



SPRACE

Update

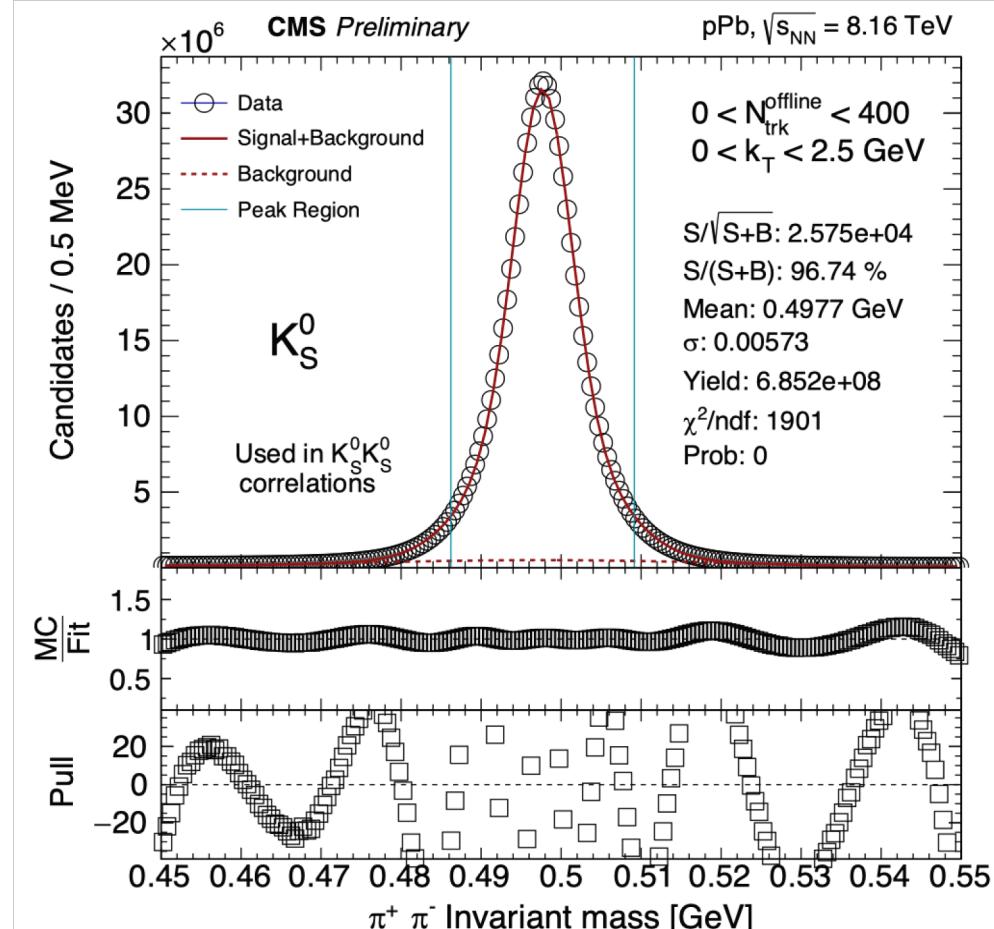
DENER S. LEMOS

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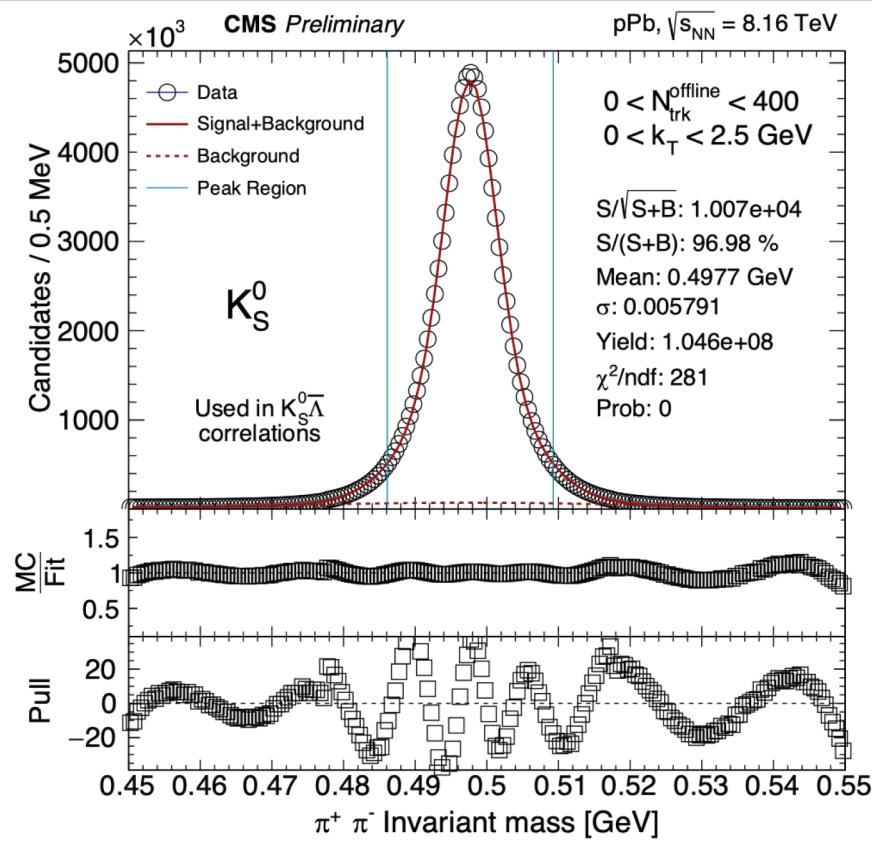
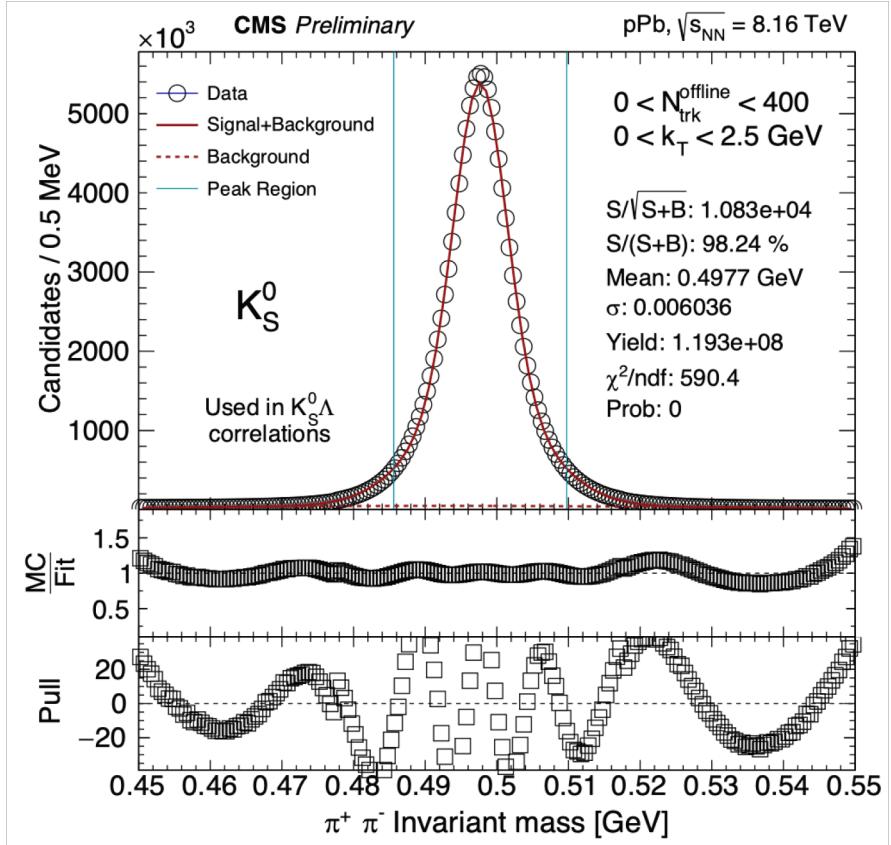


