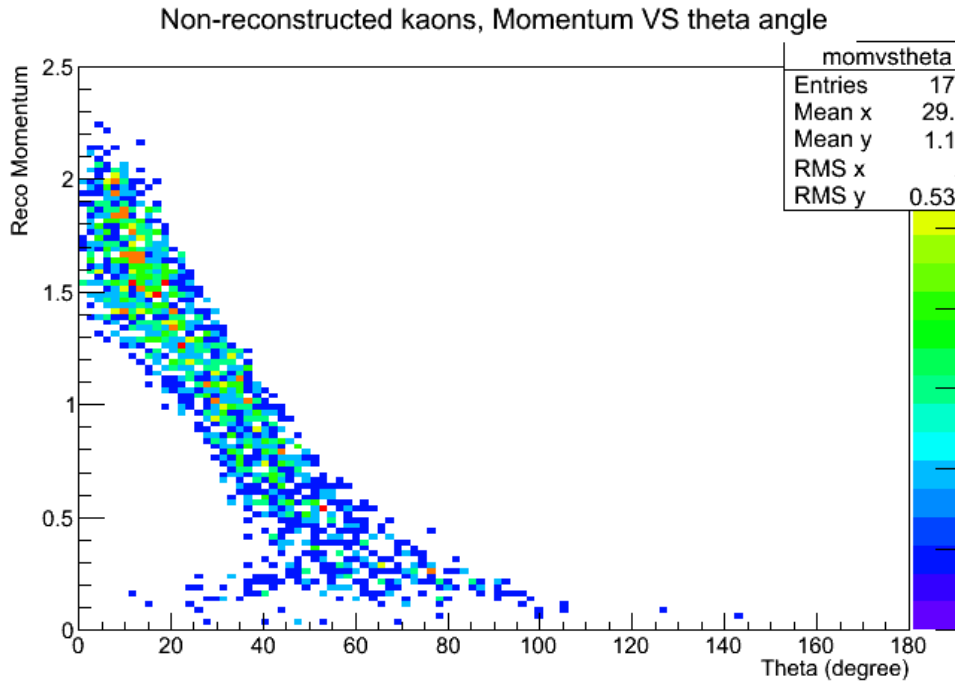
Non-reconstructed kaons

There is not corresponding tracks to primary MCTrack or reconstructed momentum outside 10% range

