

Update on preTDR plots

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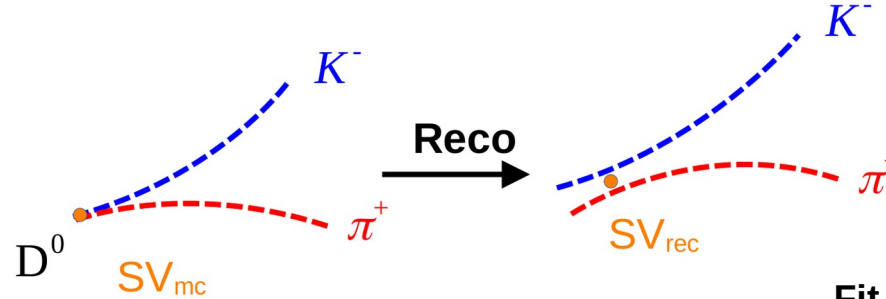
Supported by The FAIR Spoke 6 Project, funded by the NextGenerationEU program in Italy



[hipe4ml package for ML](https://doi.org/10.5281/zenodo.5070131)
Ref: <https://doi.org/10.5281/zenodo.5070131>

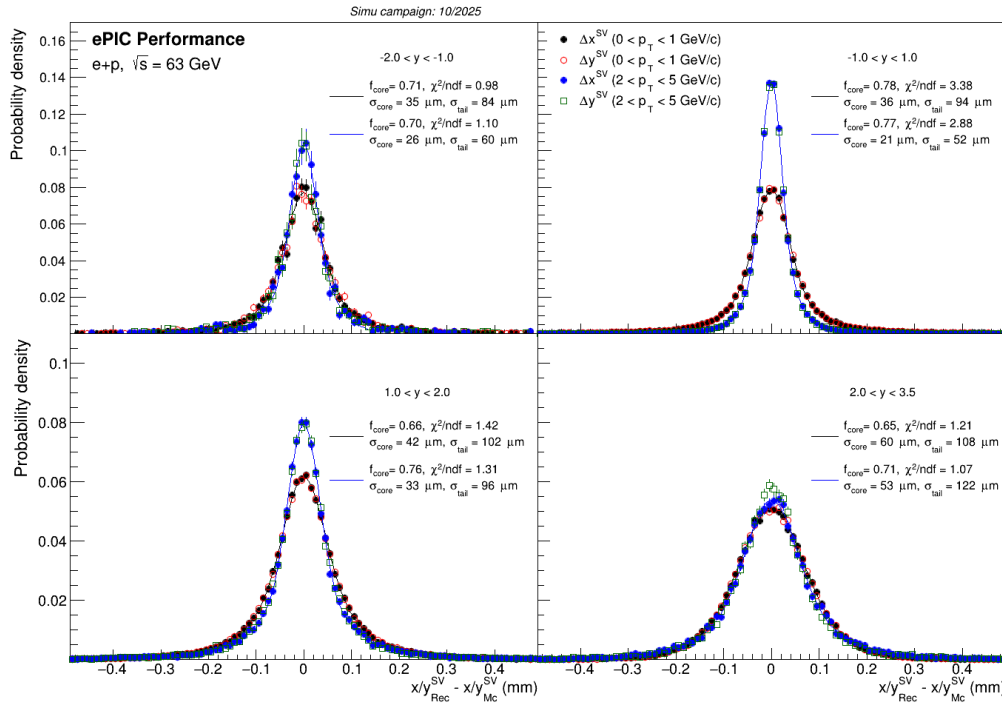