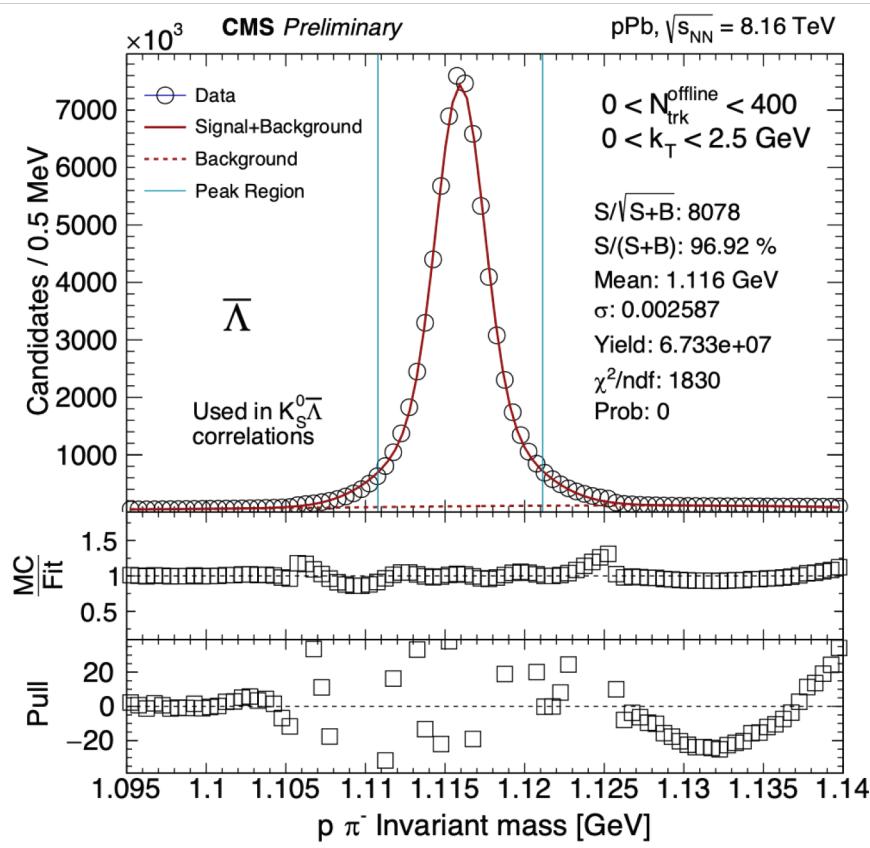
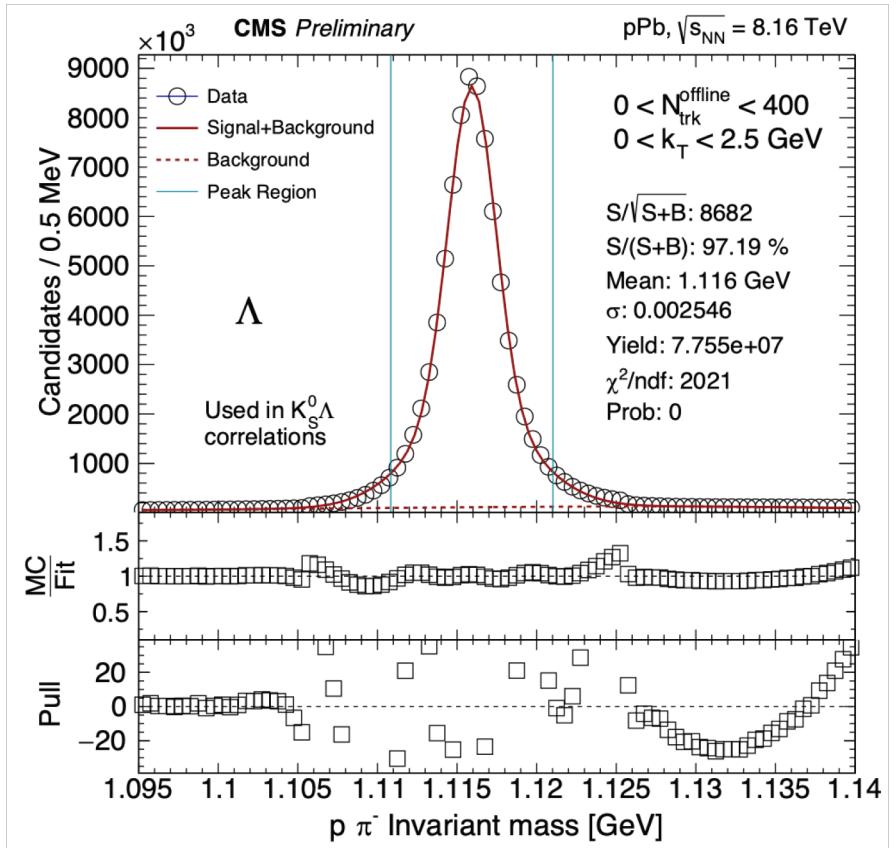
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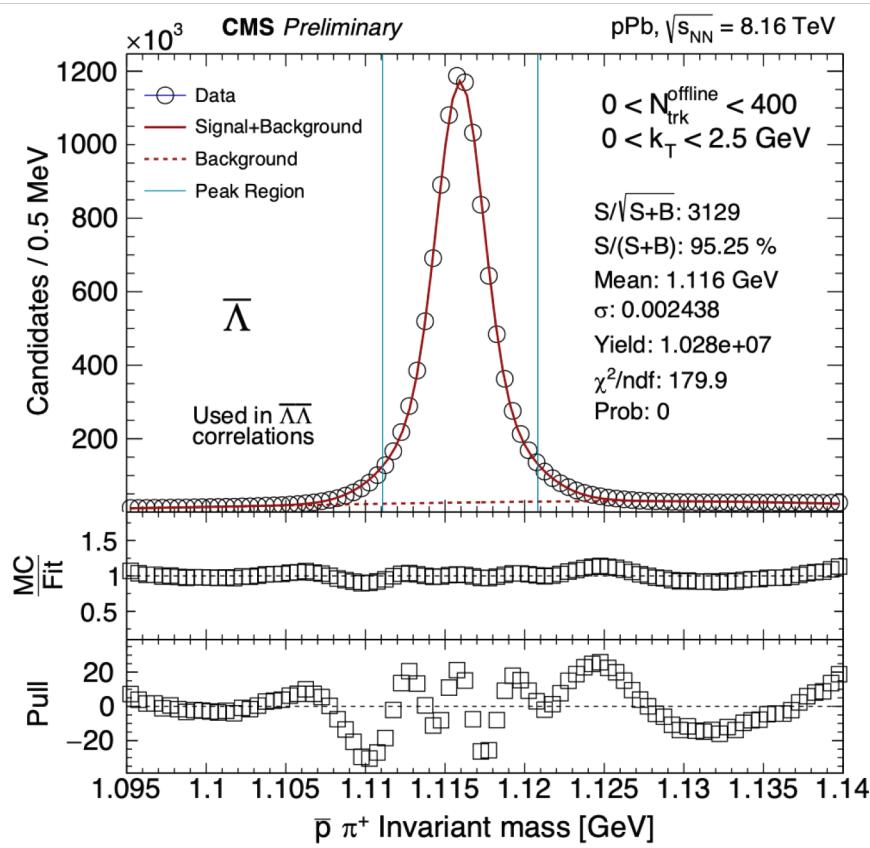
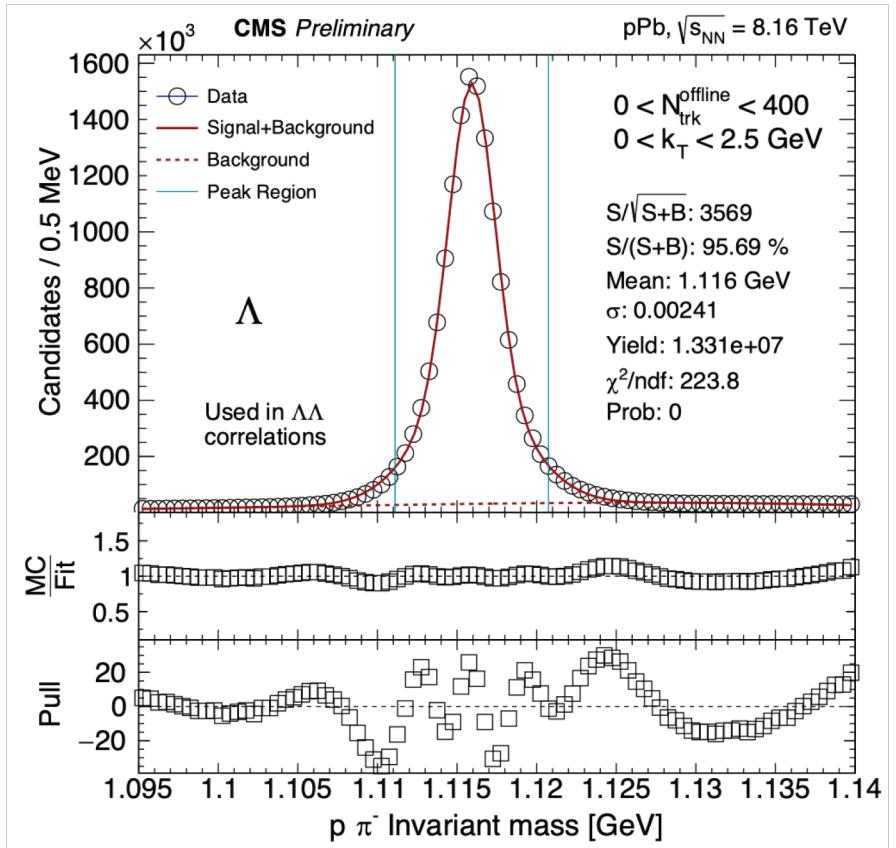
Invariant Mass Plots

