

Update on preTDR plots

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



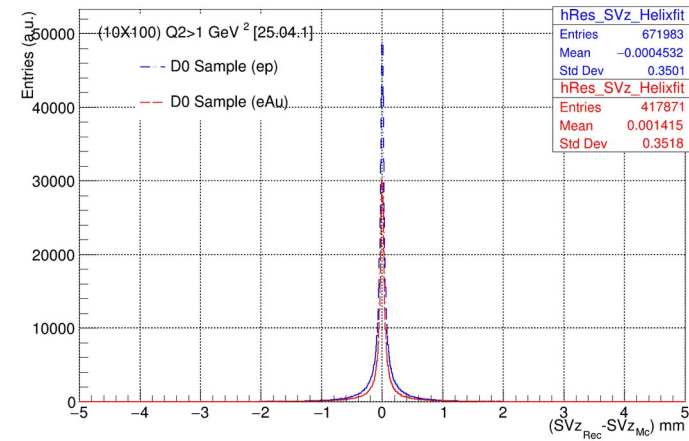
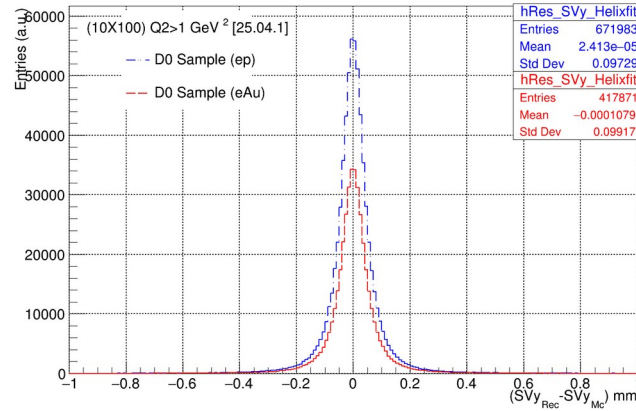
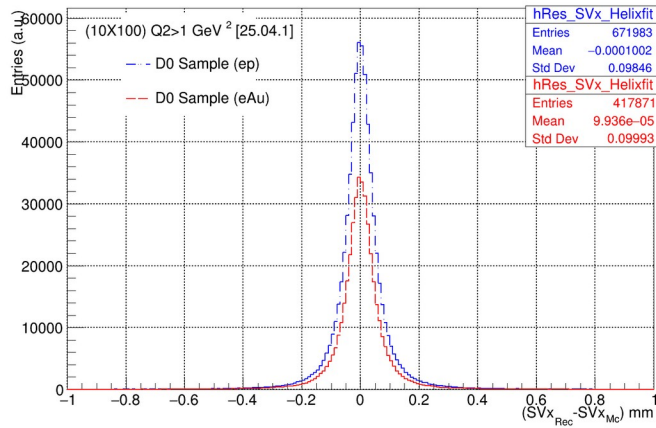
[hipe4ml package for ML](https://doi.org/10.5281/zenodo.5070131)
Ref: <https://doi.org/10.5281/zenodo.5070131>

Secondary Vertex Resolution

Signal pairs (D0 meson)[25.04.1]

ep, eAu: 10 X 100, $Q^2 > 1 \text{ GeV}^2$

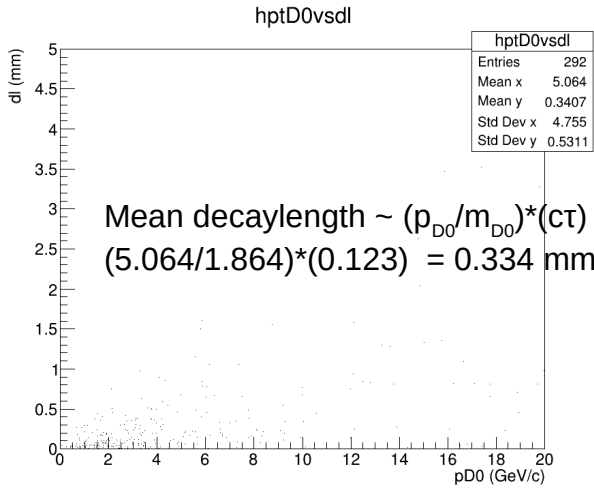
Chi2 Minimization



Secondary Vertex Resolution

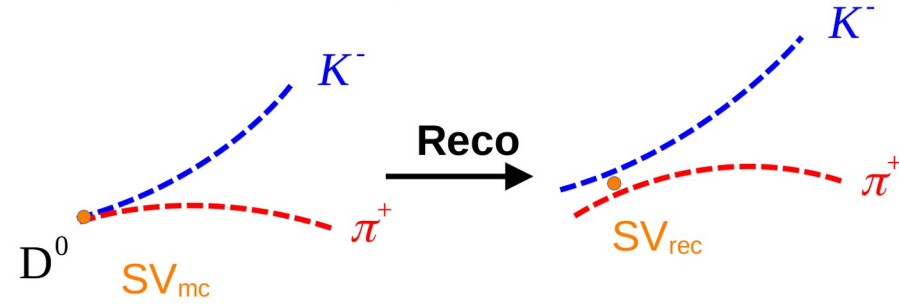
Simulation: 25.10.3 eAu/10x100/q2_1to10000

D^0 is displaced w.r.t. primary vertex



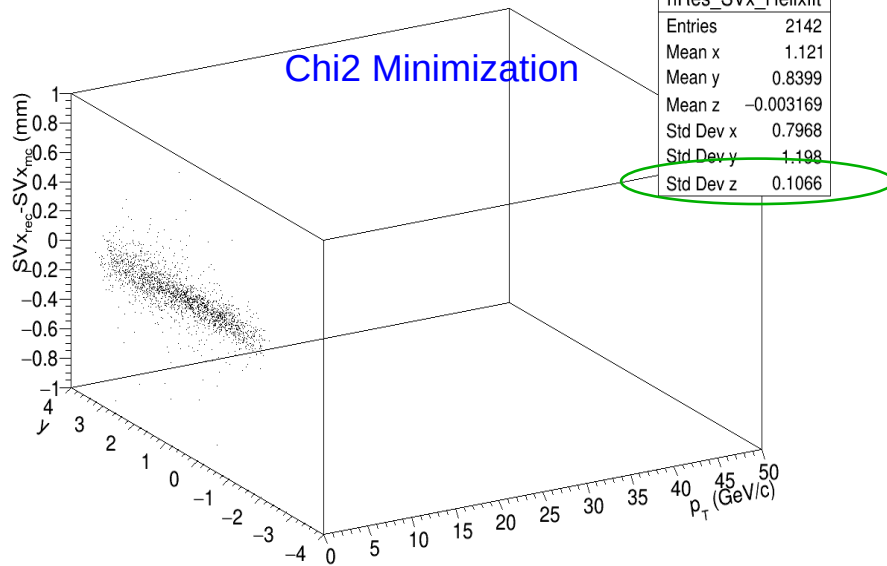
Check decaylength.C

Check and verify the expected decay length (GEANT4)