Secondary Vertex Resolution

$$D^0 \rightarrow K^- \pi^+$$

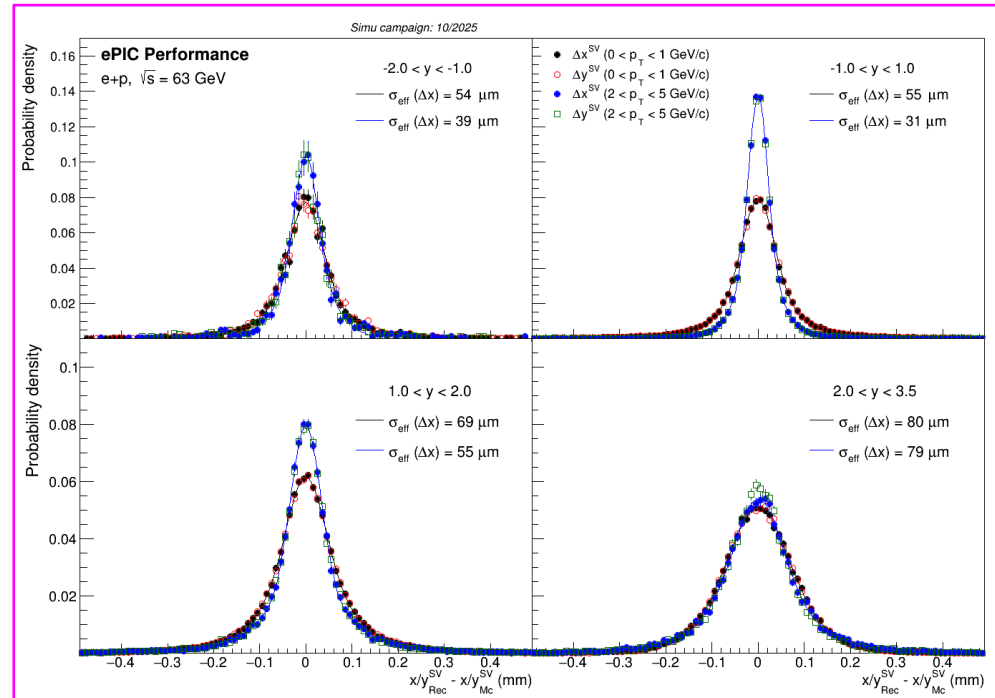


Fit Range: Mean \pm 2*StdDev

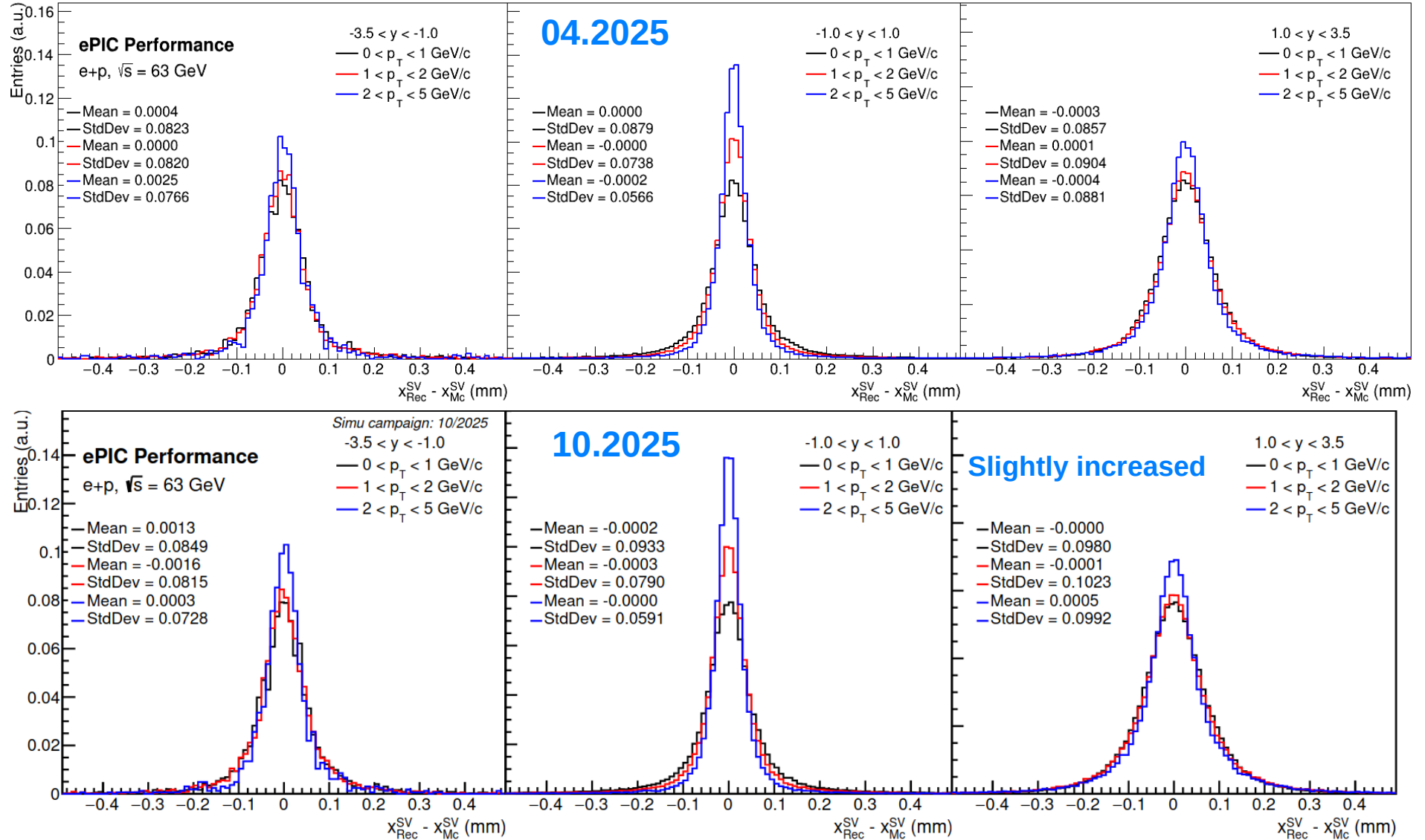
Debug Plot



