D^0-in-jet FF

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e+p 10x130, e+Au 10x100: 1 fb^{-1} for R_{eAu} vs z_{proj}

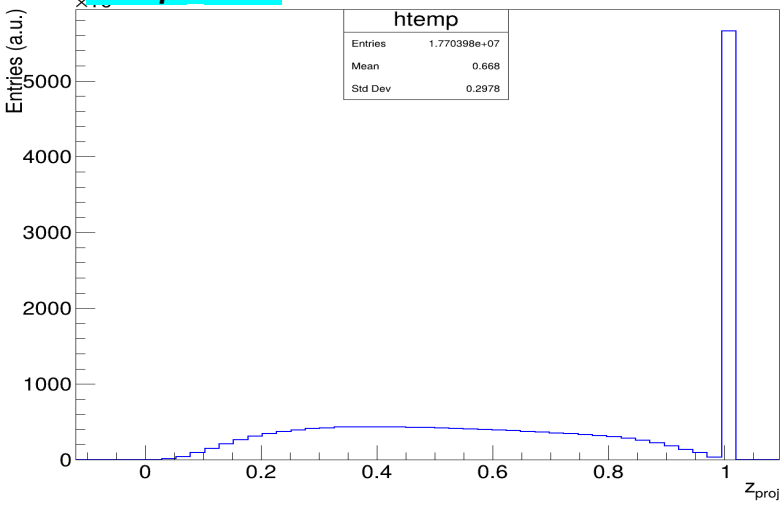
Fragmentation Variable (e+p)