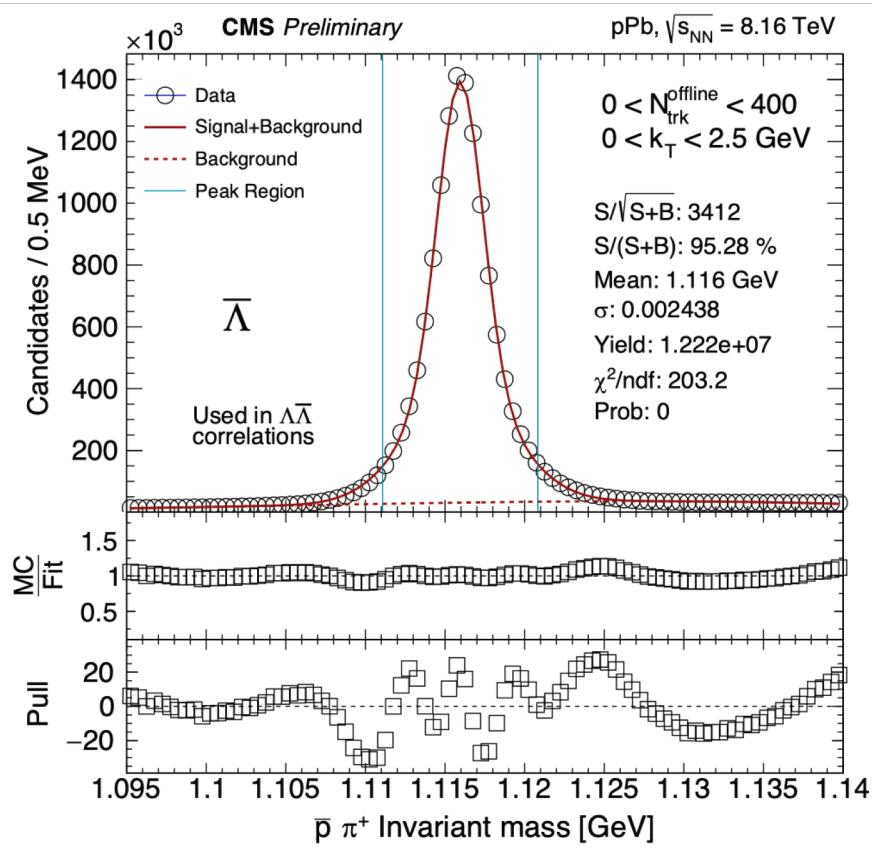
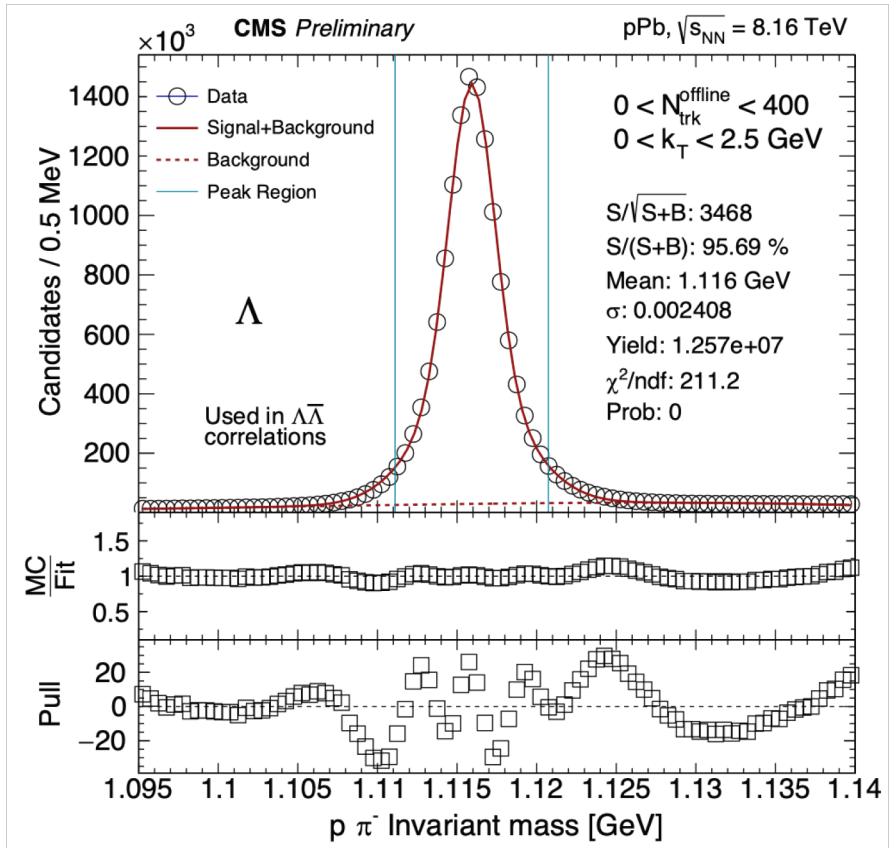