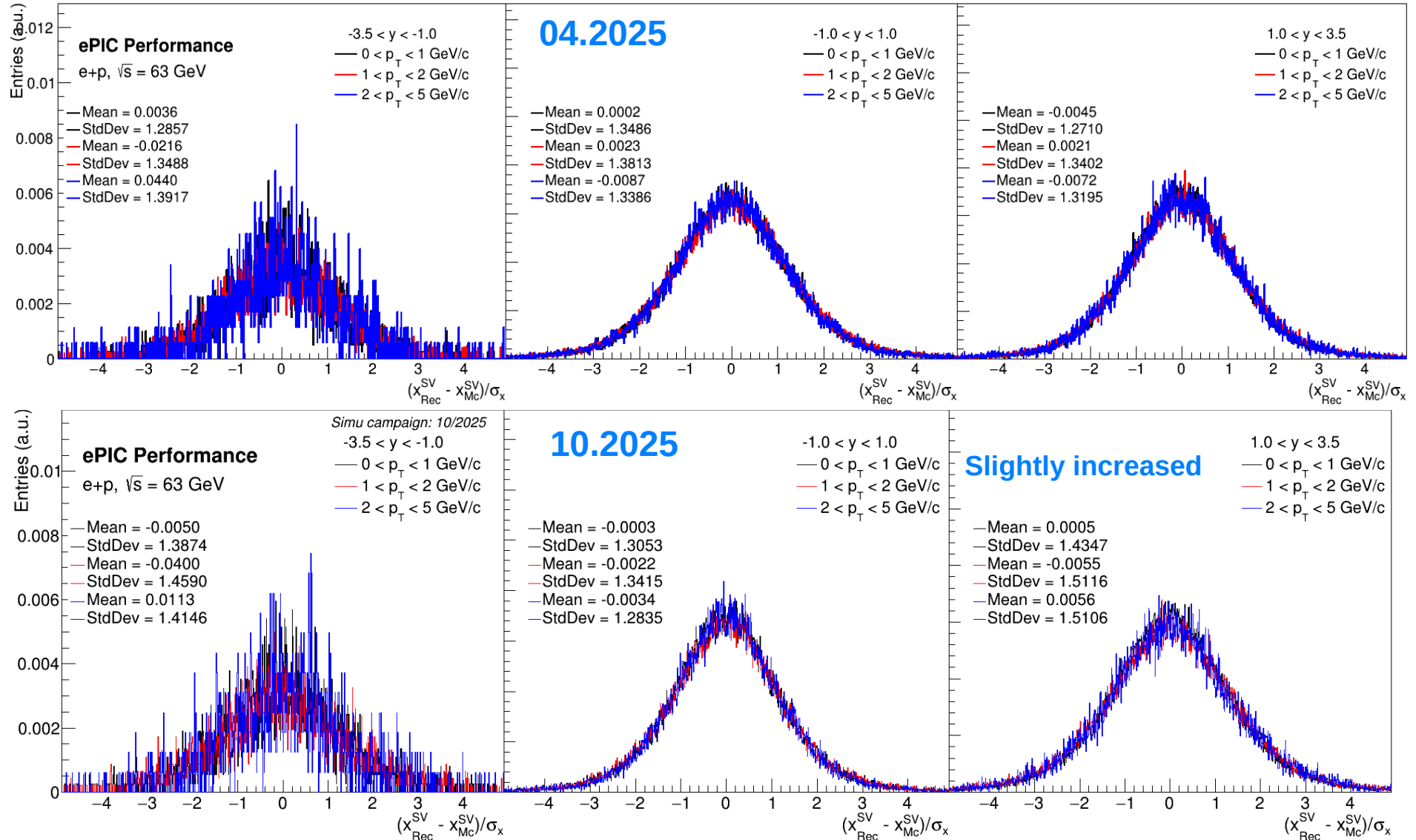
preTDR

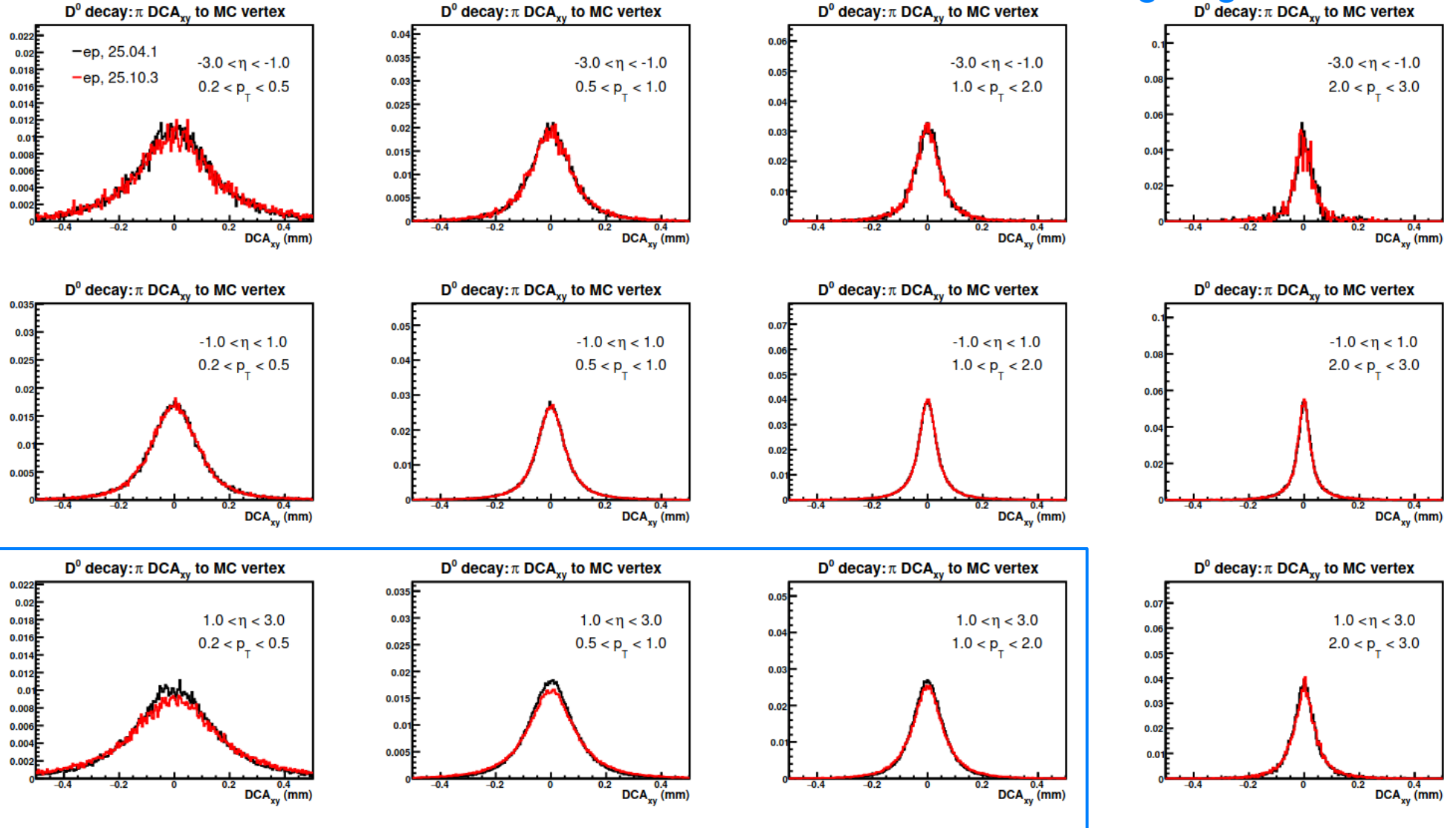


Secondary Vertex Resolution

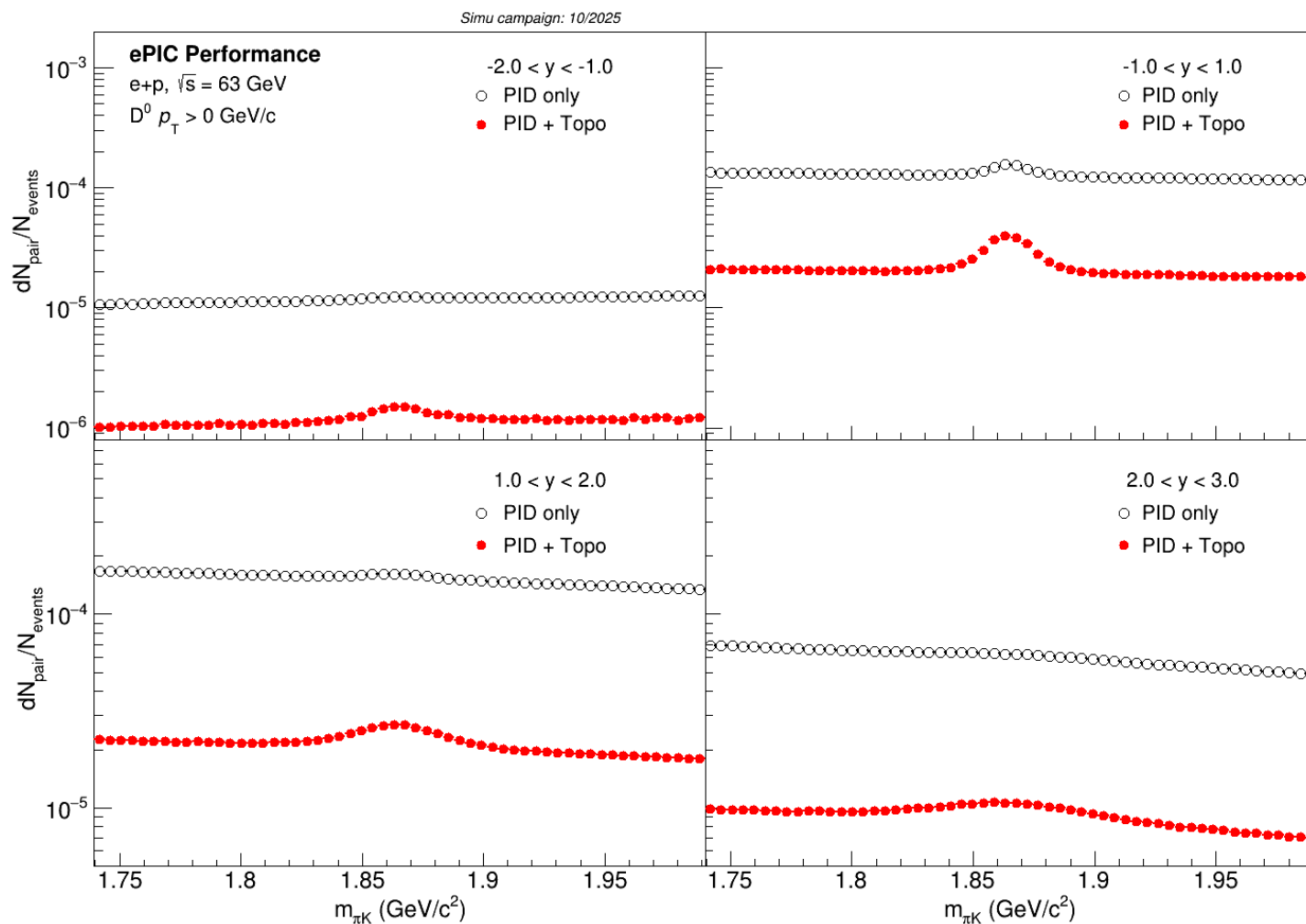


Secondary Vertex Reolution





