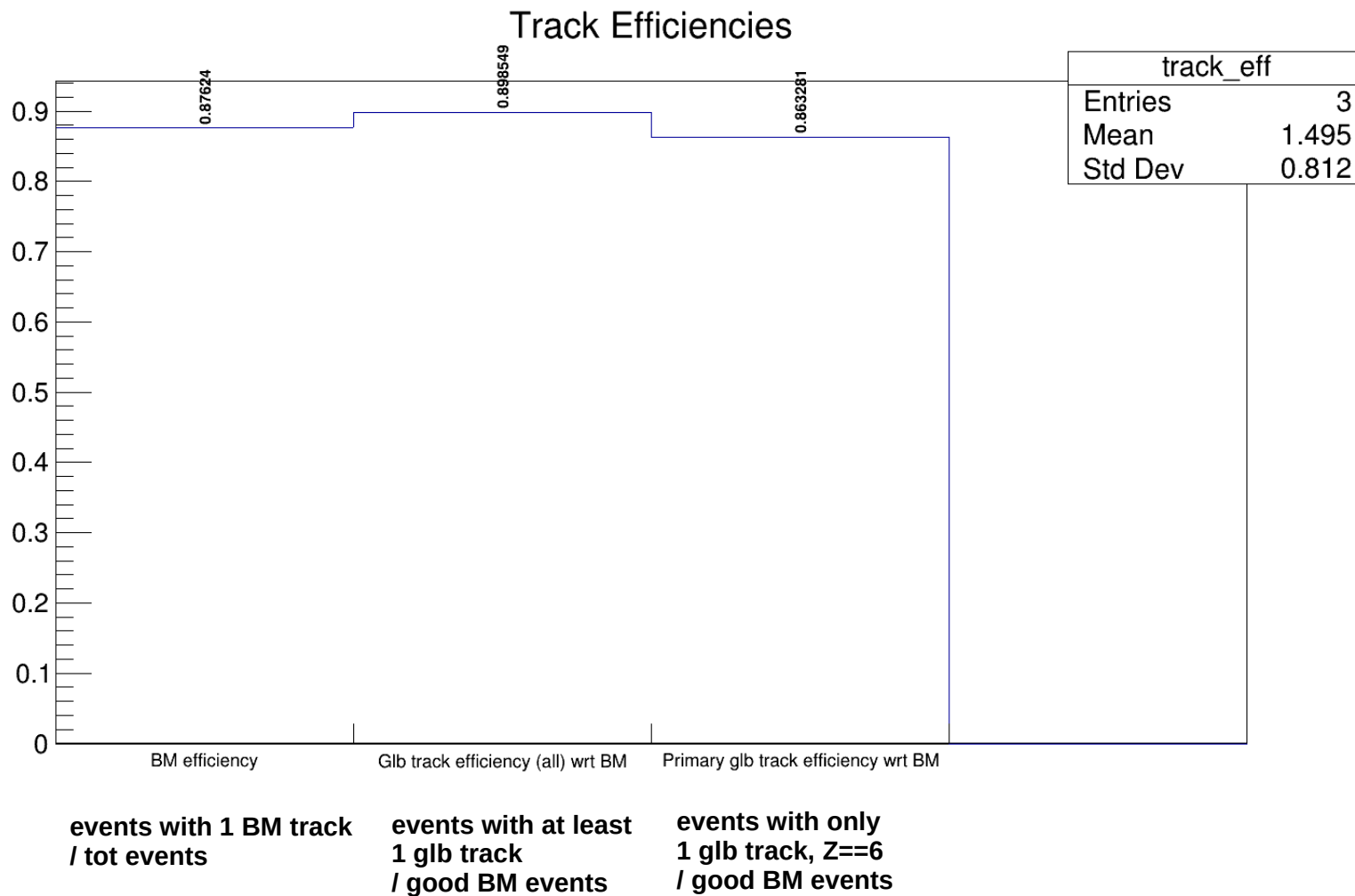




Global Tracking Analysis Updates

Giacomo Ubaldi

Efficiencies



Efficiencies

CNAO24

	File	BM efficiency [%]	Glb Track Eff [%]	Glb Track Z6 Eff[%]
<i>no TG</i> <i>no B</i>	Decoded_CNAO2024_6747_TWBarCalib_QualityPlot.root	0.773	0.885	0.869
	Decoded_CNAO2024_6748_TWBarCalib_QualityPlot.root	0.775	0.889	0.874
<i>no TG</i> <i>no B</i>	Decoded_CNAO2024_6923_TWBarCalib_QualityPlot.root	0.863	0.873	0.856
	Decoded_CNAO2024_6924_TWBarCalib_QualityPlot.root	0.856	0.887	0.869
	Decoded_CNAO2024_6925_TWBarCalib_QualityPlot.root	0.853	0.888	0.873
<i>TG B</i>	Decoded_CNAO2024_7072_DataReruction.root	0.880	0.862	0.826
	Decoded_CNAO2024_7076_DataReduction.root	0.872	0.857	0.823
	Decoded_CNAO2024_7077_DataReruction.root	0.870	0.859	0.826
<i>TG</i> <i>no B</i>	Decoded_CNAO2024_7074_QualityPlot.root	0.877	0.899	0.863
	Decoded_CNAO2024_7075_QualityPlot.root	0.874	0.898	0.864
<i>TG B</i>	Decode_CNAO24PS_ MC_QualityPlot.root VT MSD TW	0.947	0.899	0.866

	File	BM efficiency [%]	Glb Track Eff [%]	Glb Track Z6 Eff[%]
<i>no TG</i>	Decoded_CNAO2022_5465_TWBarCalib_QualityPlot.root	0.891	0.826	0.810
	Decoded_CNAO2022_5466_TWBarCalib_QualityPlot.root	0.893	0.829	0.814
	Decoded_CNAO2022_5467_TWBarCalib_QualityPlot.root	0.892	0.832	0.816
<i>no TG</i>	Decoded_CNAO2022_5504_TWBarCalib_QualityPlot.root	0.824	0.539	0.485
<i>TG</i>	Decoded_200_DataReduction_QualityPlots_E5.root 200 MC TG full setup	0.996	0.976	0.936
<i>no TG</i>	Decoded_202_QualityPLot_E5.root 202 MC NO TG full setup	0.996	0.982	0.968