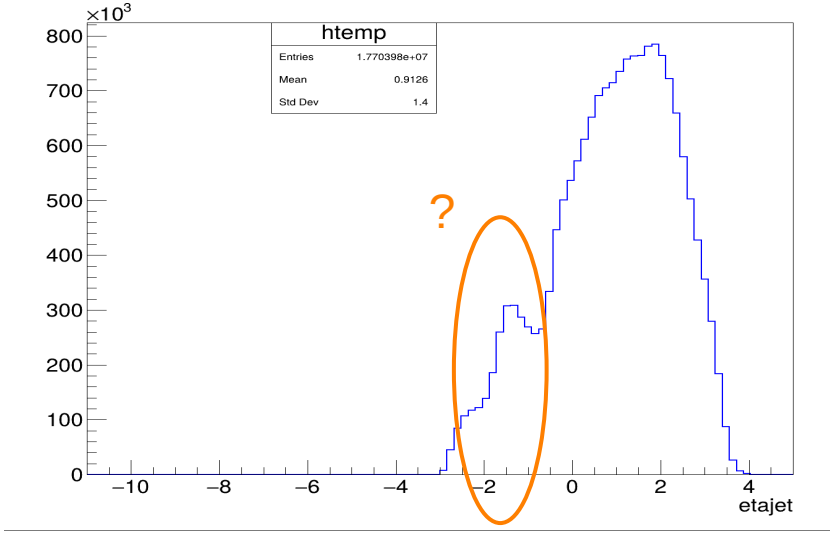
Bkg pairs from DIS Sample

e+p, 10x130, **Biased DIS sample**

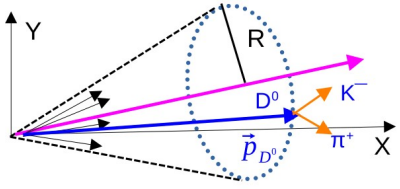
No p_T cut

z





Anti-k_T, R = 1,

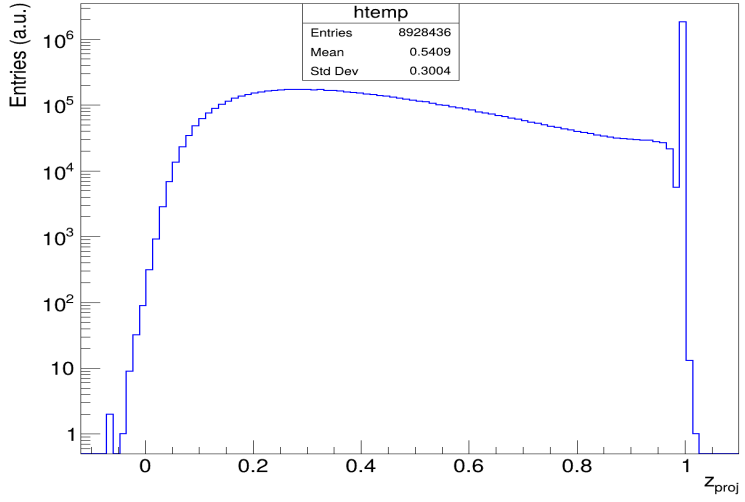


$$z = z_{proj} = \frac{\vec{p}_{D0.}\vec{p}_{jet}}{p^2_{jet}}$$

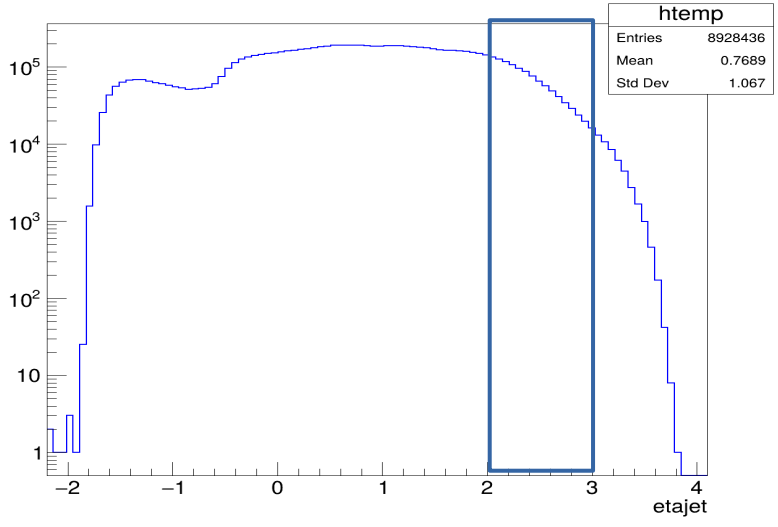
Removed scattered electron already from jet clustering

p_T > 3 GeV/c

z {pTjet>3}



etajet {pTjet>3}



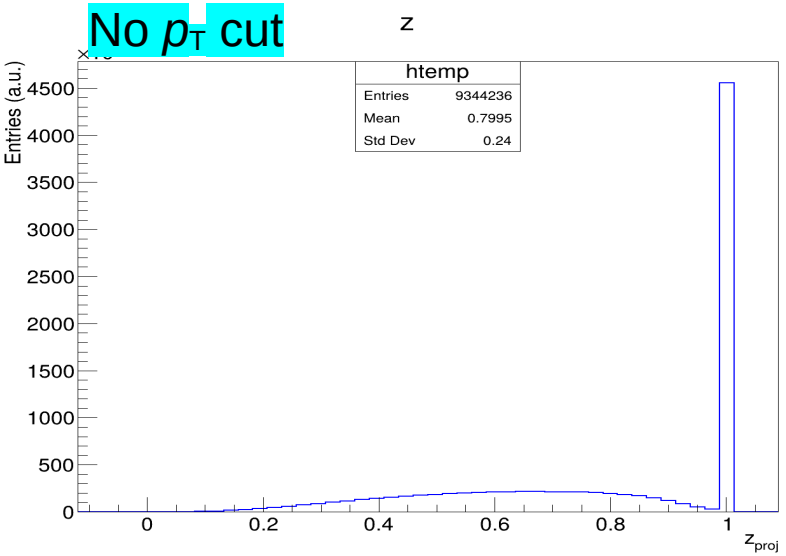
Fragmentation Variable (e+Au)