Double gaussian + 4th order polynomial











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Sideband Method

Sideband Method

Peak region contain the contributions for

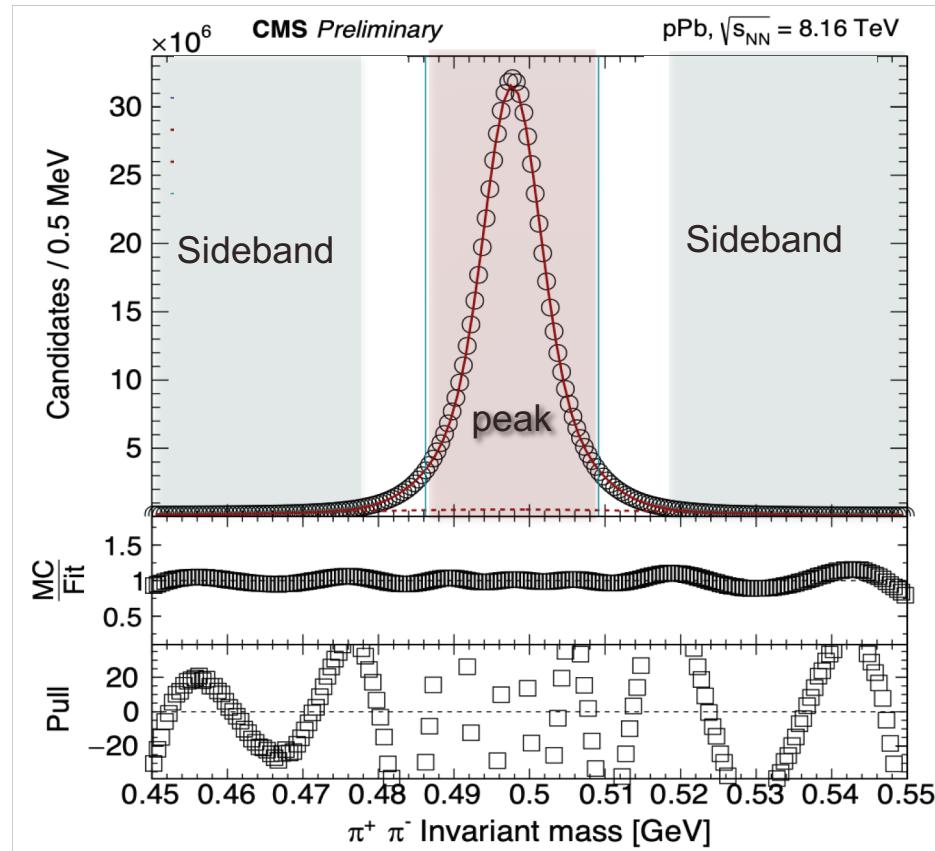
- signal+signal (ss)
- signal+background (sb)
- background+background (bb)

We divided the distribution of observed q_{inv} in three

$$\mathcal{D}(q_{\text{inv}}^{\text{obs}}) = f_{ss} \mathcal{D}(q_{\text{inv}}^{ss}) + f_{bb} \mathcal{D}(q_{\text{inv}}^{bb}) + (1 - f_{ss} - f_{bb}) \mathcal{D}(q_{\text{inv}}^{sb})$$

$\mathcal{D}(q_{\text{inv}}^{\text{AB}})$ is the q_{inv} distribution for each contribution

Example of M_{inv}



Sideband Method

The f's are the factors to estimate the percentage of this contributions

f_{ss} and f_{bb} can be extracted by the mass fit in the peak region using combinatorics

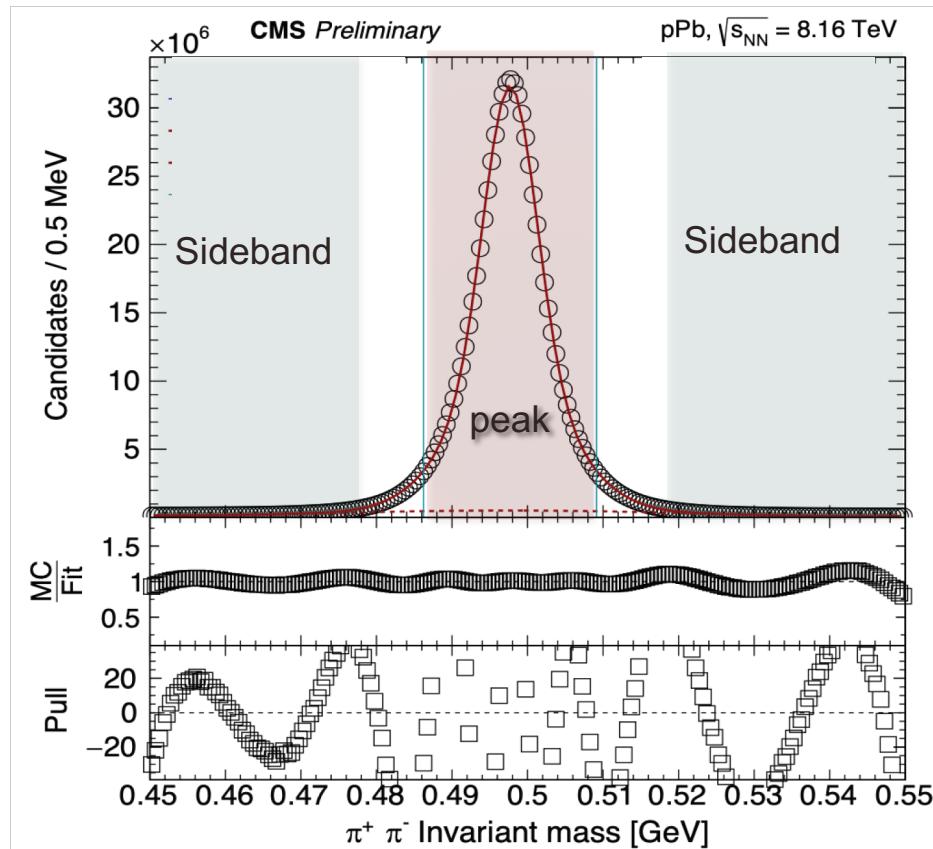
$$f_{ss} = \frac{\binom{s}{2}}{\binom{s+b}{2}} \quad f_{bb} = \frac{\binom{b}{2}}{\binom{s+b}{2}}$$

where s is the signal yield and b the background yield.