Invariant Mass Plots



BDT Thr > 0.6

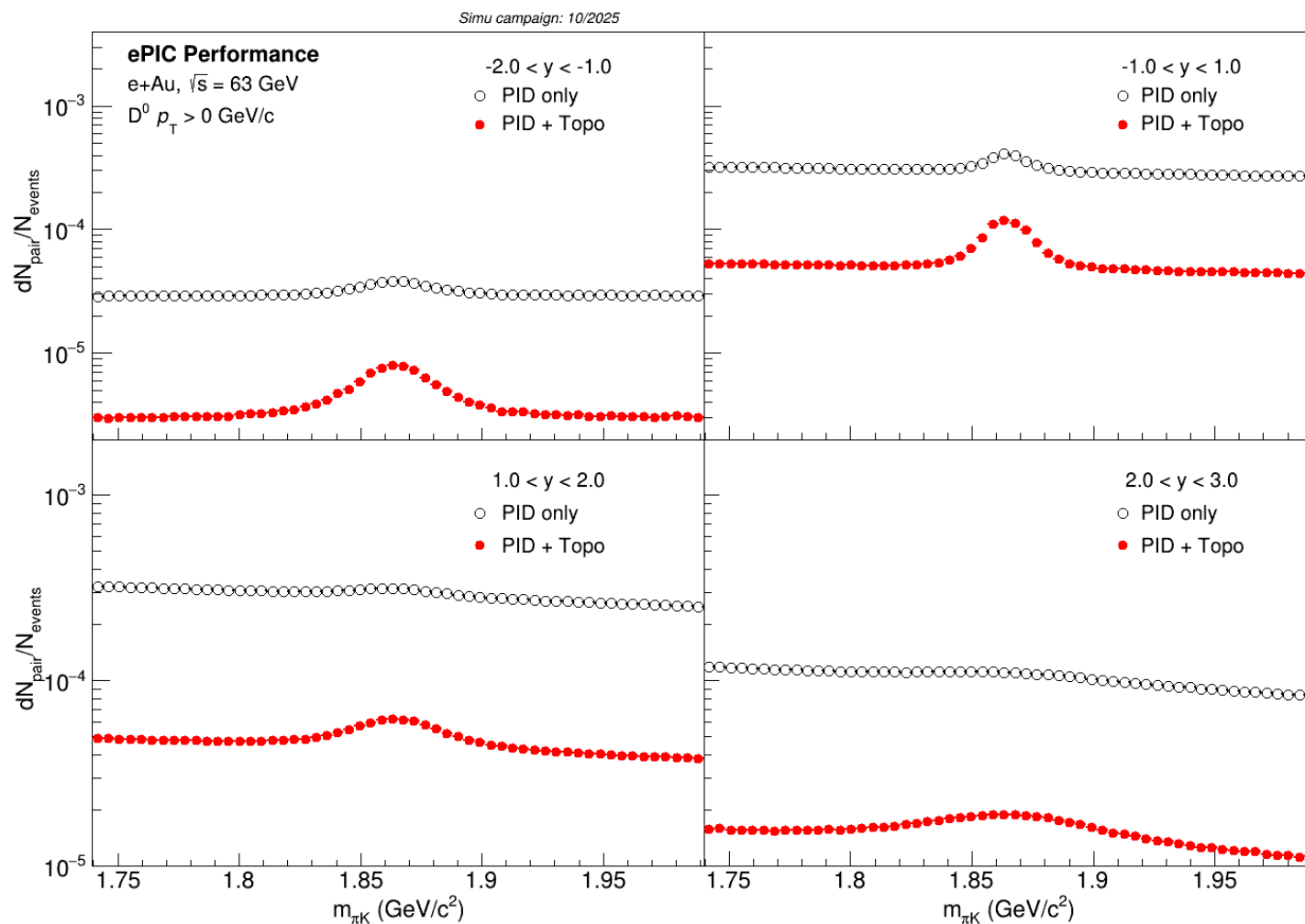
Black PID Only

Red: with ML

Background efficiency

$\epsilon_{\text{bkg}} \sim 0.1$

Invariant Mass Plots