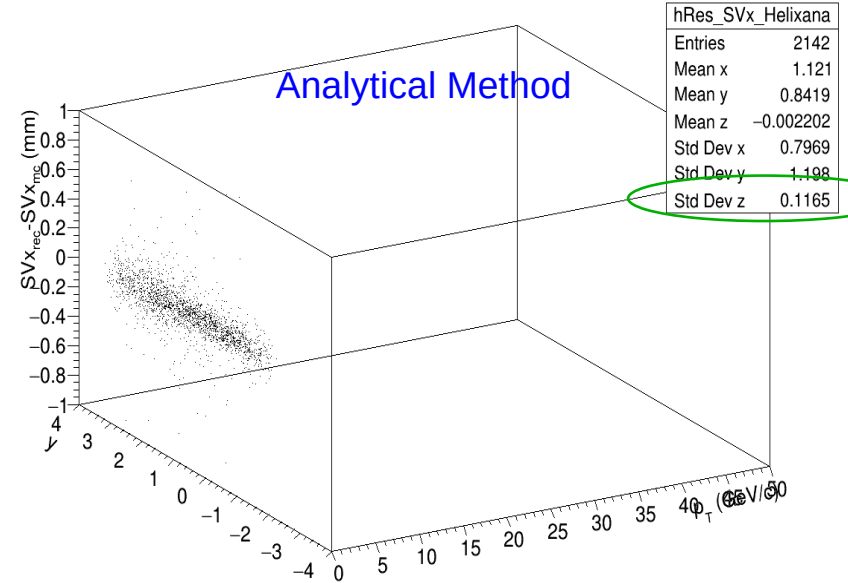
Fit method: Residual of SV (X)

Chi2 Minimization



Analytical method: Residual of SV (X)

Analytical Method



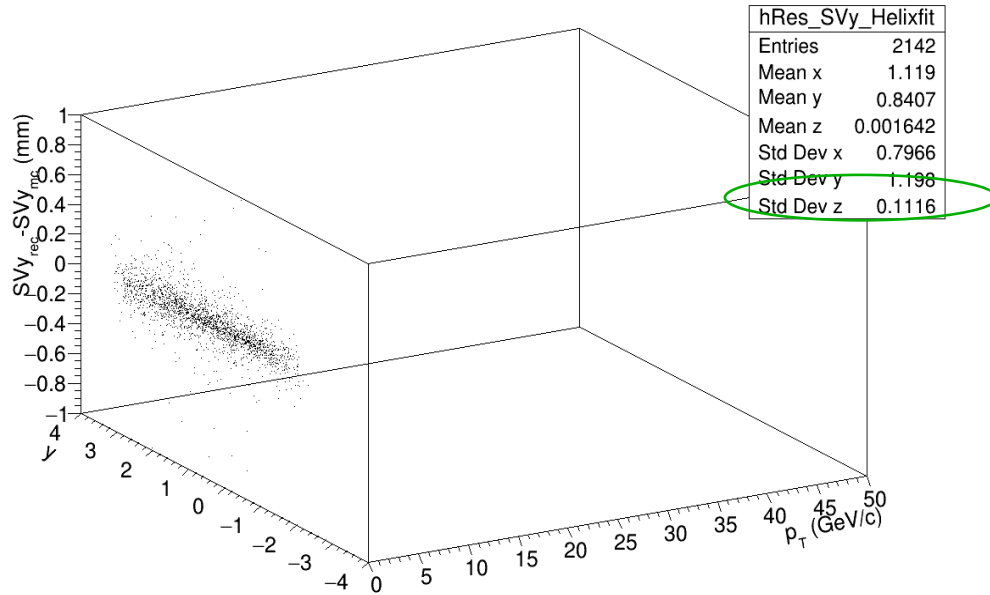
Secondary Vertex Resolution

Simulation: 25.10.3 eAu/10x100/q2_1to10000

D⁰ is displaced w.r.t. primary vertex

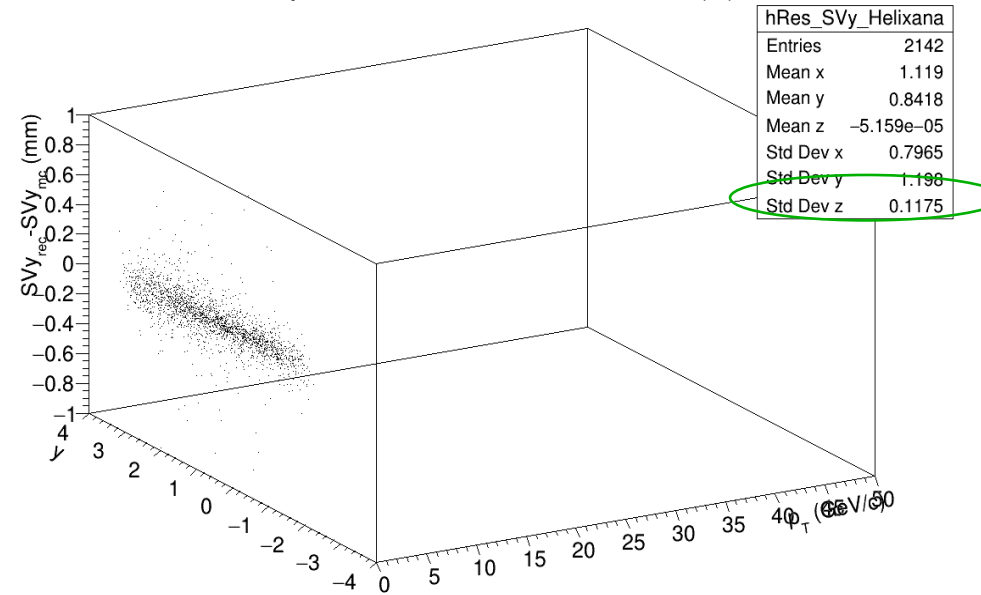
Chi2 Minimization

Fit method: Residual of SV (Y)



Analytical Method

Analytical method: Residual of SV (Y)