STT



TPC

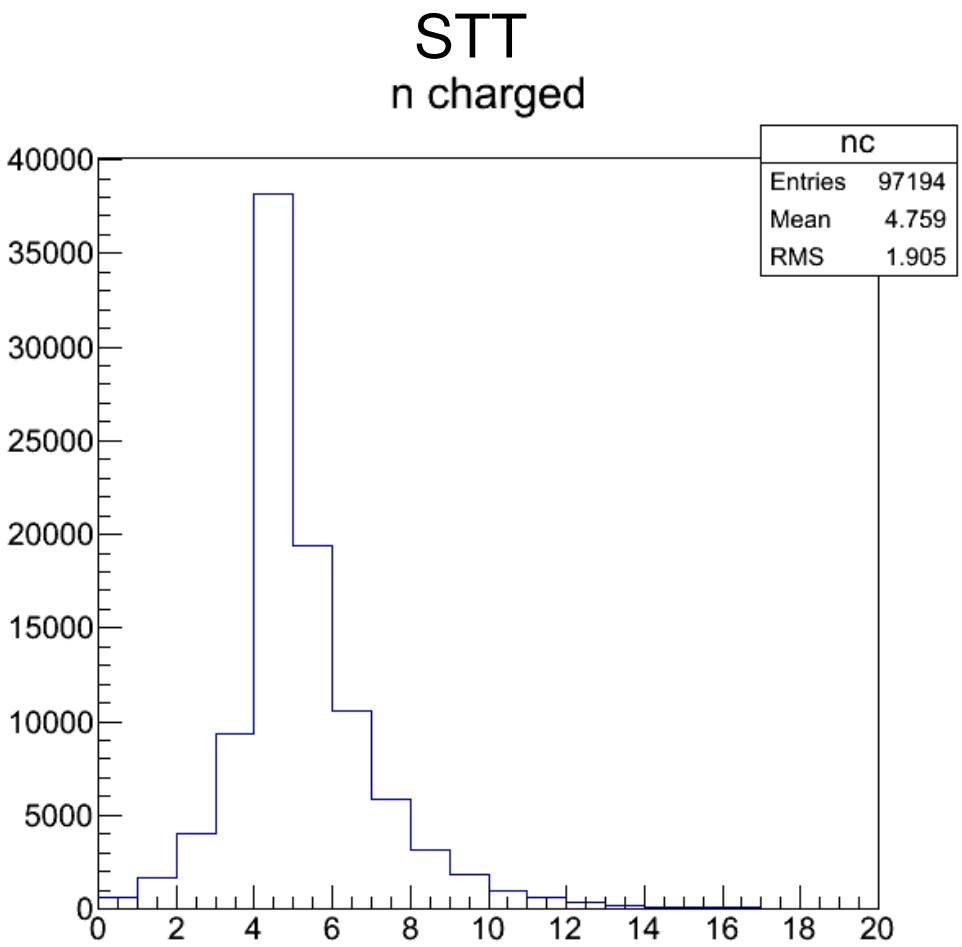


Analyzis

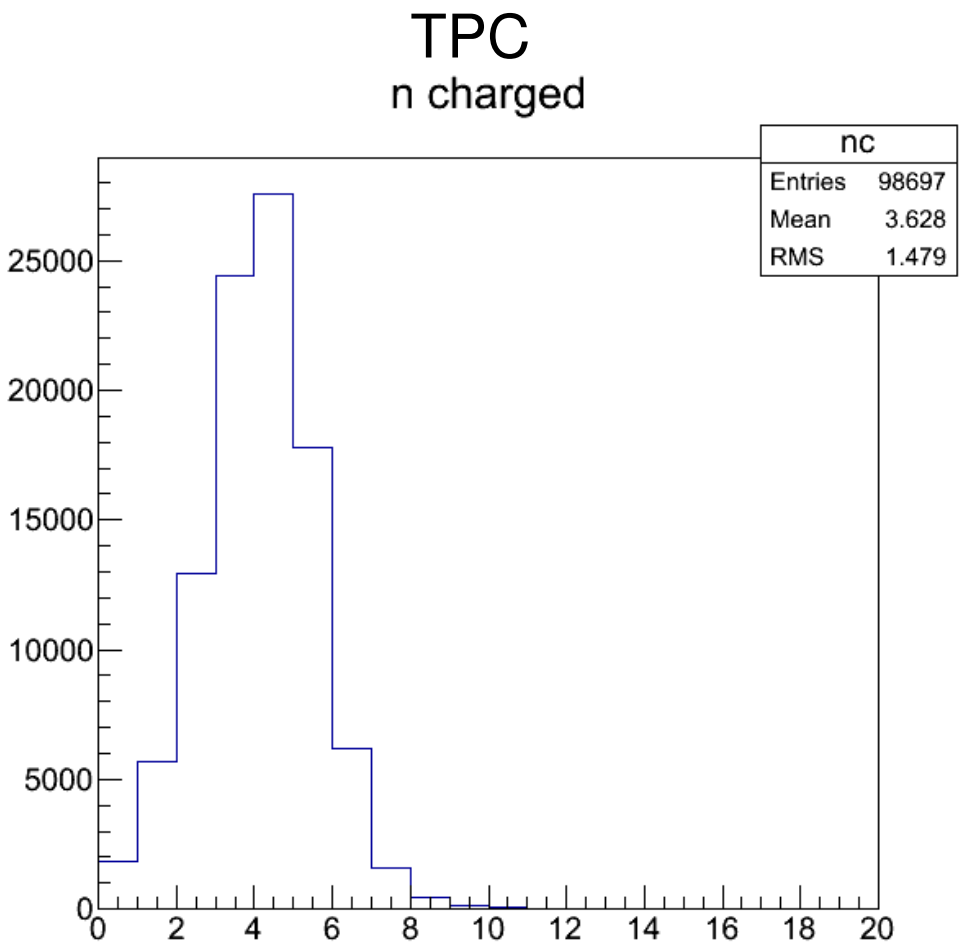
98k events on GRID - run 921 (STT) and 100k events run 971 (TPC)