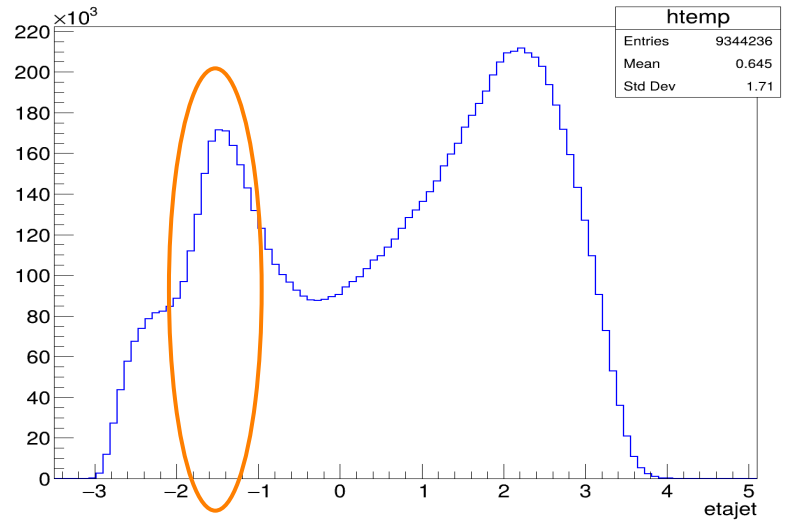
Bkg pairs from DIS Sample

e+Au, 10x100, **Biased DIS sample**

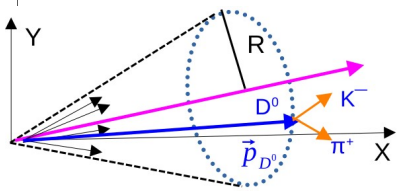
No p_T cut

$p_T > 3$ GeV/c



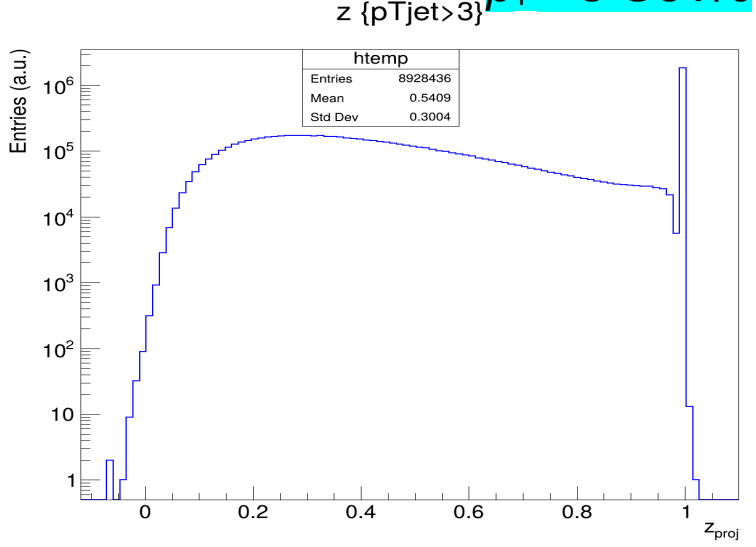


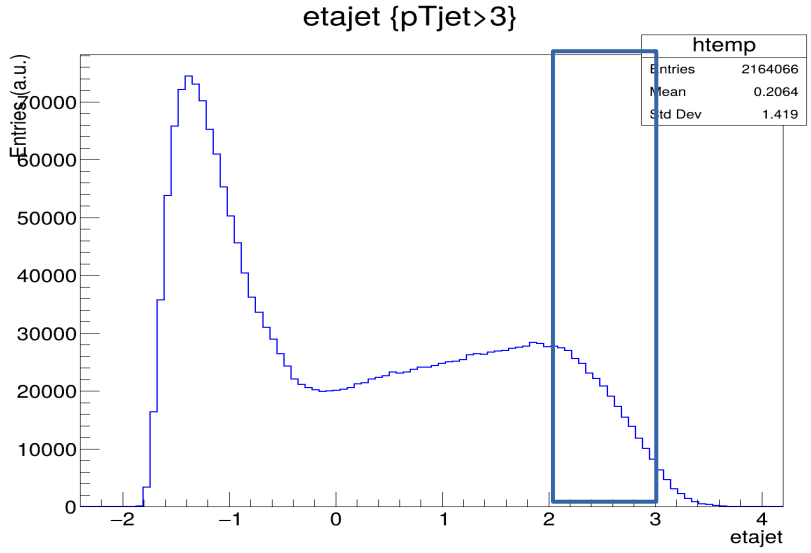