For non-identical particles

- $s = s_1 + s_2$ and $b = b_1 + b_2$

Example of M_{inv}



Sideband Method

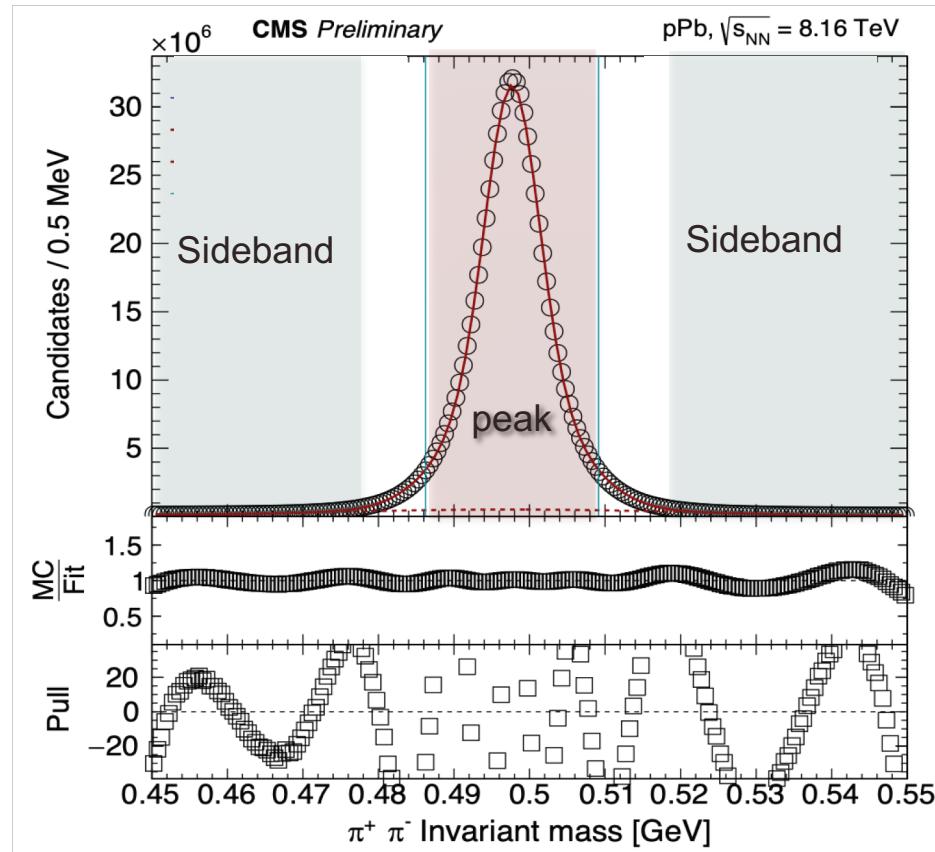
Example of M_{inv}

Isolating $D(q_{\text{inv}}^{\text{ss}})$:

$$\begin{aligned} D(q_{\text{inv}}^{\text{ss}}) &= [D(q_{\text{inv}}^{\text{obs}}) - f_{bb}D(q_{\text{inv}}^{\text{bb}}) \\ &\quad - (1 - f_{ss} - f_{bb})D(q_{\text{inv}}^{\text{sb}})]/f_{ss} \end{aligned}$$

$D(q_{\text{inv}}^{\text{sb}})$ and $D(q_{\text{inv}}^{\text{bb}})$ still unknown

- ❑ To solve that we assume:
 - The shape of $D(q_{\text{inv}}^{\text{bb}})$ is the same as $D(q_{\text{sidebandsideband}}^{\text{inv}})$
 - The shape of $D(q_{\text{inv}}^{\text{sb}})$ as the same $D(q_{\text{peaksideband}}^{\text{inv}})$

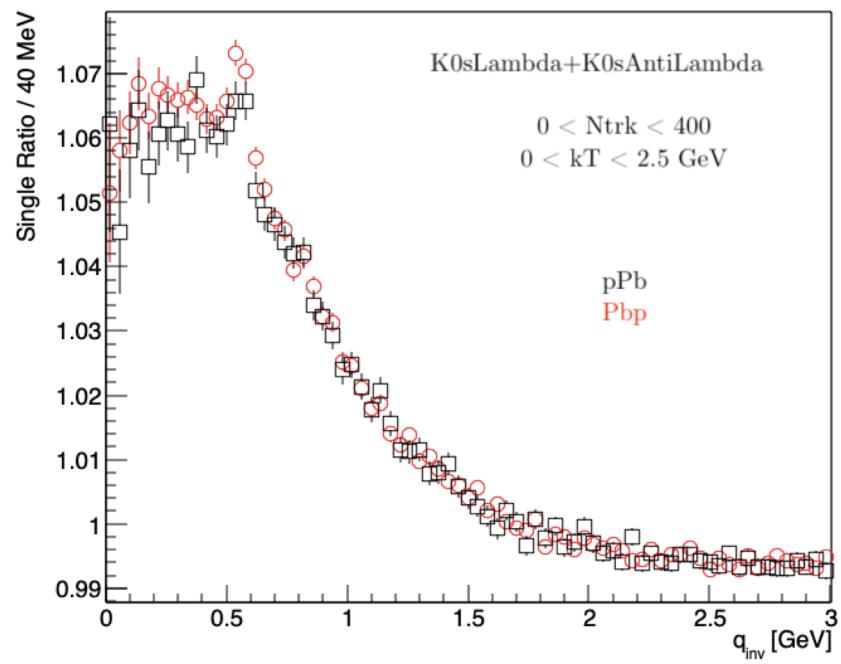
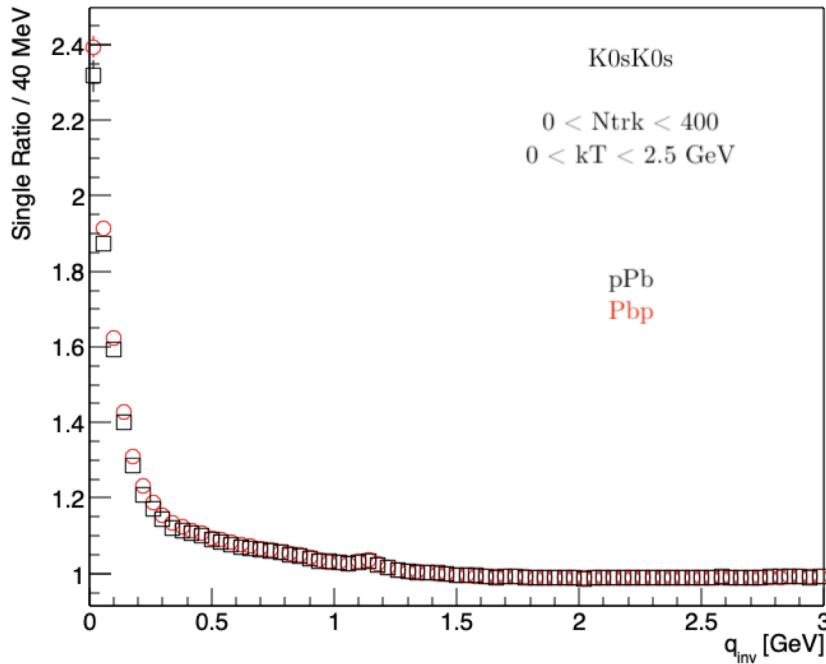