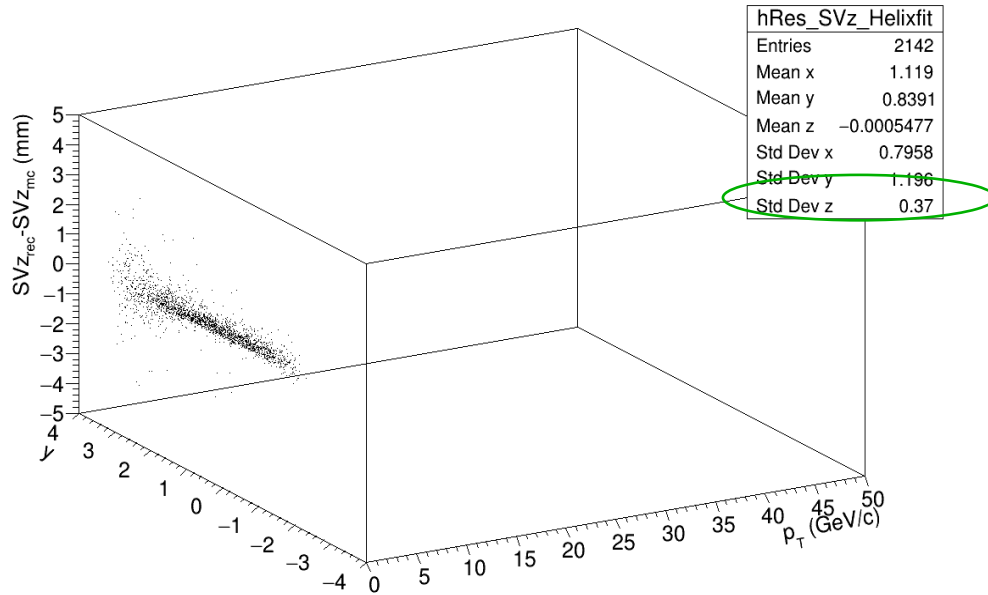
Secondary Vertex Resolution

Simulation: 25.10.3 eAu/10x100/q2_1to10000

D^0 is displaced w.r.t. primary vertex

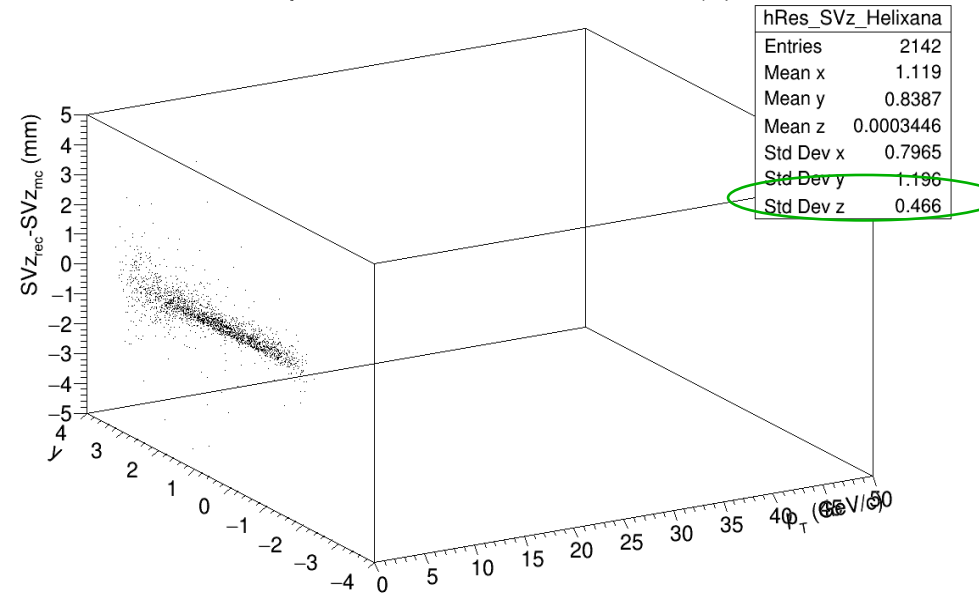
Chi2 Minimization

Fit method: Residual of SV (Z)



Analytical Method

Analytical method: Residual of SV (Z)



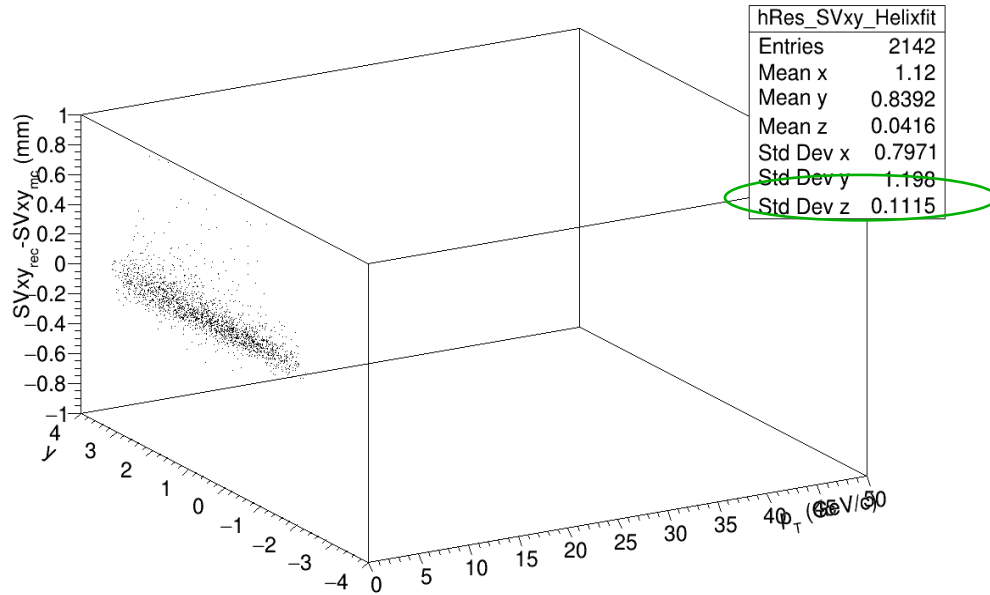
Secondary Vertex Resolution

Simulation: 25.10.3 eAu/10x100/q2_1to10000

D⁰ is displaced w.r.t. primary vertex

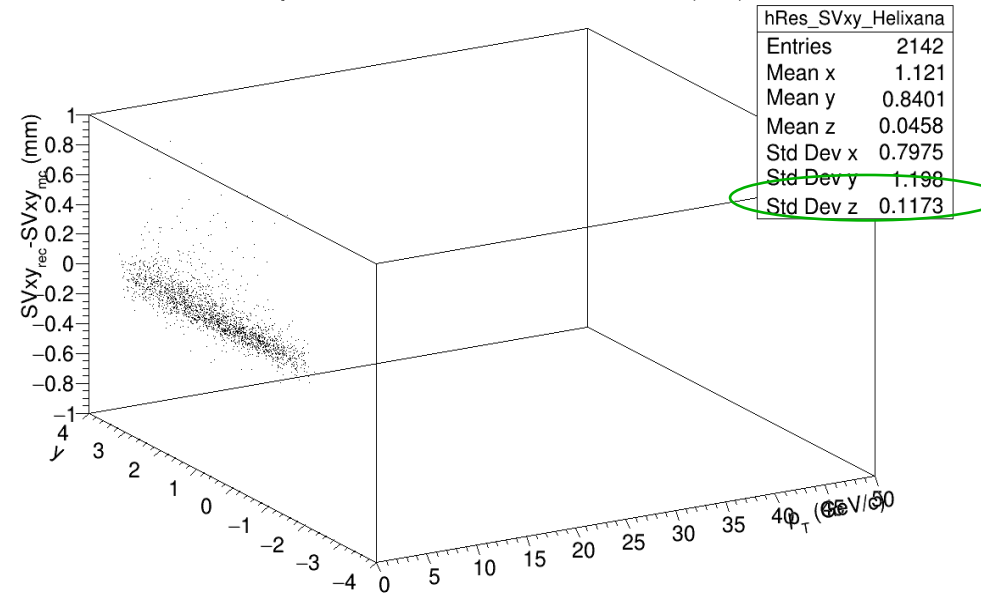
Chi2 Minimization

Fit method: Residual of SV (XY)



Analytical Method

Analytical method: Residual of SV (XY)