- Charged candidates with opposite charge are combined to ϕ candidate with ϕ mass preselection $1.02 \pm 0.2 GeV$
- Vertex fit is performed and best η_c candidate in each event is selected by minimal χ^2.
- Events with ϕ candidate within mass window: $0.99 GeV < m(K+K-) < 1.05 GeV$ are selected
- η_c mass window [2.90;3.06] GeV

Number of reconstructed charged tracks



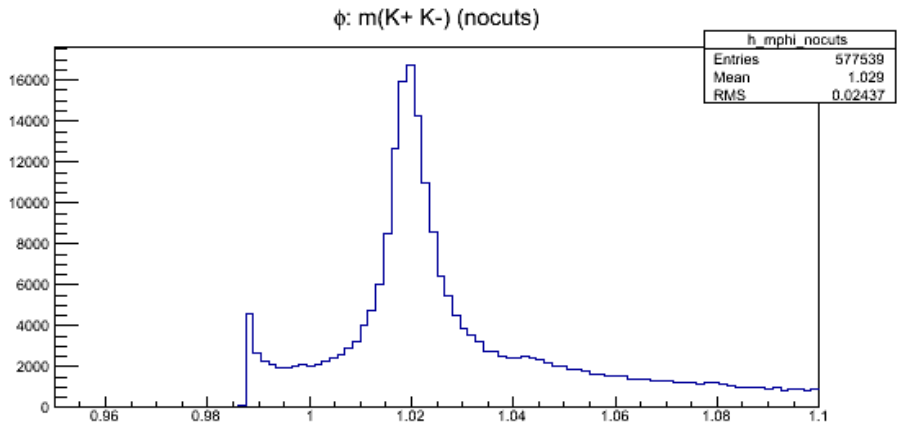
83% >=4 tracks

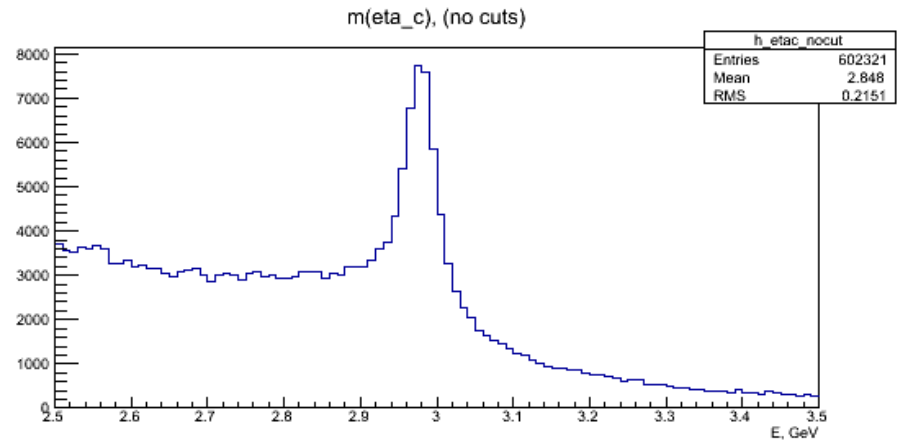


54% >=4 tracks

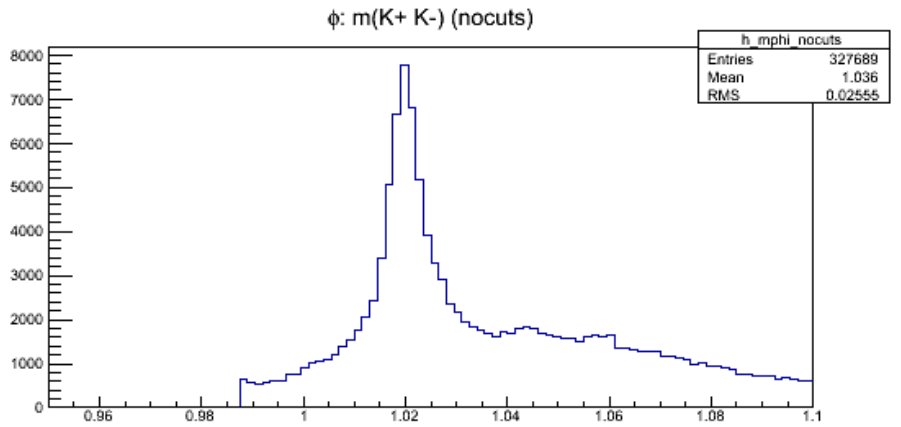
Invaraint mass (No cuts applied)