BDT Thr > 0.6

Black PID Only

Red: with ML

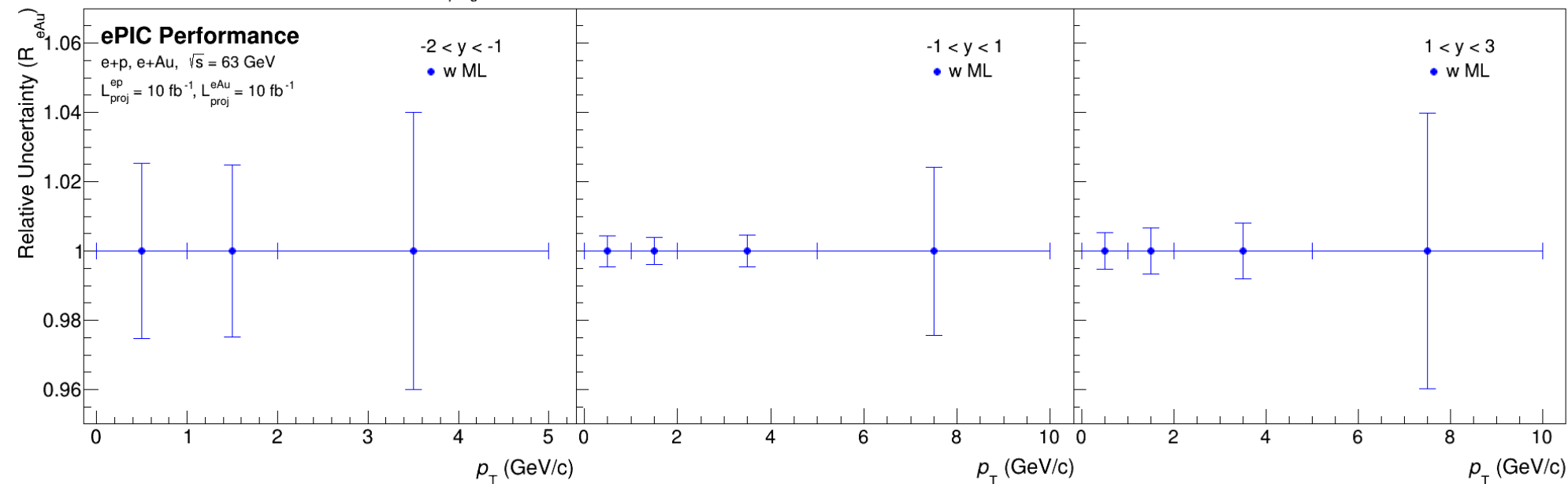
Background efficiency

$\epsilon_{\text{bkg}} \sim 0.1$

Projected Statistical Uncertainty (R_{eAu})