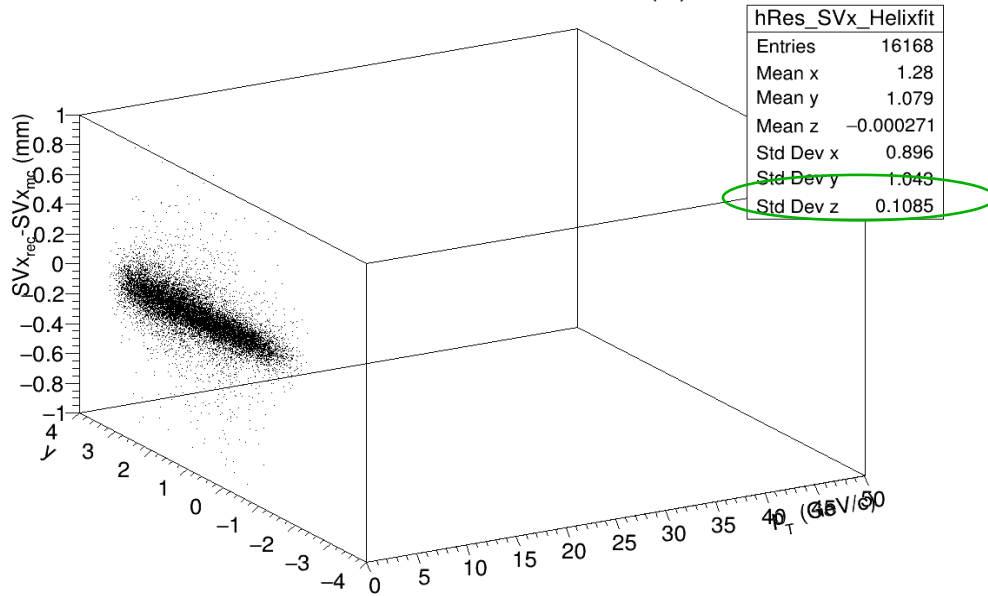


Secondary Vertex Resolution

Simulation: 25.10.3 ep/10x100/q2_1to10000

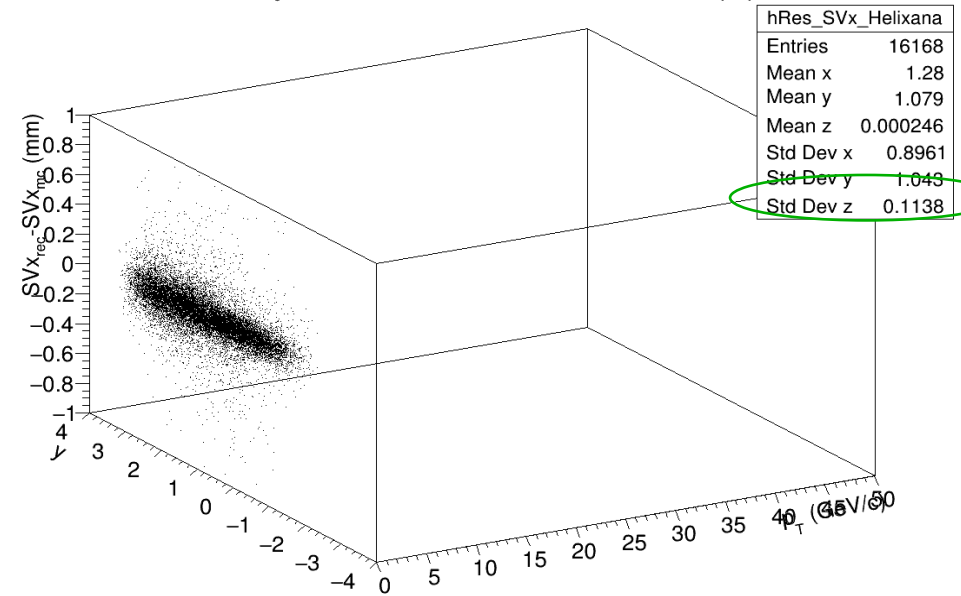
Chi2 Minimization

Fit method: Residual of SV (X)



Analytical Method

Analytical method: Residual of SV (X)

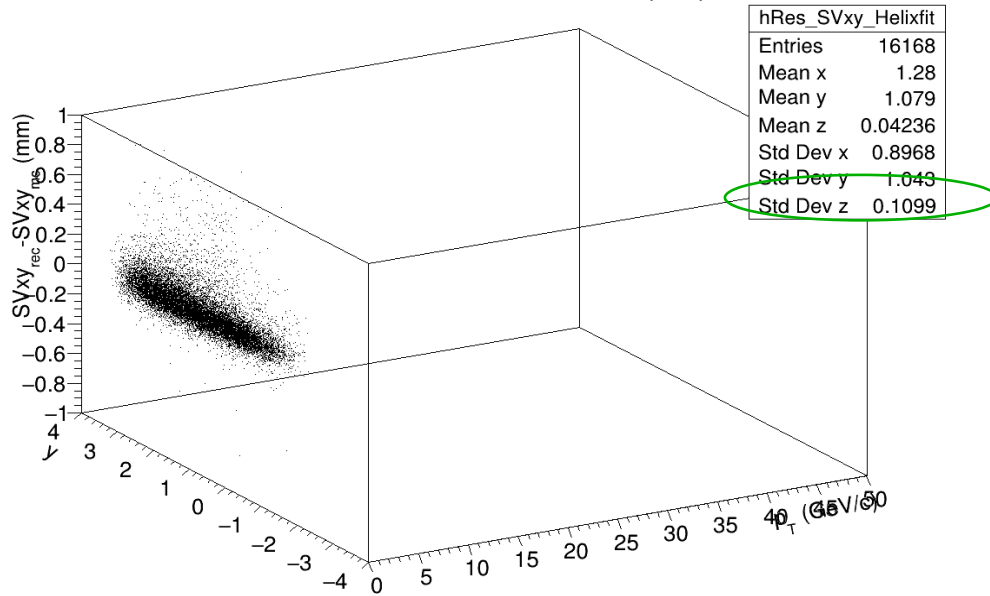


Secondary Vertex Resolution

Simulation: 25.10.3 ep/10x100/q2_1to10000

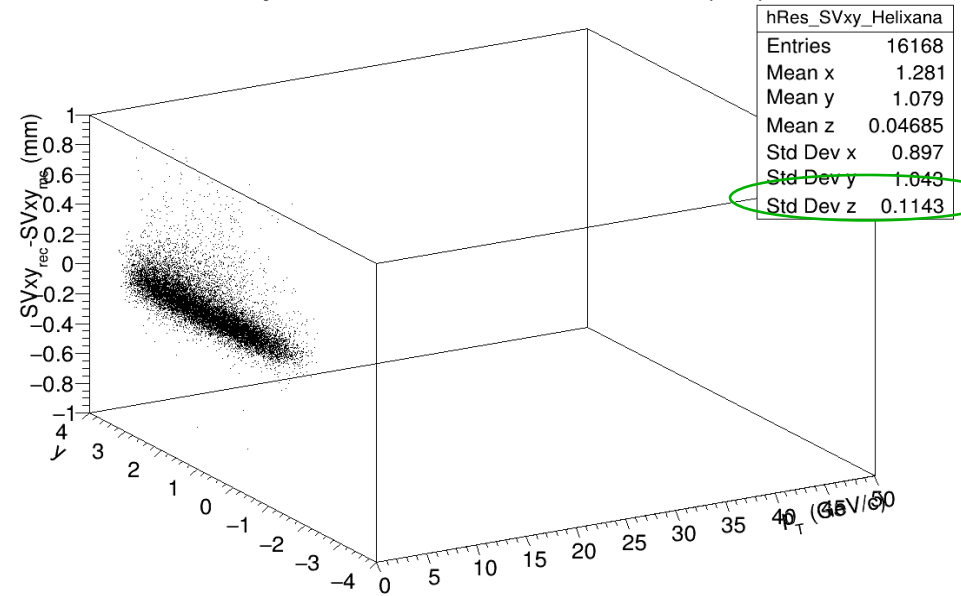
Chi2 Minimization

Fit method: Residual of SV (XY)