Anti-k_T, R = 1,



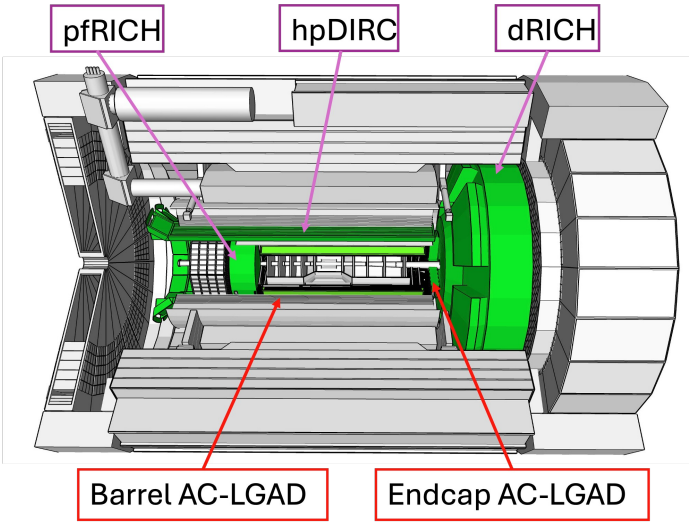
$$z = z_{proj} = \frac{\vec{p}_{D0.}\vec{p}_{jet}}{p^2_{jet}}$$

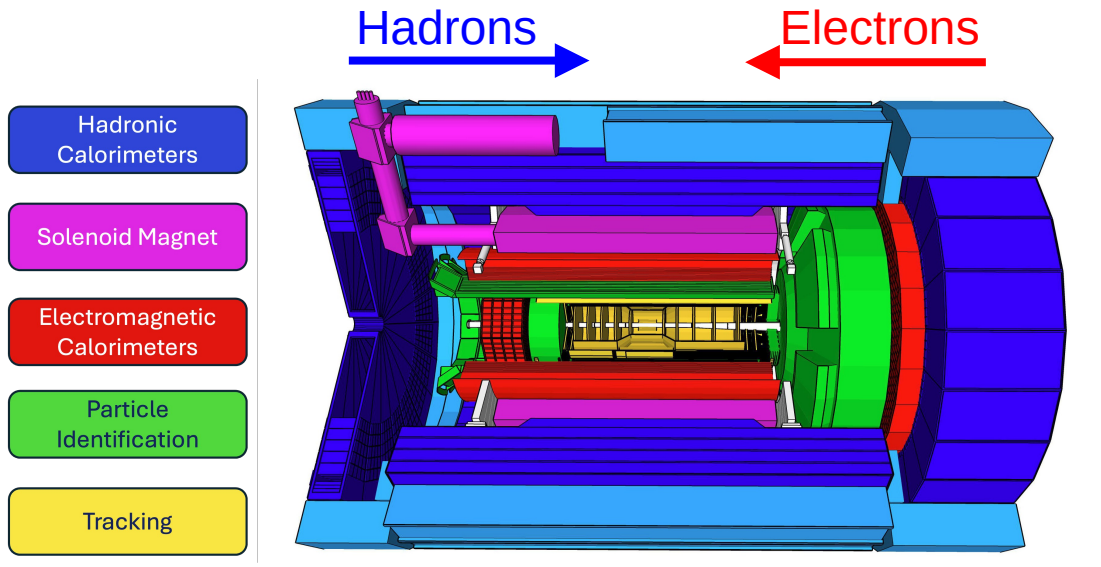
Removed scattered electron already from jet clustering