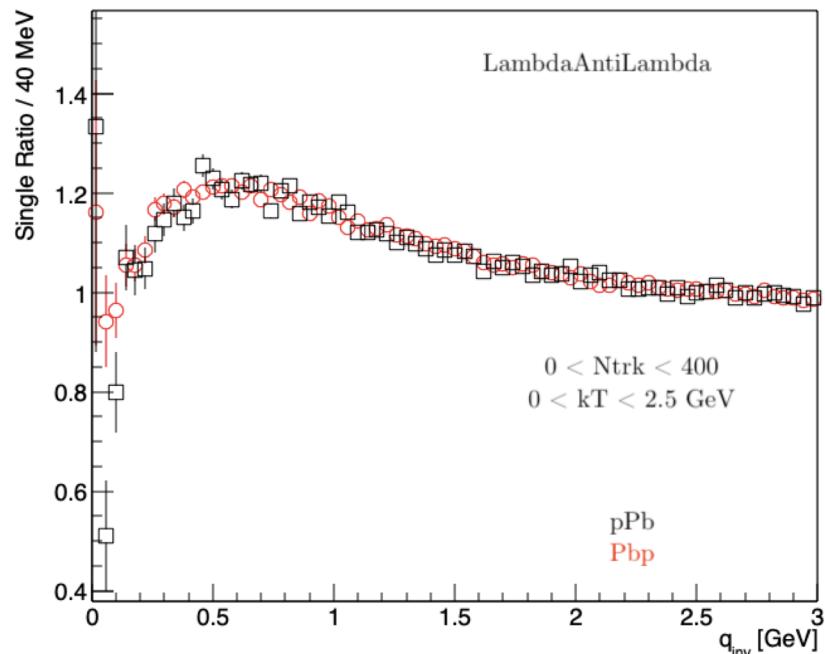
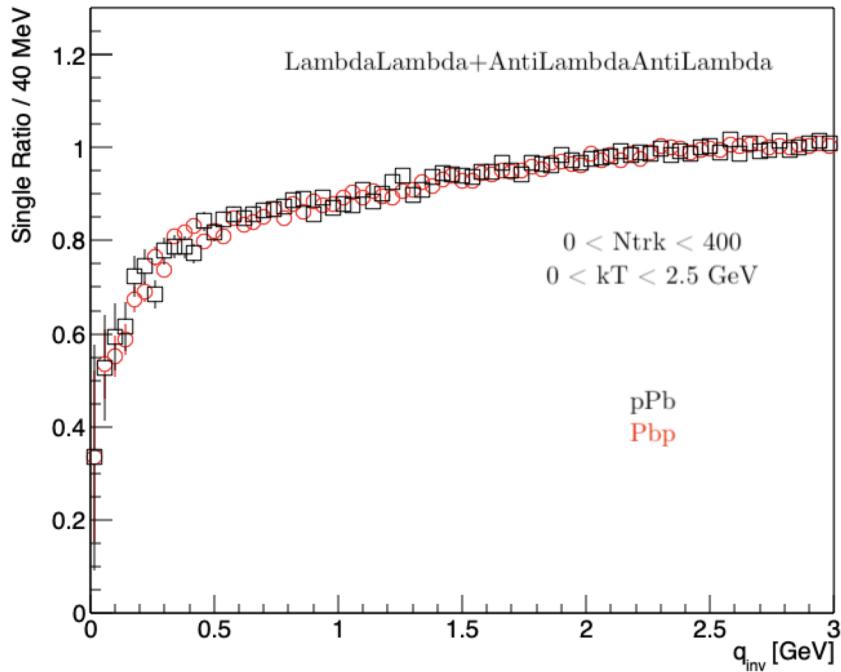
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Cross-checks

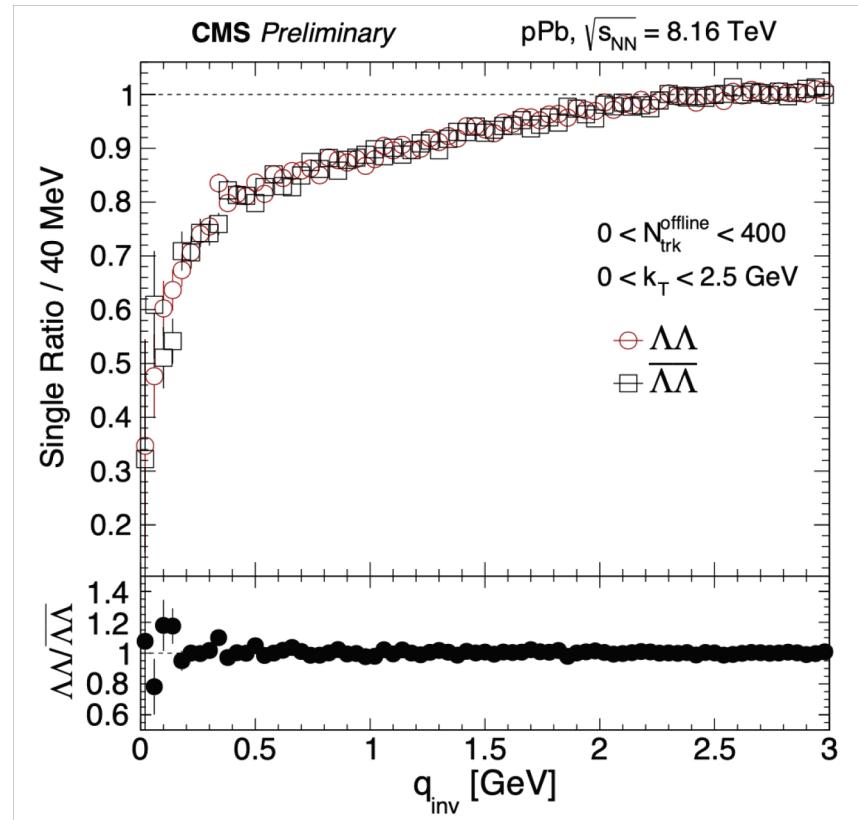
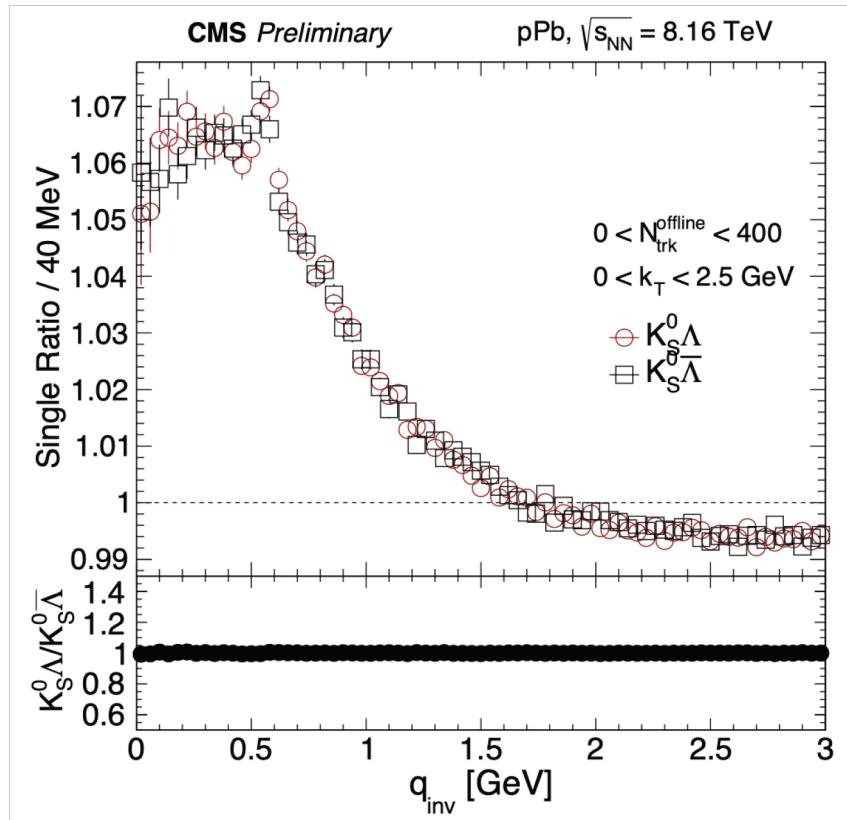
Check influence of the beam (I)