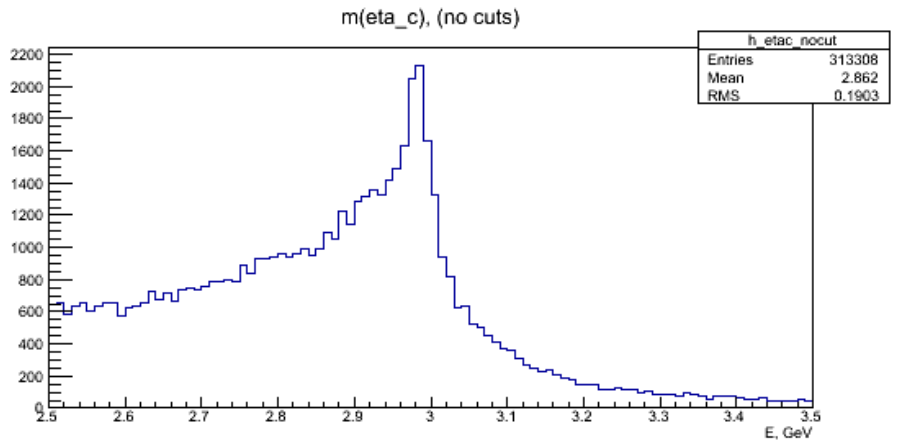
STT





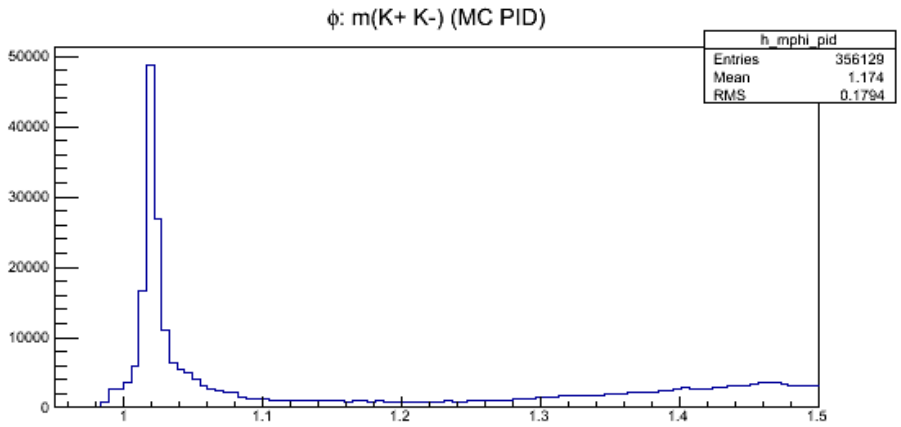
TPC

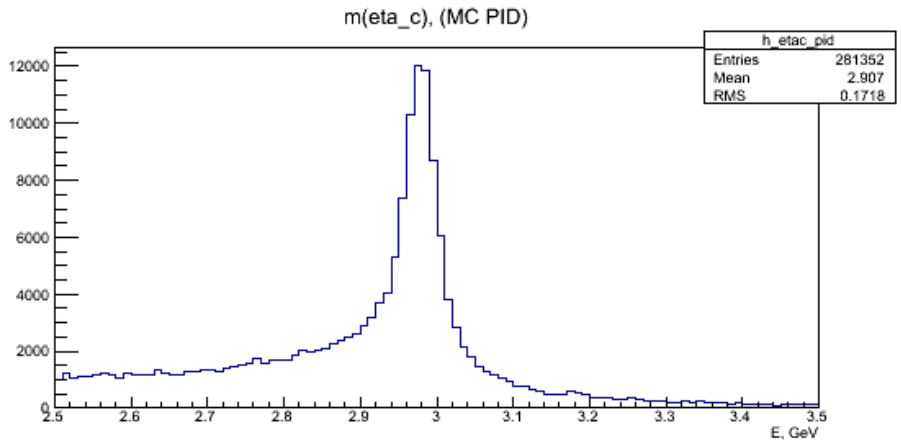




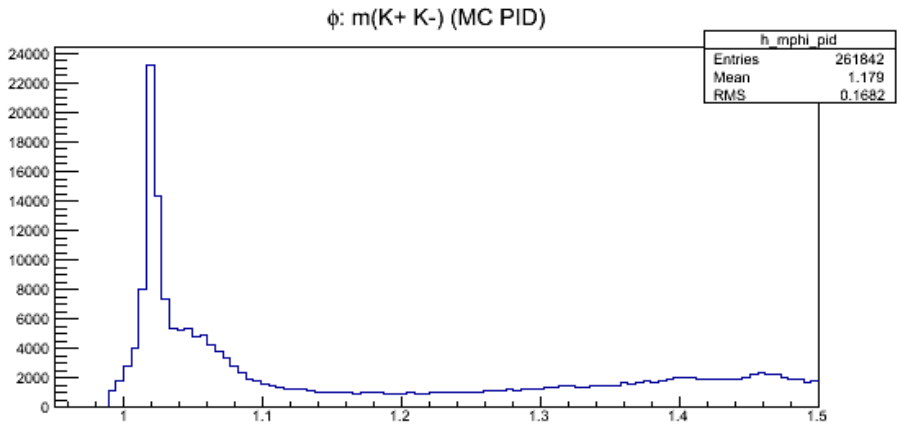
Monte Carlo based PID