$$D^0 \rightarrow K^- \pi^+$$

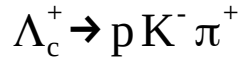
Simu campaign: 10/2025



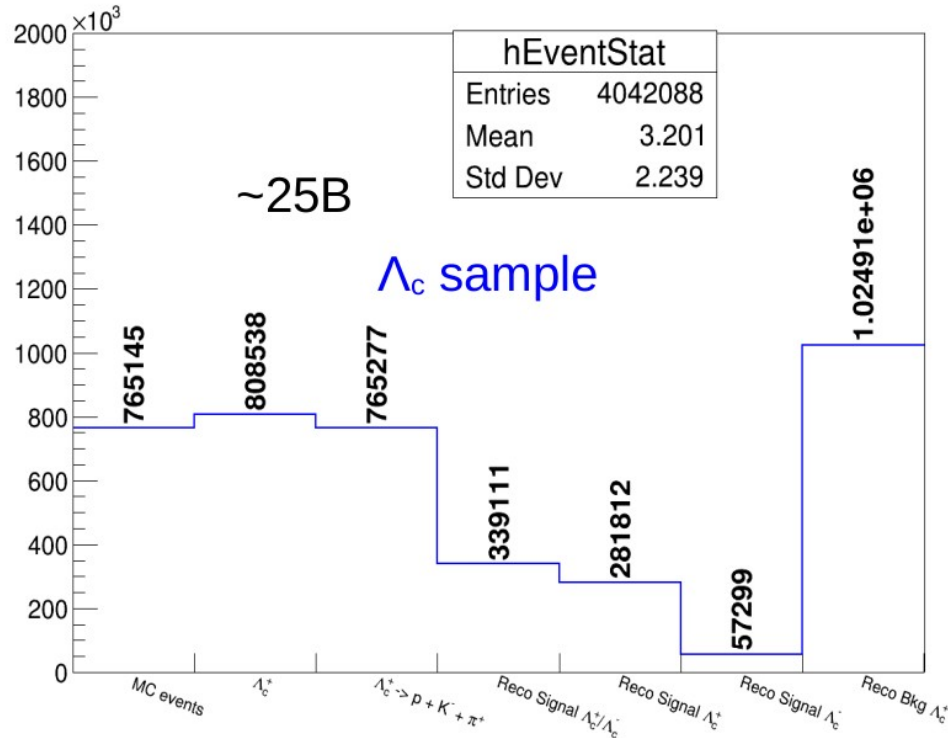
Campaign: 25.07.0

Λ_c DIS Sample

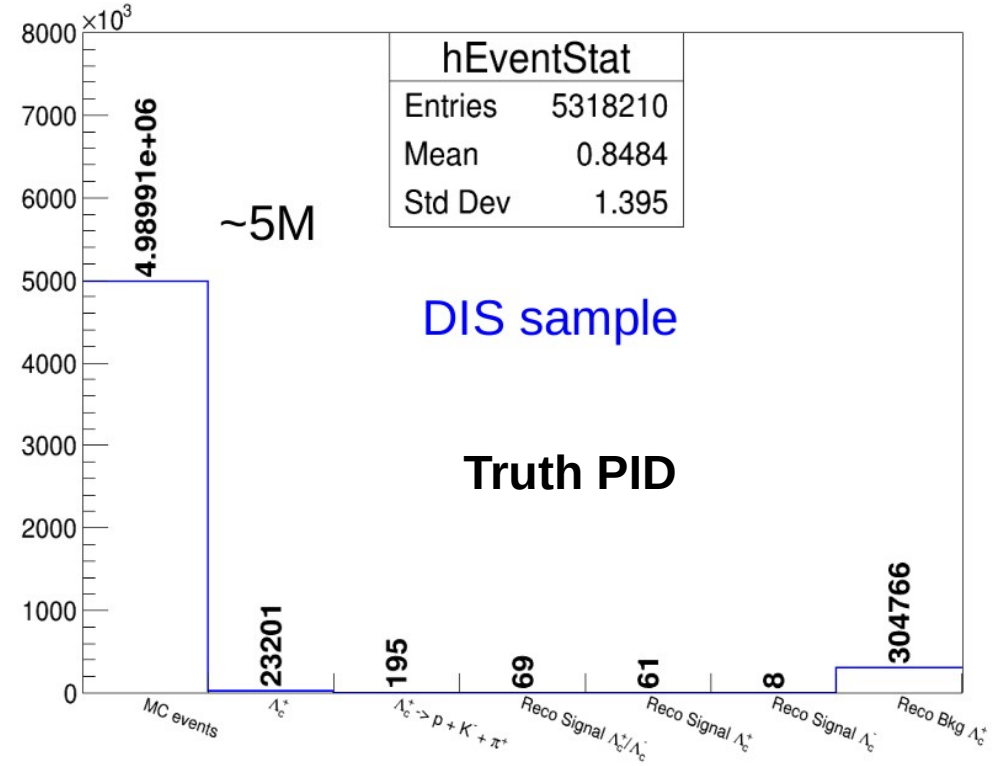
Branching Ratio (PDG) ~ 6.35 %



Event statistics



Event statistics