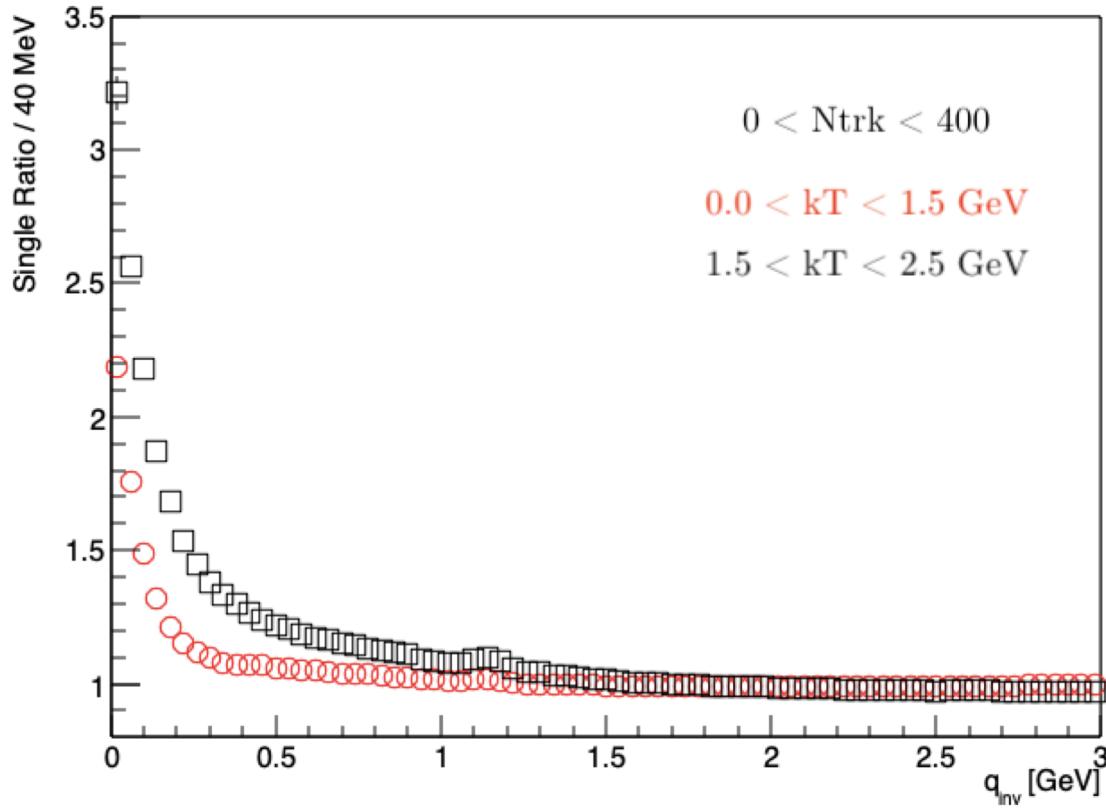
Check influence of the beam (II)



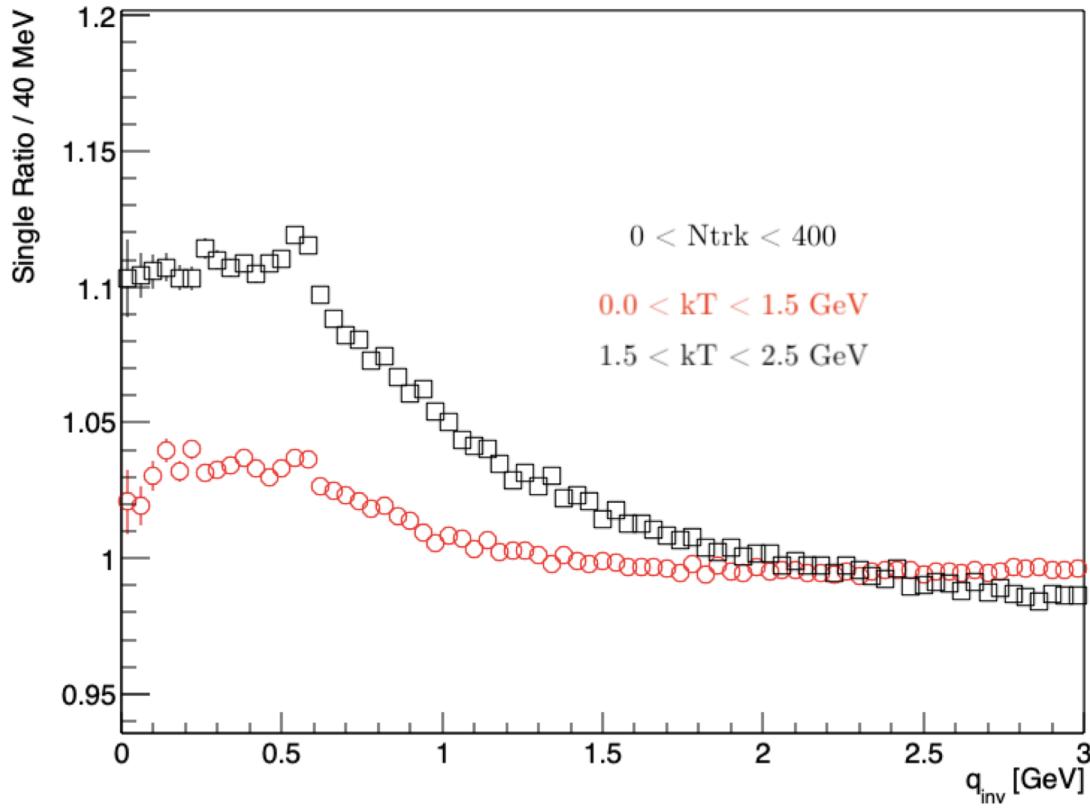
Cross-Check in order to sum correlations