MC: Cross Section Closure Test CNAO22PS_MC

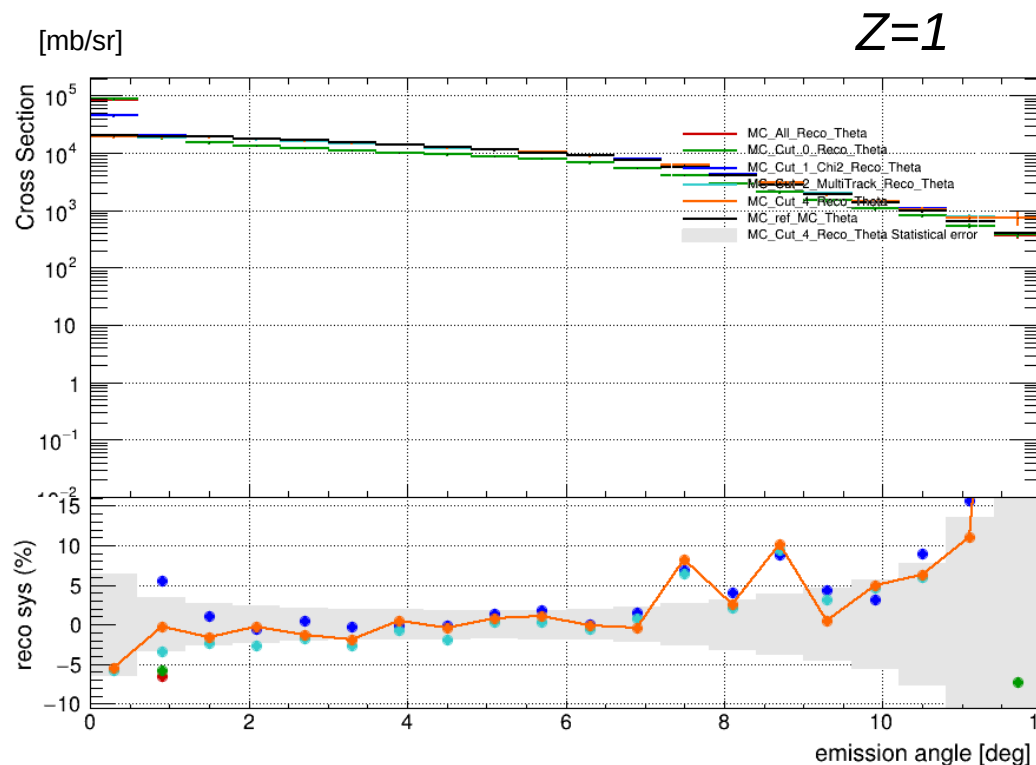
Cross Section closure test

$$\frac{d\sigma}{d\theta}(Z, \theta) = \frac{Y(Z, \theta)}{N_{beam} N_{target} \Omega_{\theta} \epsilon(Z, \theta)}$$