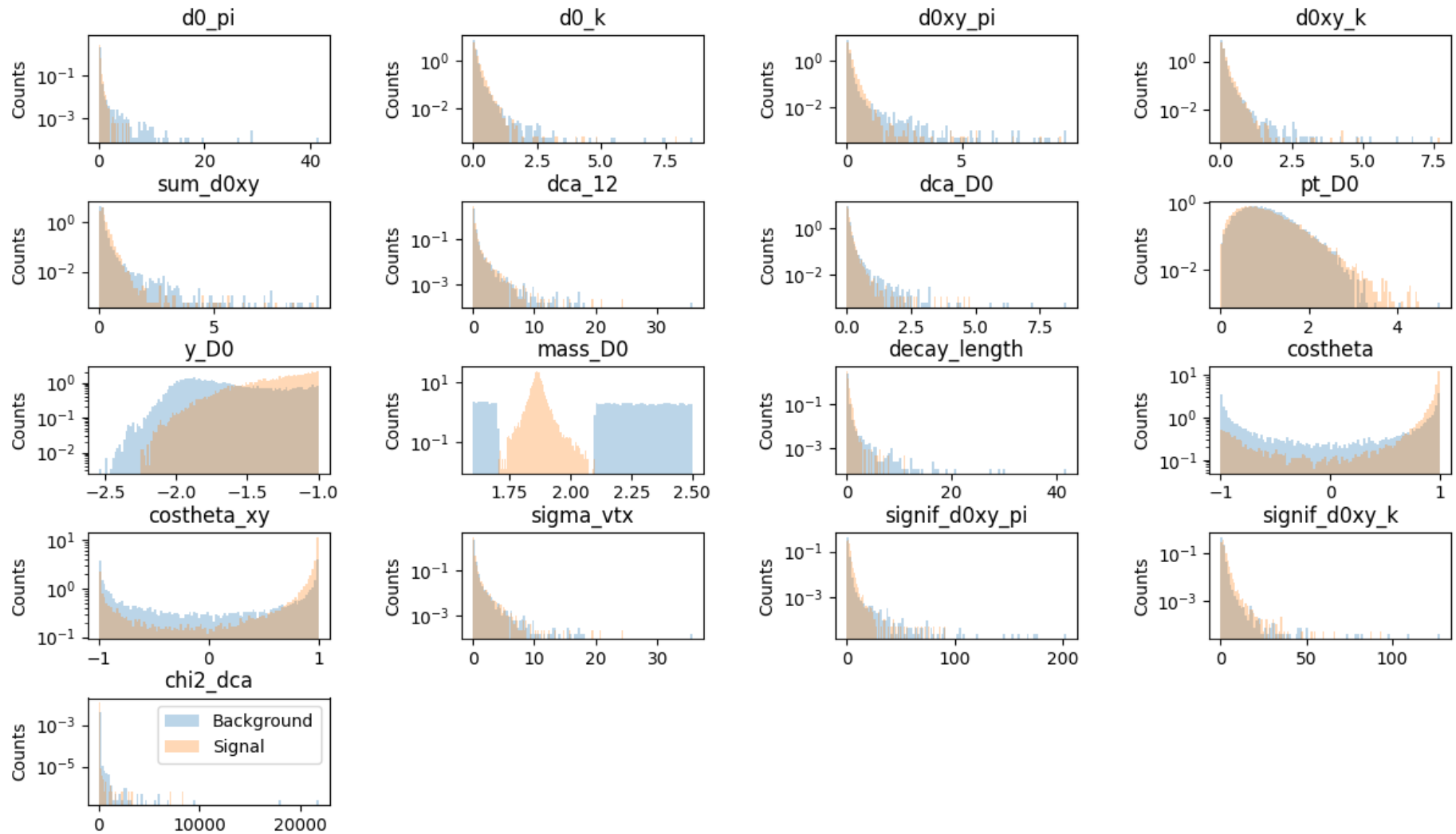


Analytical Method

Analytical method: Residual of SV (XY)

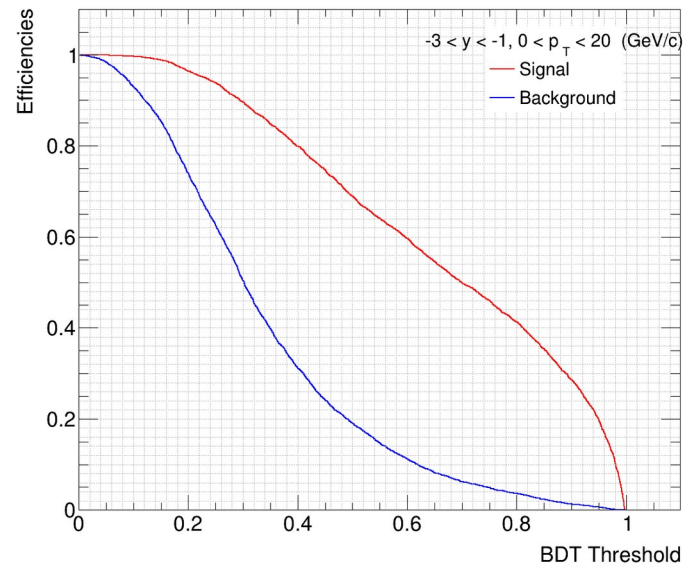
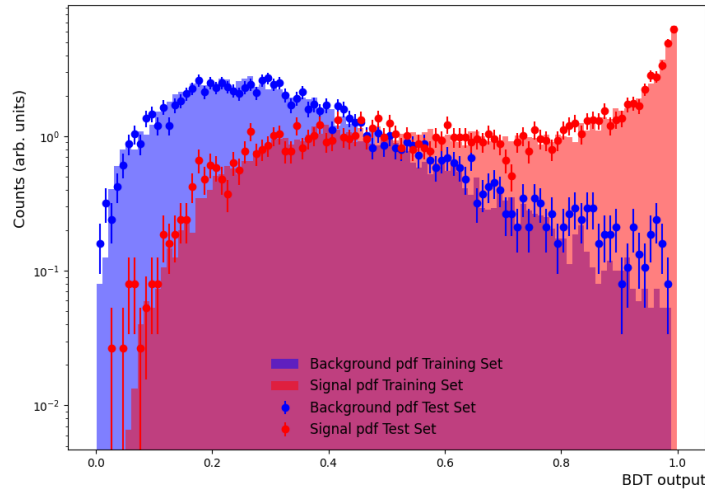


ML Training ($-3 < y < -1$)