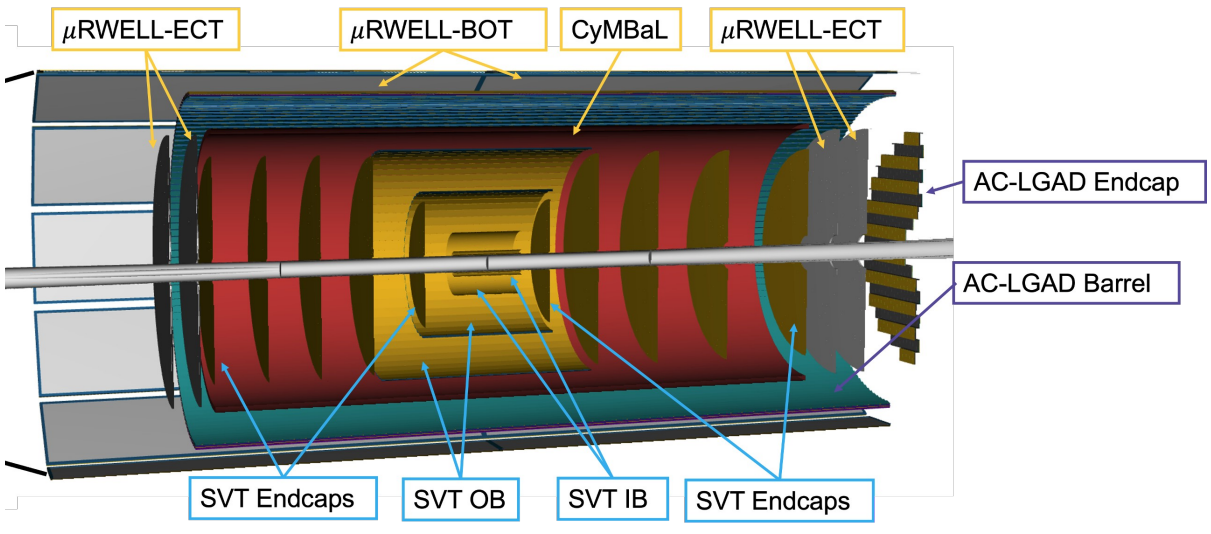




The ePIC Detector







In the forward region:

Endcap TOF+ dRICH PID

In the backward region:

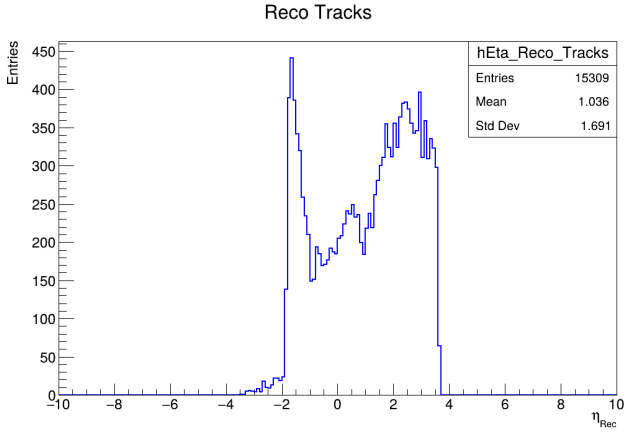
pfRICH (PID)