- Comparison of the Reco cross sections with the MC reference one

$$\text{ratio plot} = \frac{\sigma_{reco} - \sigma_{MC}}{\sigma_{MC}}$$

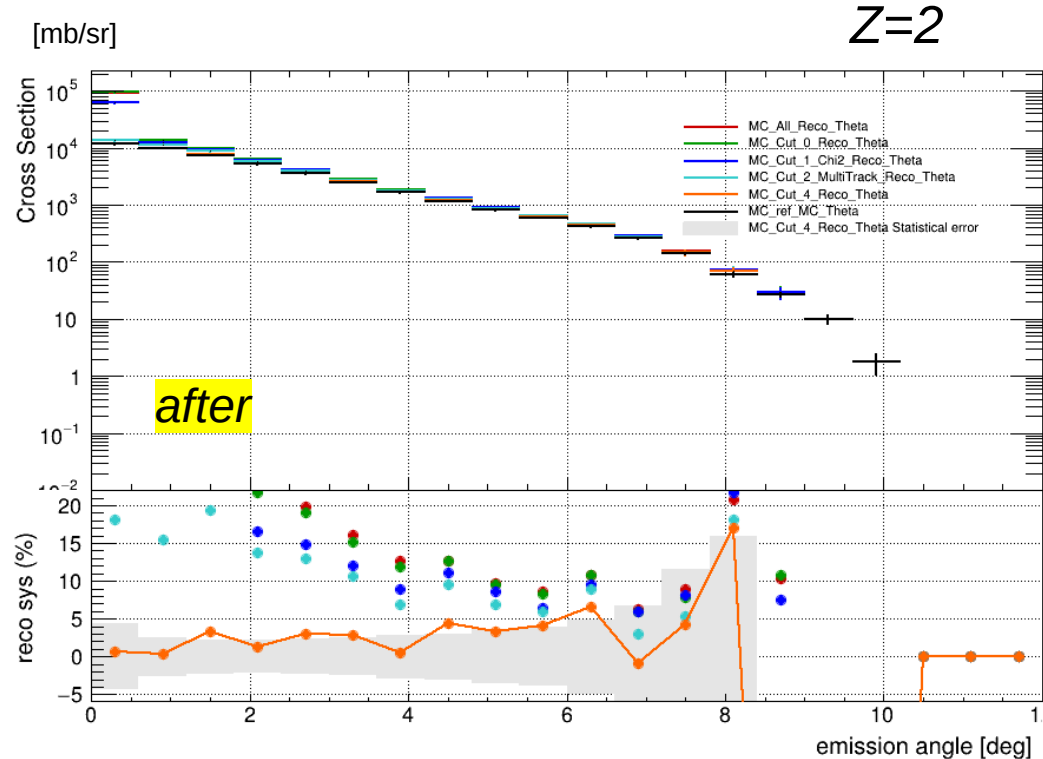
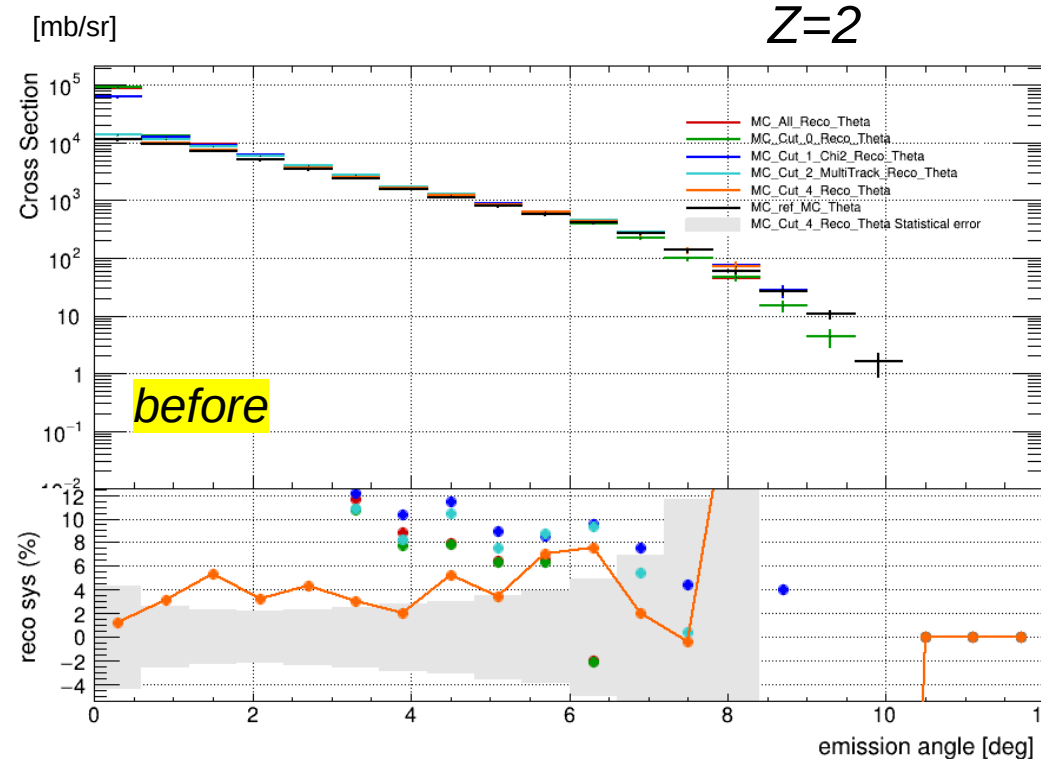
- In gray the statistical error of the last cut