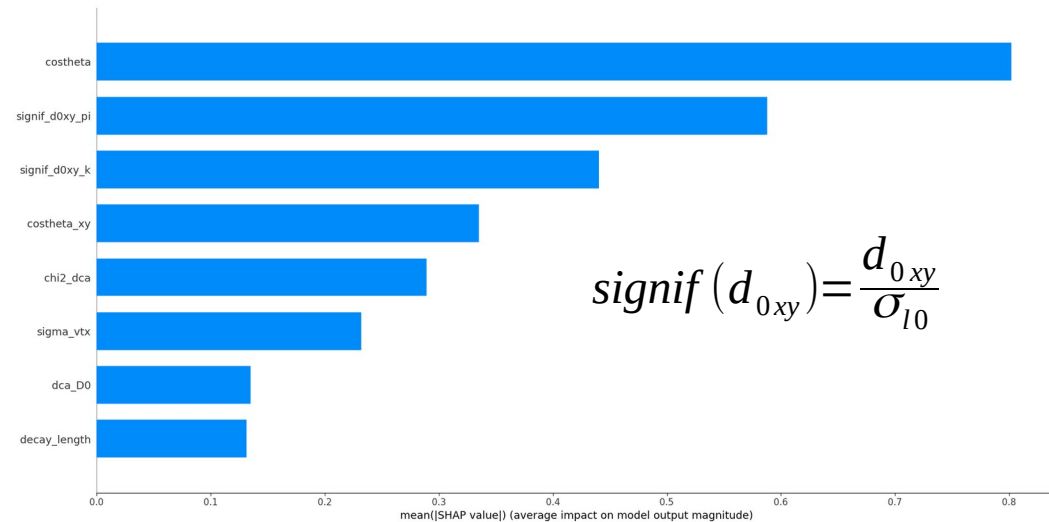
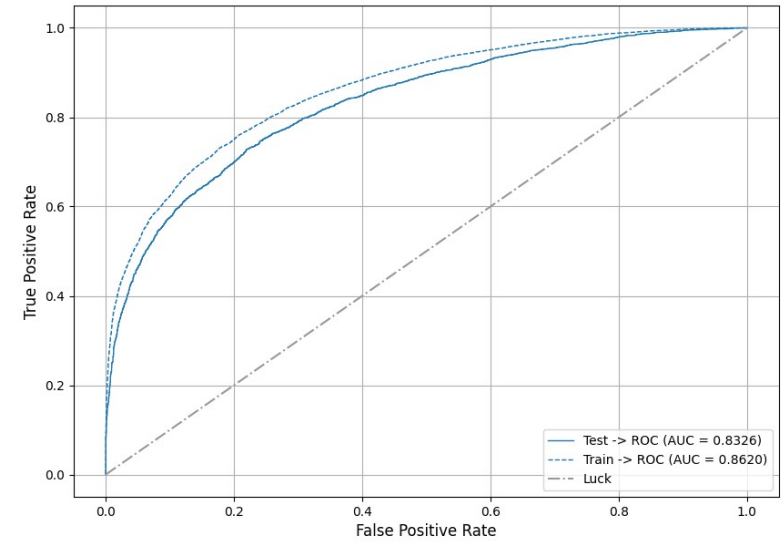


ML Training ($-3 < y < -1$)