Ratio: (pkpi)/ Λ_c + ~ 0.84%

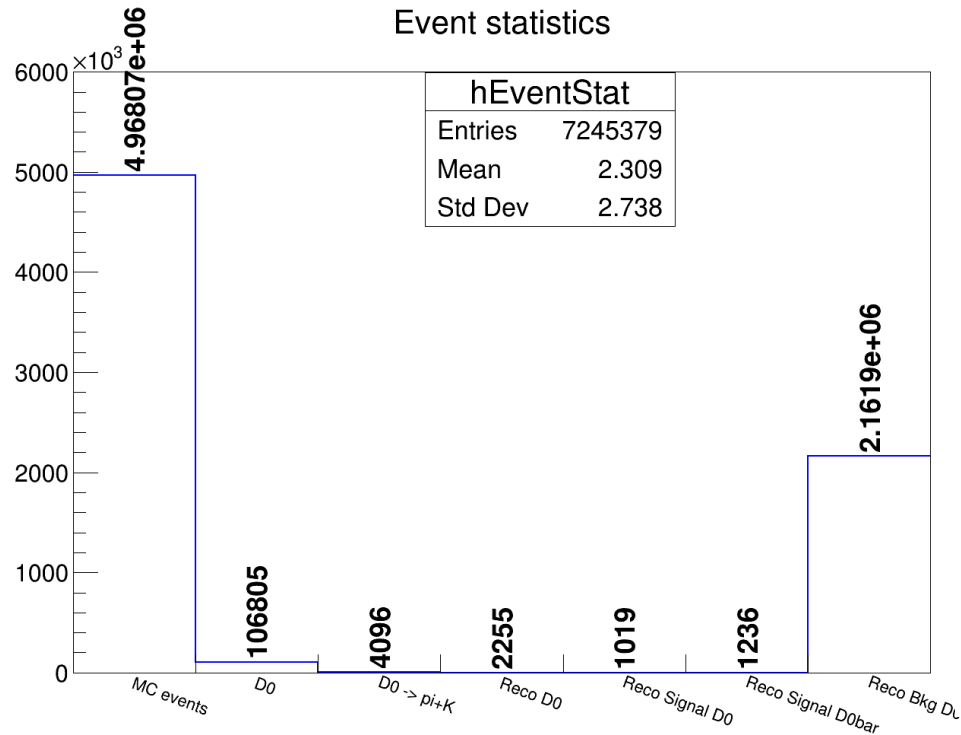
Checks for DIS Sample

October Campaign

$$D^0 \rightarrow K^- \pi^+$$

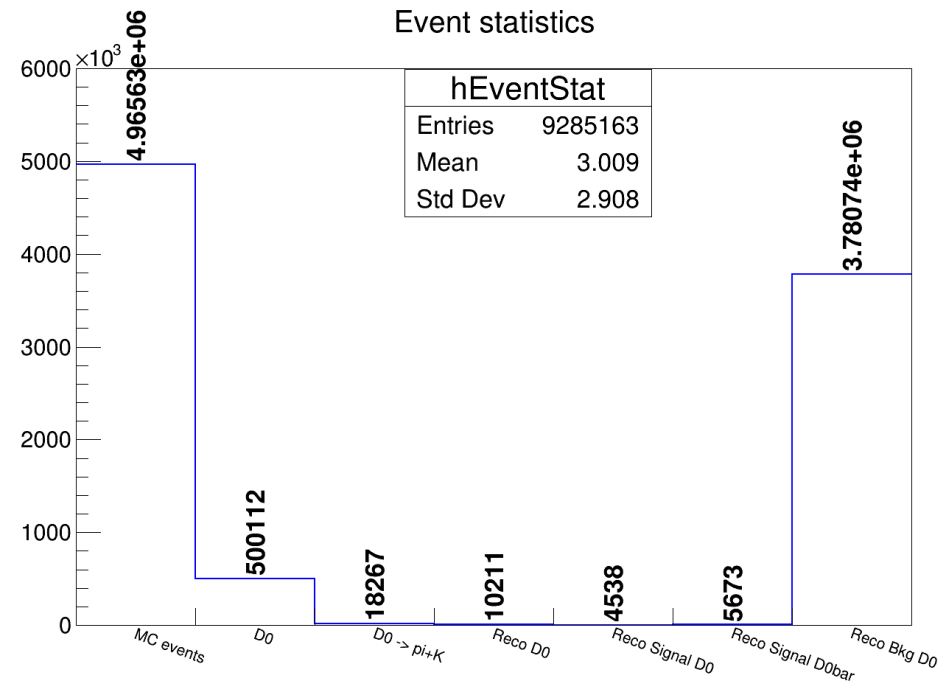
Branching Ratio (PDG) ~ 3.945%

Event statistics



Ratio: (kpi)/D0 (DIS) ~ 3.84 %

Event statistics



Ratio: (kpi)/D0 (DIS) ~ 3.65%