Reconstruction
Quality cut
Multi-tracks cut
TW point cut

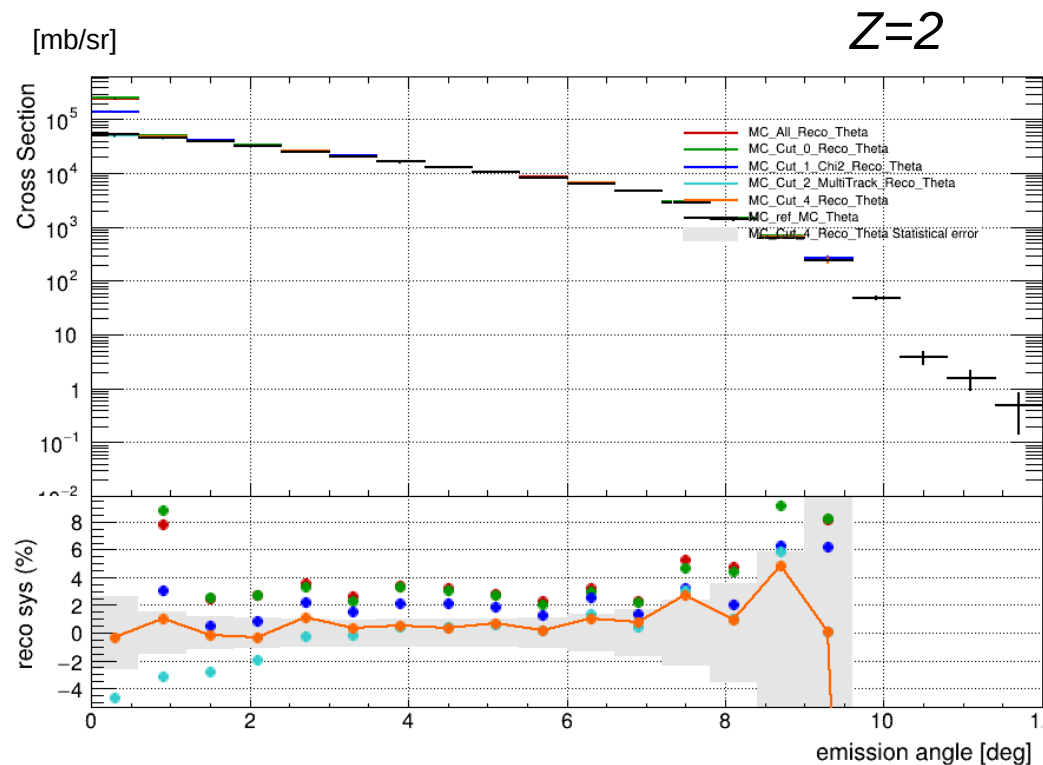
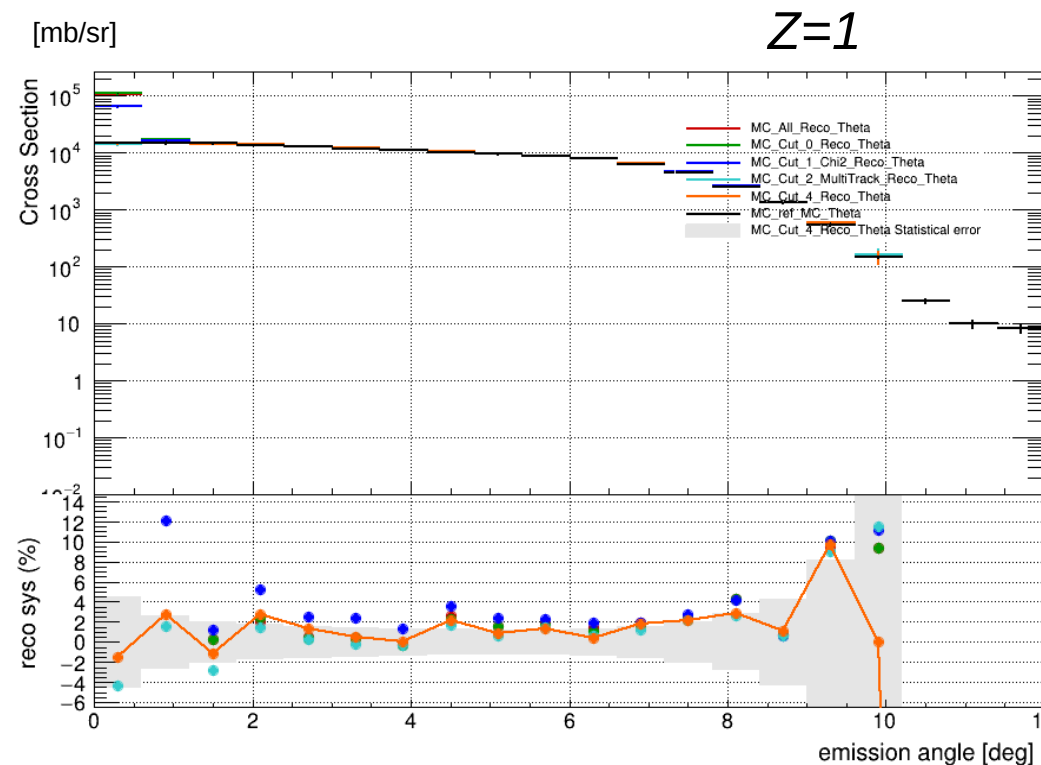
Cross Section closure test