Simulation: 25.10.3 eAu/10x100/q2_1to10000

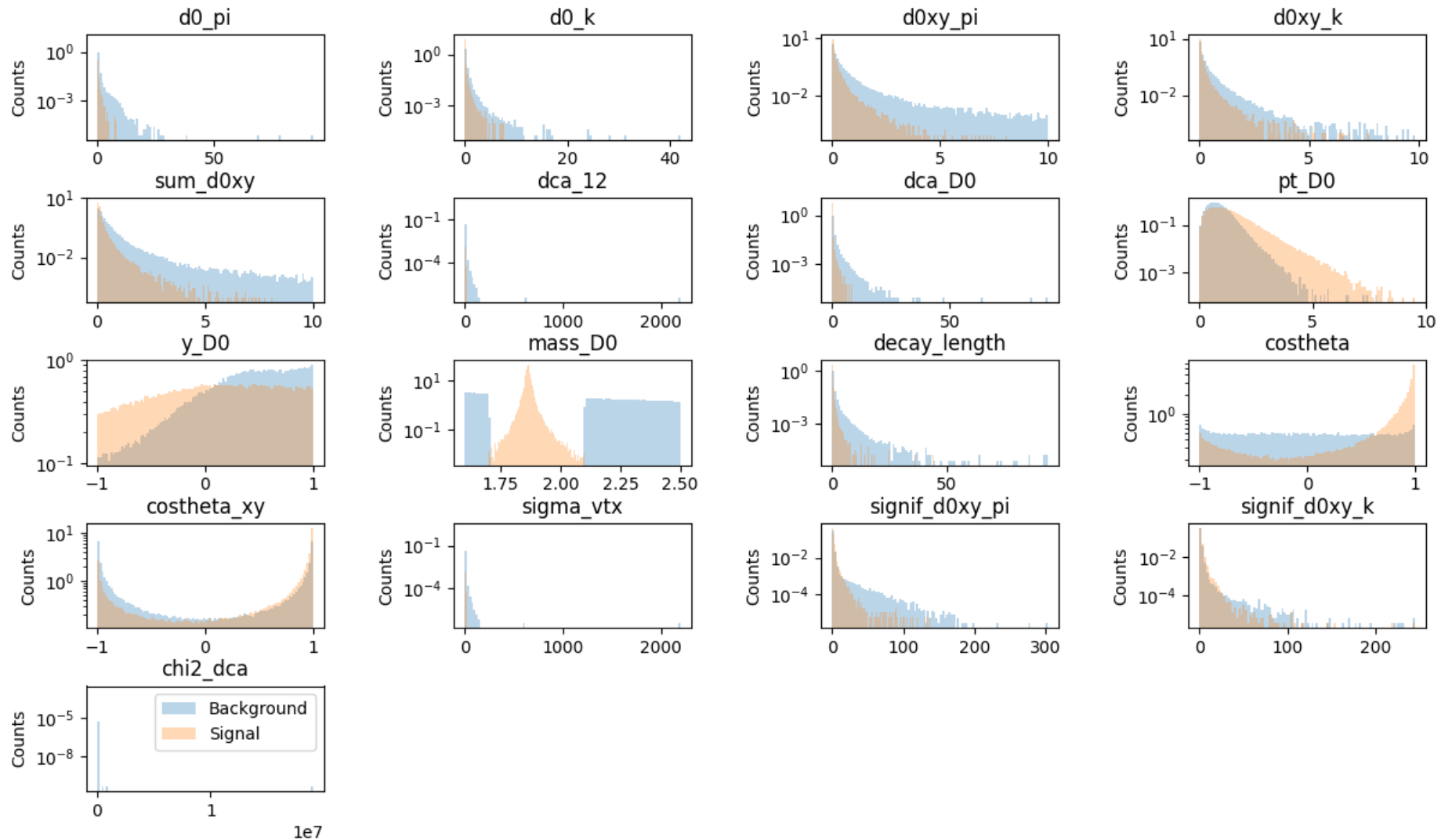


$p_T > 0$ GeV/c



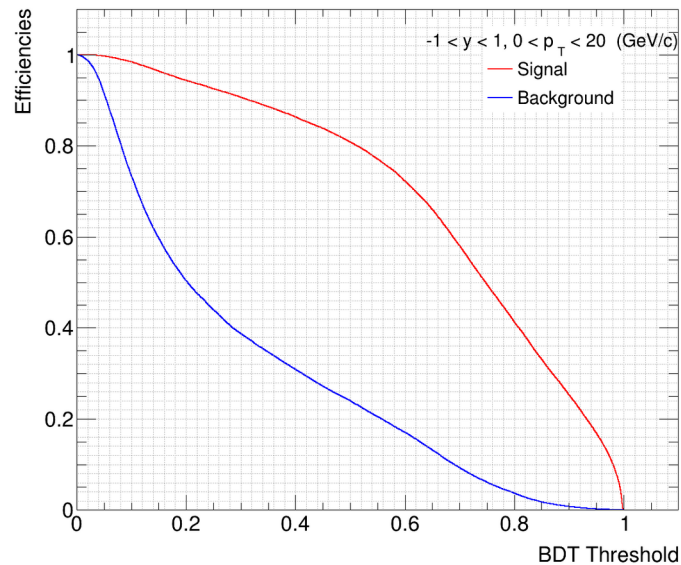
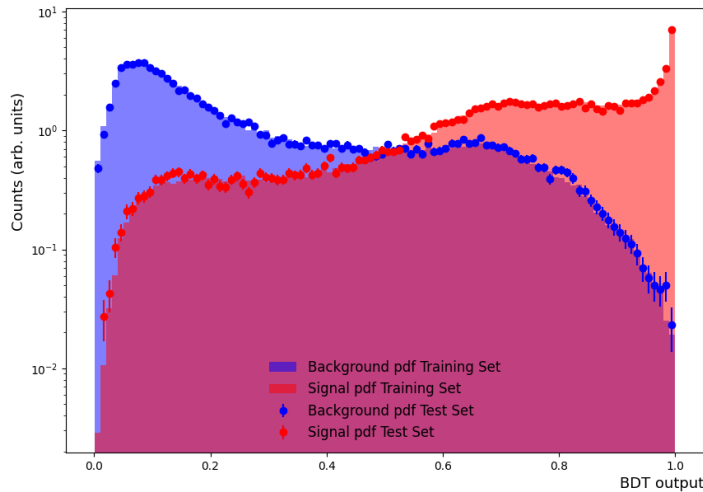
$$\text{signif}(d_{0xy}) = \frac{d_{0xy}}{\sigma_{l0}}$$

ML Training ($-1 < y < 1$)

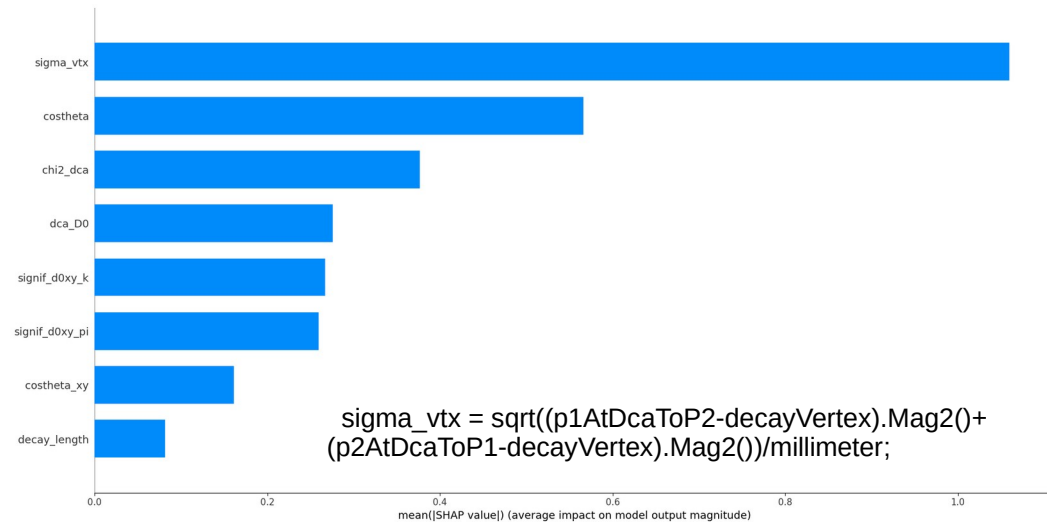
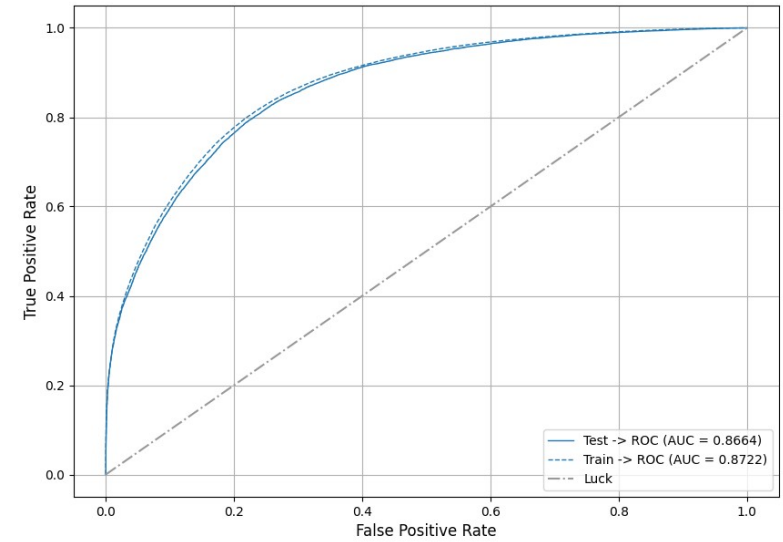


ML Training ($-1 < y < 1$)

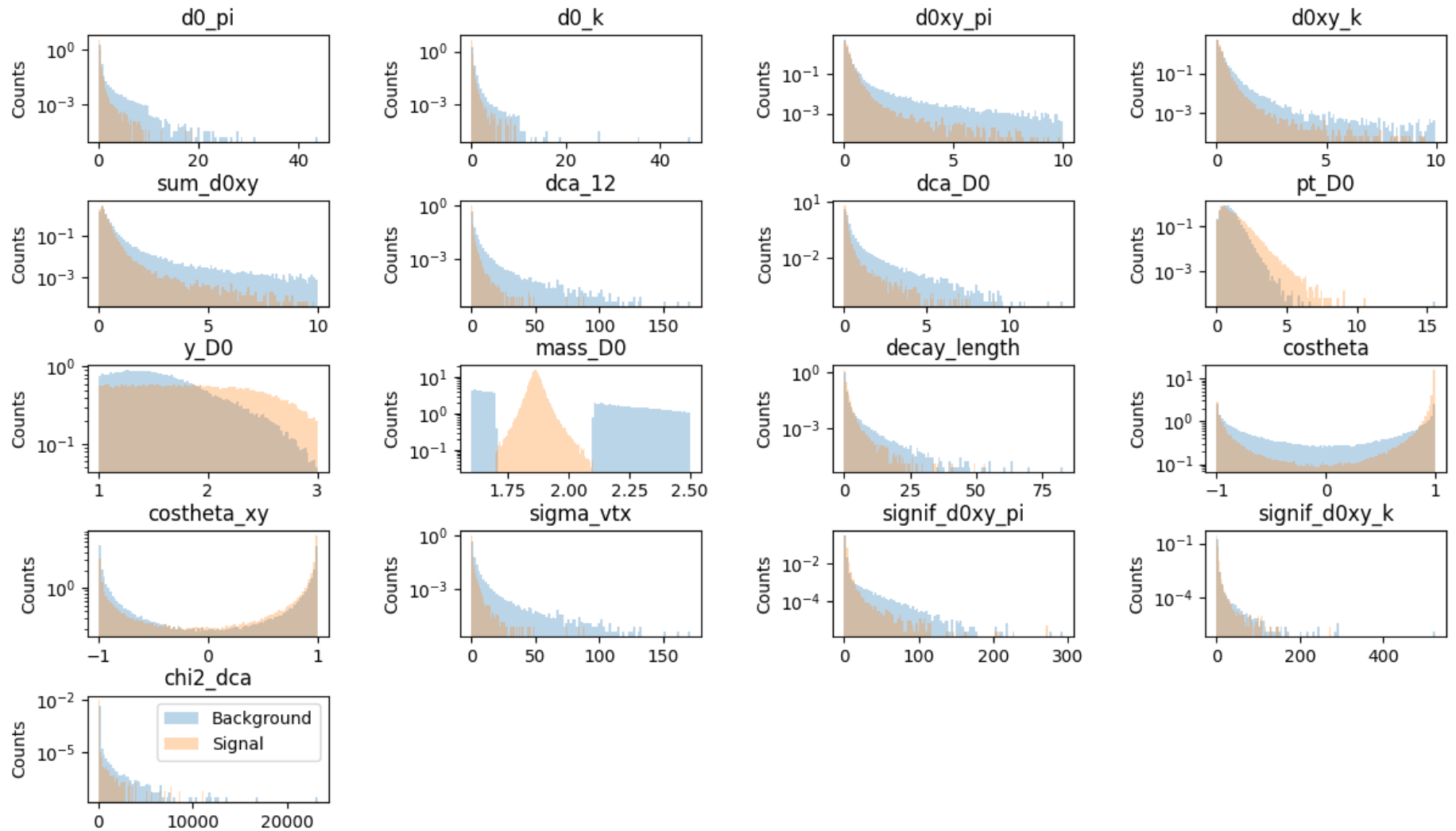
Simulation: 25.10.3 eAu/10x100/q2_1to10000