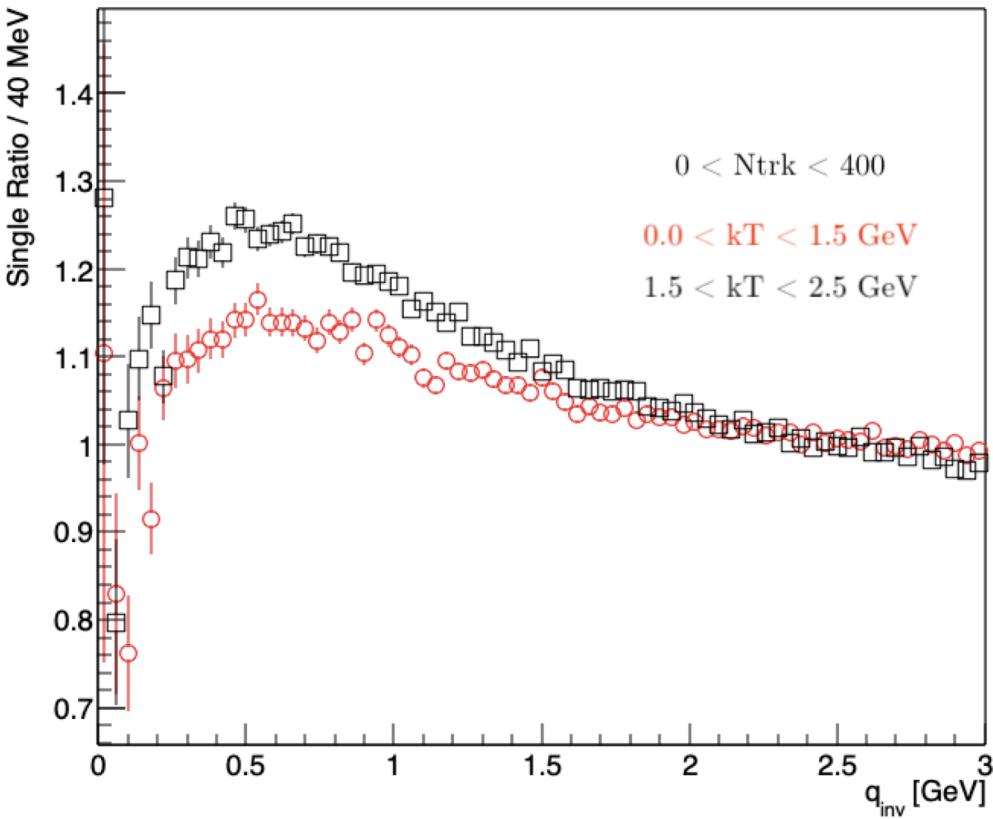
K0sK0s



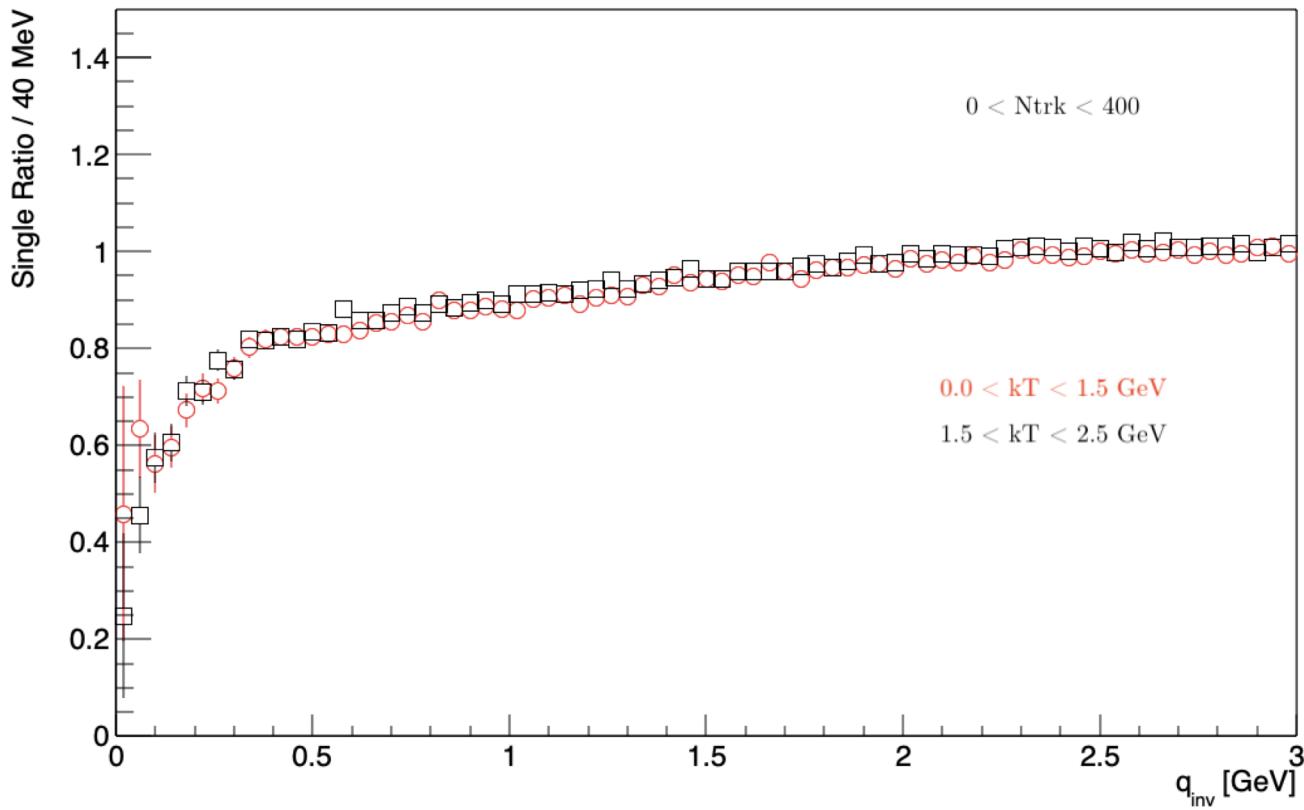
K0sLambda + K0sALambda



Lambda+ALambda



LambdaLambda+ALambdaALambda



All together