Fix bug in MC_ID of the track → **closure test improved!**



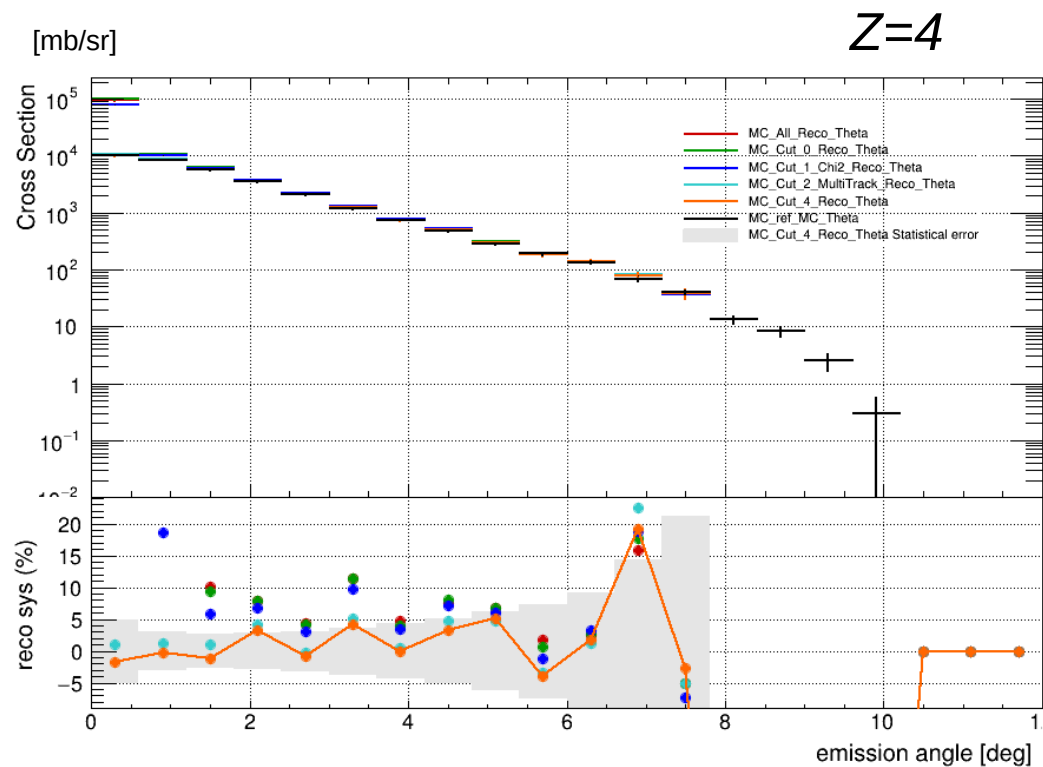
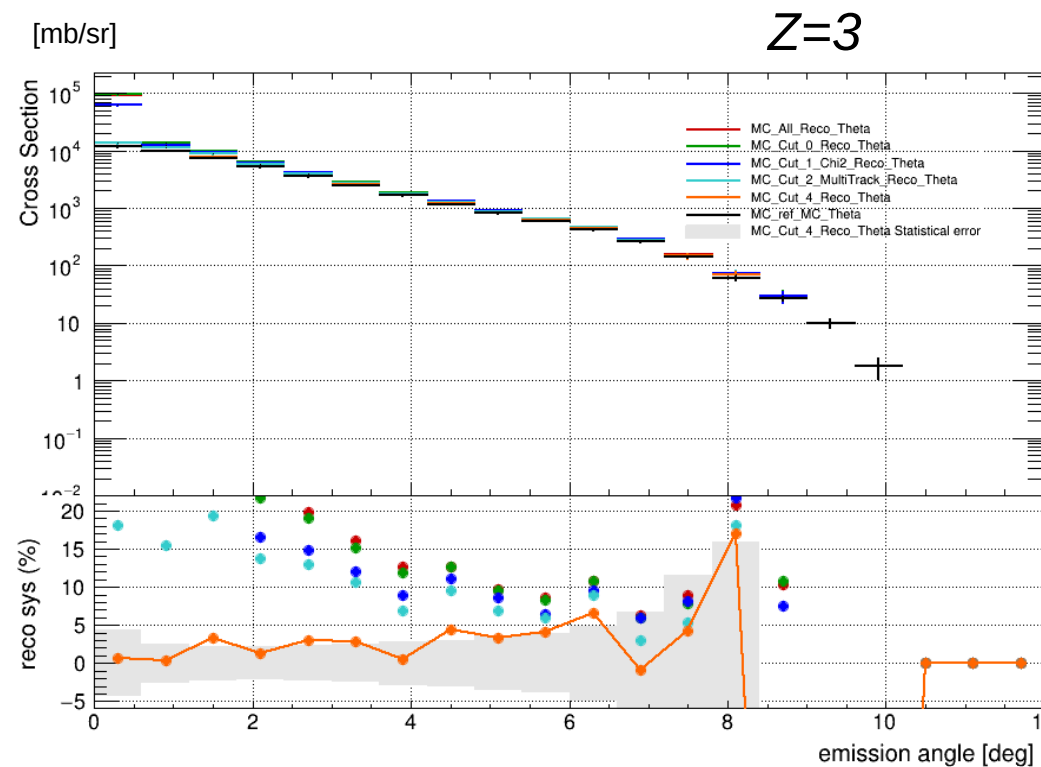
Reconstruction
Quality cut
Multi-tracks cut
TW point cut