$p_T > 0$ GeV/c

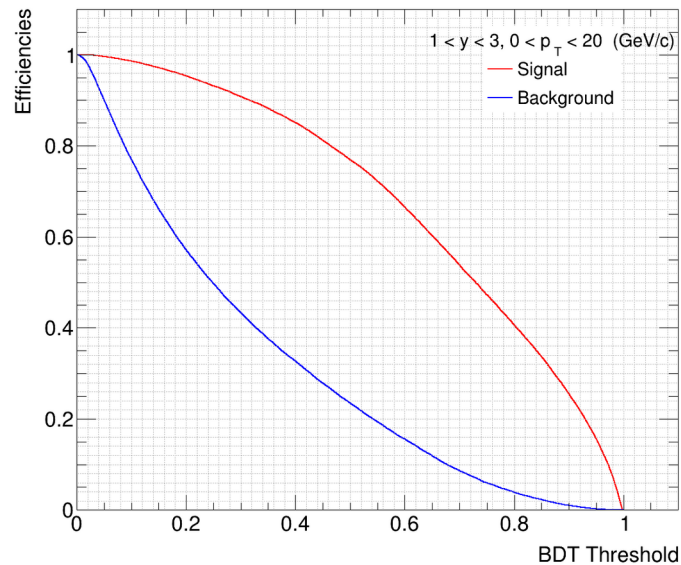
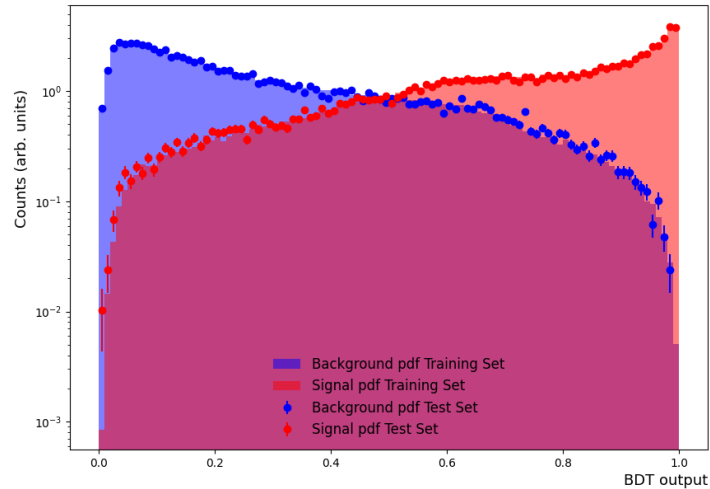


ML Training ($1 < y < 3$)

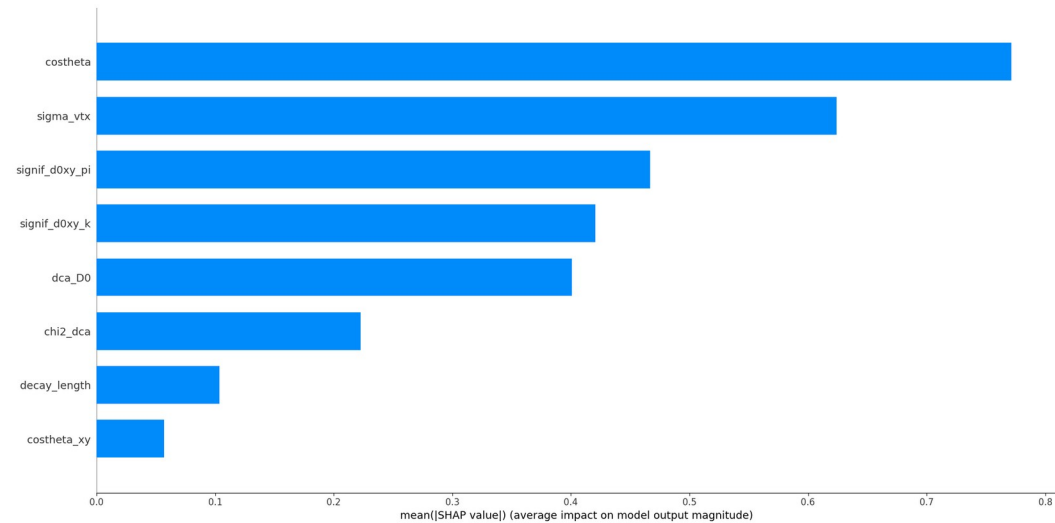
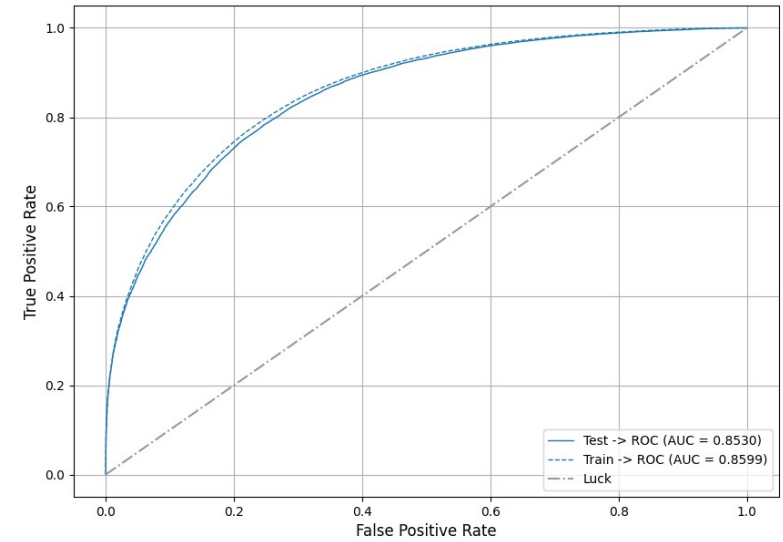


ML Training ($1 < y < 3$)

Simulation: 25.10.3 eAu/10x100/q2_1to10000



$p_T > 0$ GeV/c



Invariant Mass Plots