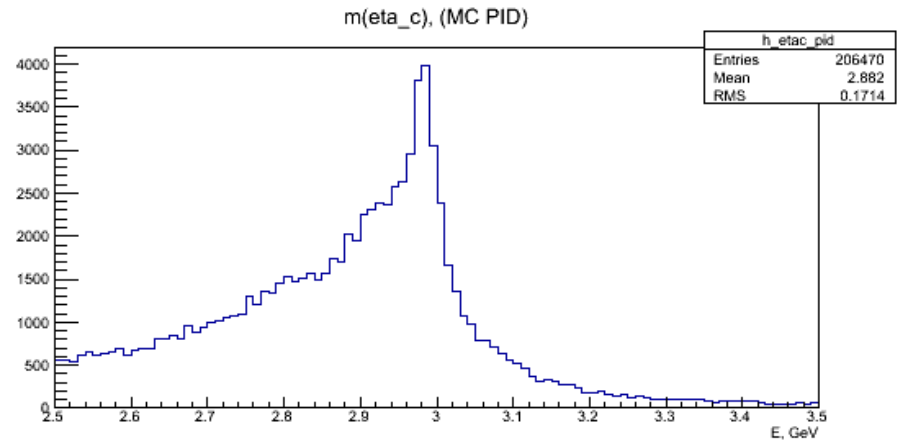
STT





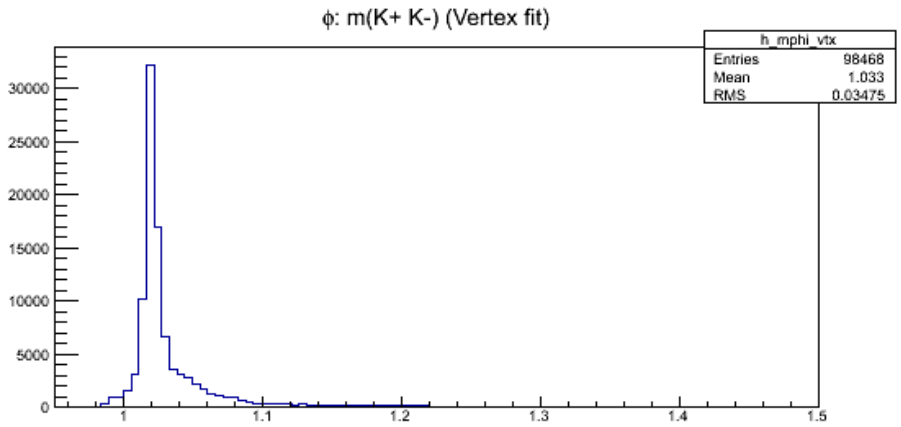
TPC

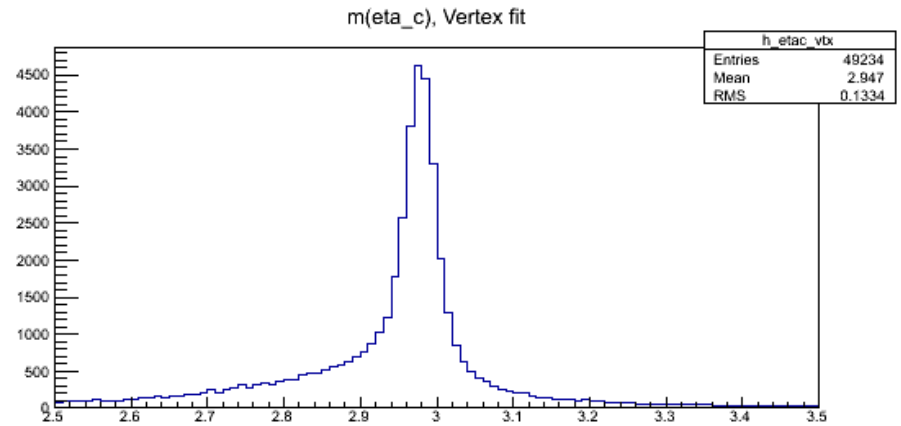




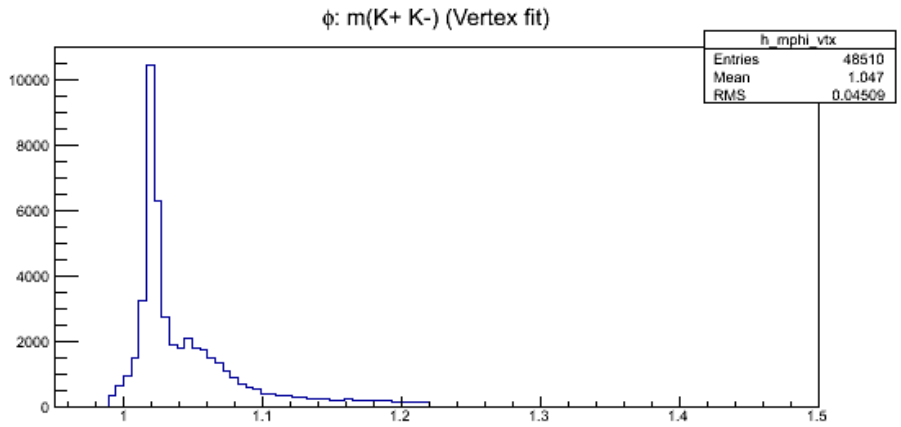
Best candidate from vertex fit