Cross Section closure test



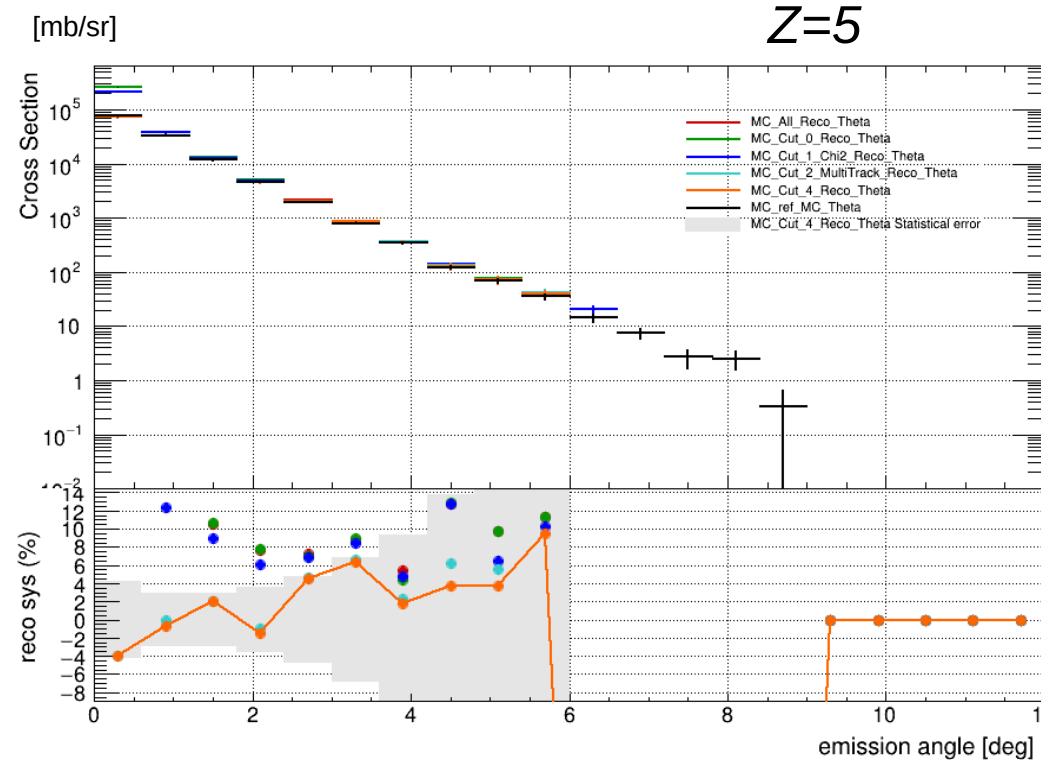
Reconstruction
Quality cut
Multi-tracks cut
TW point cut

