# RGA Common tools input: Fiducial cuts and momentum corrections Progress report

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Common tools: group effort

Idea of common tools is to facilitate analysis note approval process by reviewing separately common tools such as fiducial cuts and momentum corrections

Not all physics analysis have the same requirements

Status report of progress, welcome comments and feedback





# **Fiducial Cuts**





# ECal fiducial cuts principle



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# Procedure to find ECal edges







#### Illustrations in S1 and S4





# Sampling fraction near edges









# Efficiency variations vs cut





## Fiducial cuts procedure results



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# DC fiducial cuts results



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class

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# Momentum Corrections







# FD angles from elastic





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# Cross check electron FD angles



#### Momentum correction procedure



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# RGA 10.6 GeV e mom DC R2 map



# RGA 10.6 GeV e mom DC R2 fit



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## RGK 6.5 GeV e mom DC R2 map



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# RGK 6.5 GeV e mom DC R2 fit



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### Momentum corrections to DIS W



Electron momentum corrections are small 1 to 2% or less

 $\begin{array}{l} \frac{\Delta p}{p} \propto \frac{\Delta B}{B} \implies \text{Map correction to DC R2 coordinates} \\ \text{RGA and RGK momentum corrections seem anti-correlated} \\ \text{In- vs Out- bending?} \end{array}$ 

Need to cross check results with other reactions  $(ep 
ightarrow e\pi^+ X, \cdots)$ 





# Photon Energy Correction







#### Photon energy correction step 1



#### Both photons have the same energy





#### Photon energy correction step 2

One photon corrected from step 1 range



SI IM 0.22 + E, e O24 GeV



S1 IM 5.00 < E. < 6.00 GeV

0.1 0.15 0.2

281.5 / 61

4.6826-30

501.4±8.6

51.88+2.41

160.9±11.7

0.0154 = 0.0000

0.25 0.1 M\_ (GeV)









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200

0.05





# Photon sampling fraction results





Photon sampling fraction from step 1 results Photon sampling fraction from step 2 results

 $\implies \text{question on step 1 results around } E_{\gamma} > 3 \text{ GeV } \theta_{\gamma\gamma} \approx 5^{\circ} \implies \Delta_{\gamma\gamma} \approx 60 \text{ cm}$ Also seen in simulations, needs to be updated Energy sharing for nearby clusters in deeper layers?



# Position dependence of the $\pi^0$ mass



No clear correlation between electron and photon sampling fractions Systematic limitation to this correction approach





1	Electrons in the Forward Detectors	1
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