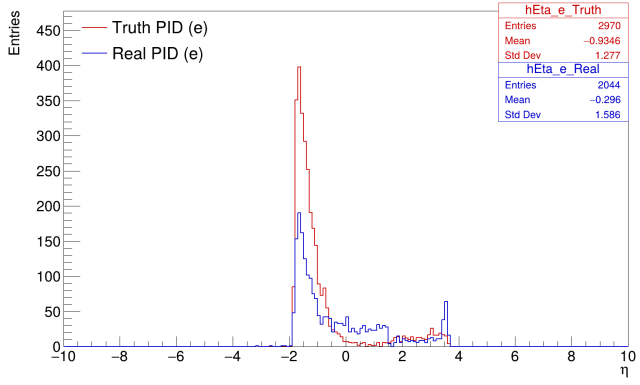
Scattered electron with high-momentum

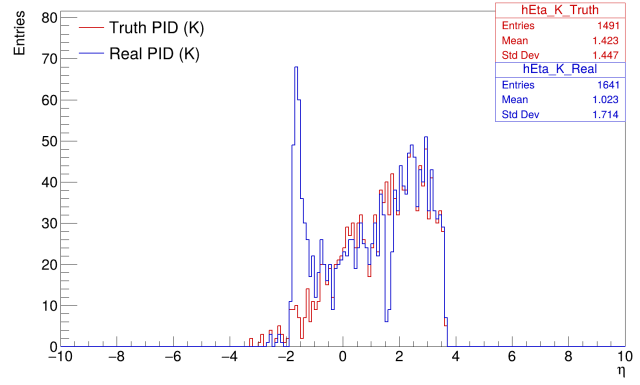
Reconstructed Particles (η)

e+Au (DIS Sample): April campaign (few files)

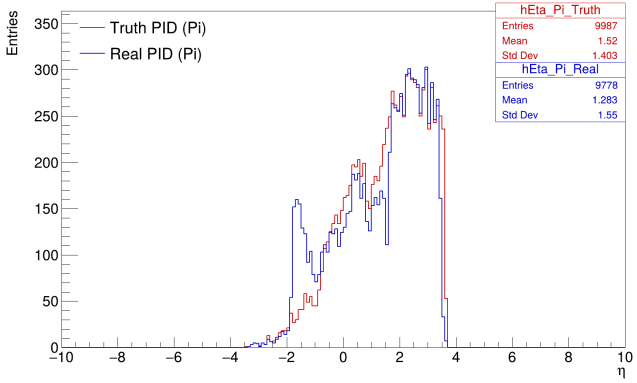
Using Real and Truth PID

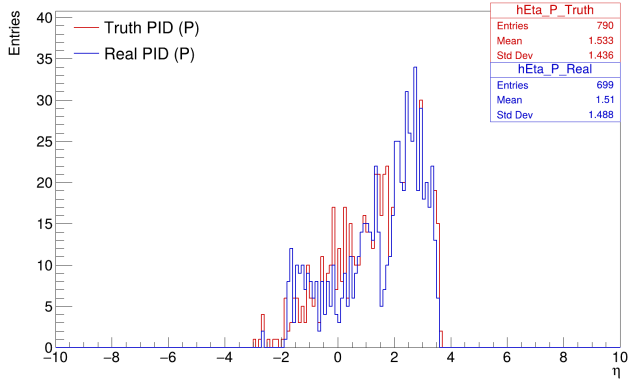






In the backward region, PID is performed using the pfRICH detector, which provides good particle separation at higher momenta. Therefore, some contamination is expected. This will be better handled once the full PID reconstruction machinery is included (**Brian**)





- The peak at negative η originates from electrons that are misidentified as kaons, pions, and protons
- The scattered electrons are removed from the jet clustering using MC information
- While considering the bkg pair for D^0 meson with real PID, these electrons enters in the pairs as kaons or pions
- **Further remove these electrons using truth information from the bkg pair**

Summary and Future Plan

- Origin of peak at backward eta is understood
- Next to remove the scattered electrons from the D^0 background pairs looking at the MC information
- Will use this strategy for the NIMA special issue!

Thank you for your attention!