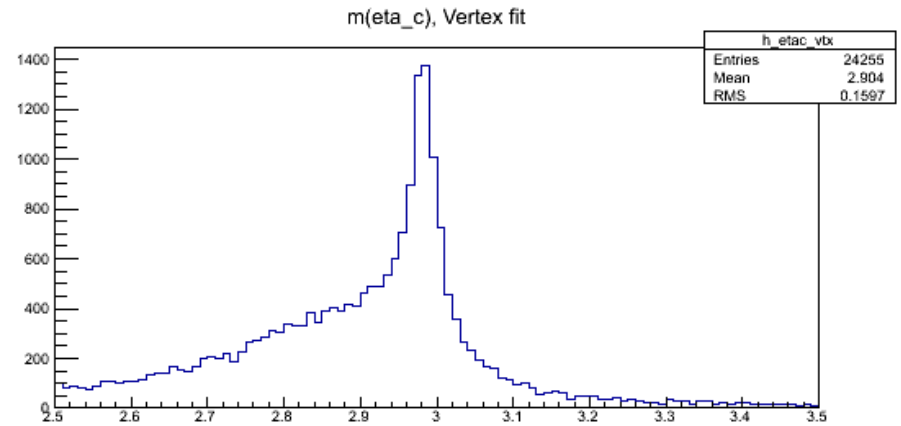
STT





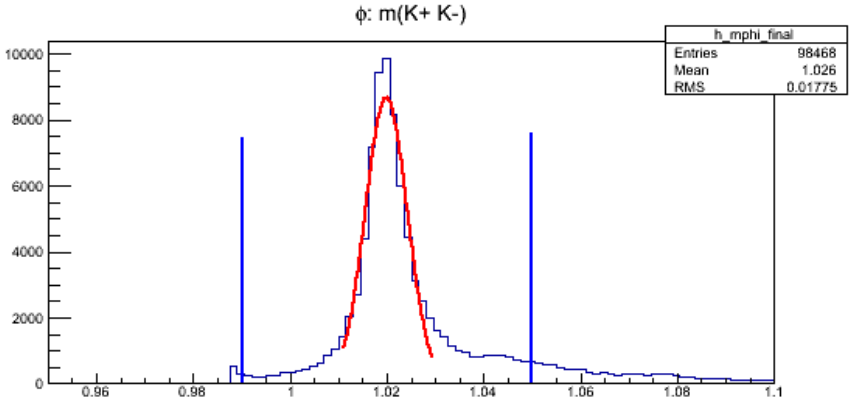
TPC

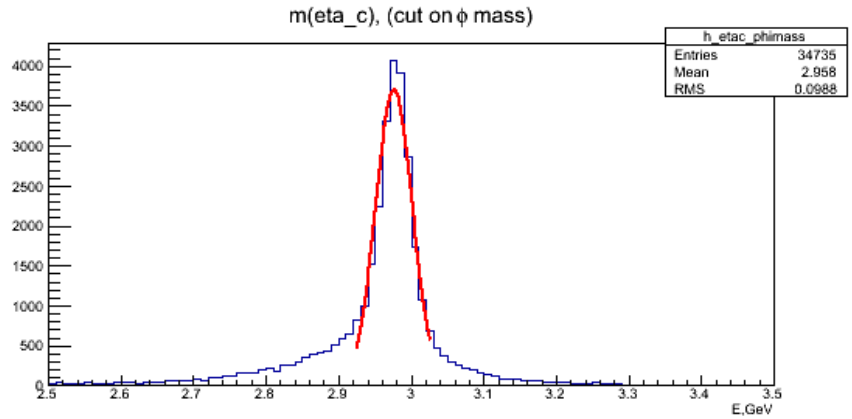




Cut on invariant mass

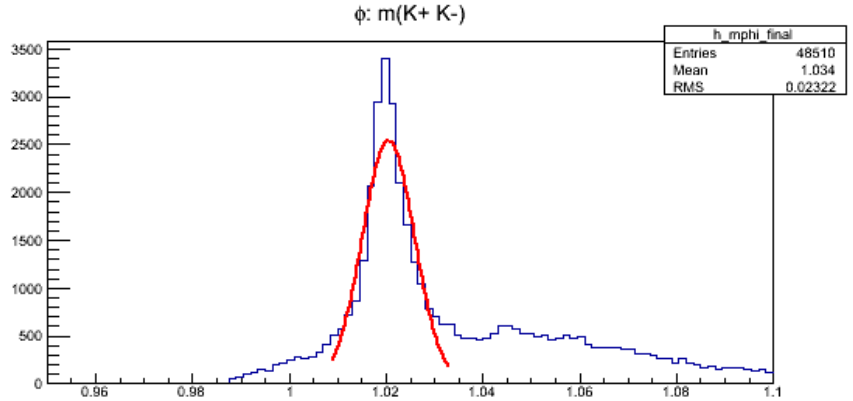
STT

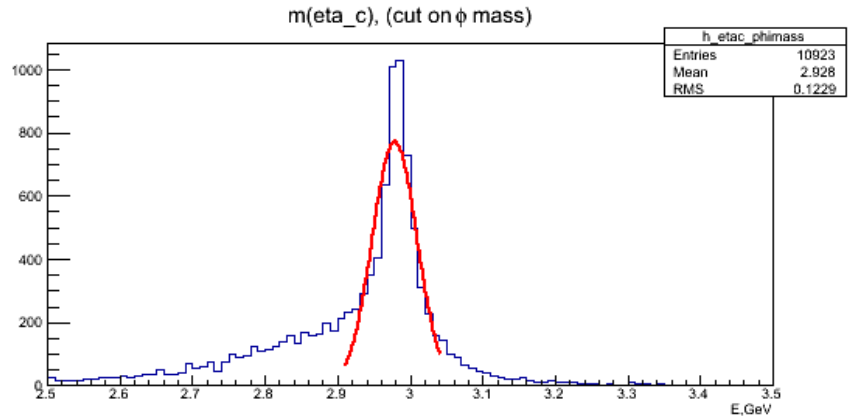




- $\sigma(\phi)$= 4.4 MeV
- $\sigma(\eta_c)$= 25.4 MeV
- ε_{ff}=26.4%

TPC





- $\sigma(\phi)$= 5.4 MeV
- $\sigma(\eta_c)$= 30.8 MeV
- ε_{ff}=6.7%