Cross Section closure test



Reconstruction
Quality cut
Multi-tracks cut
TW point cut

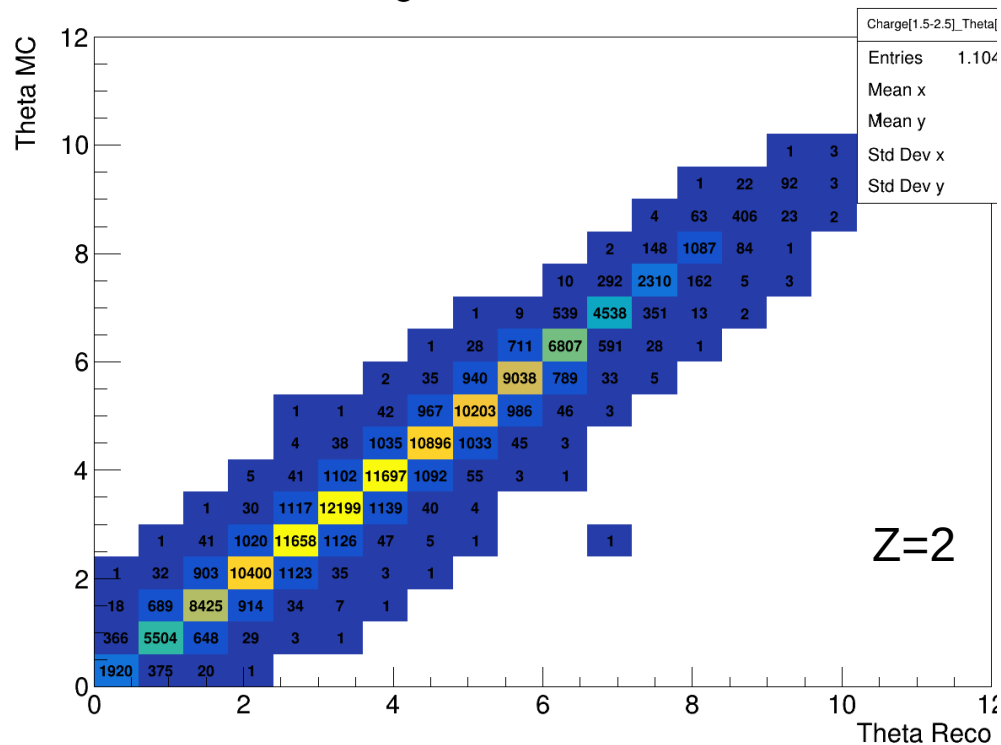
Cross Section closure test



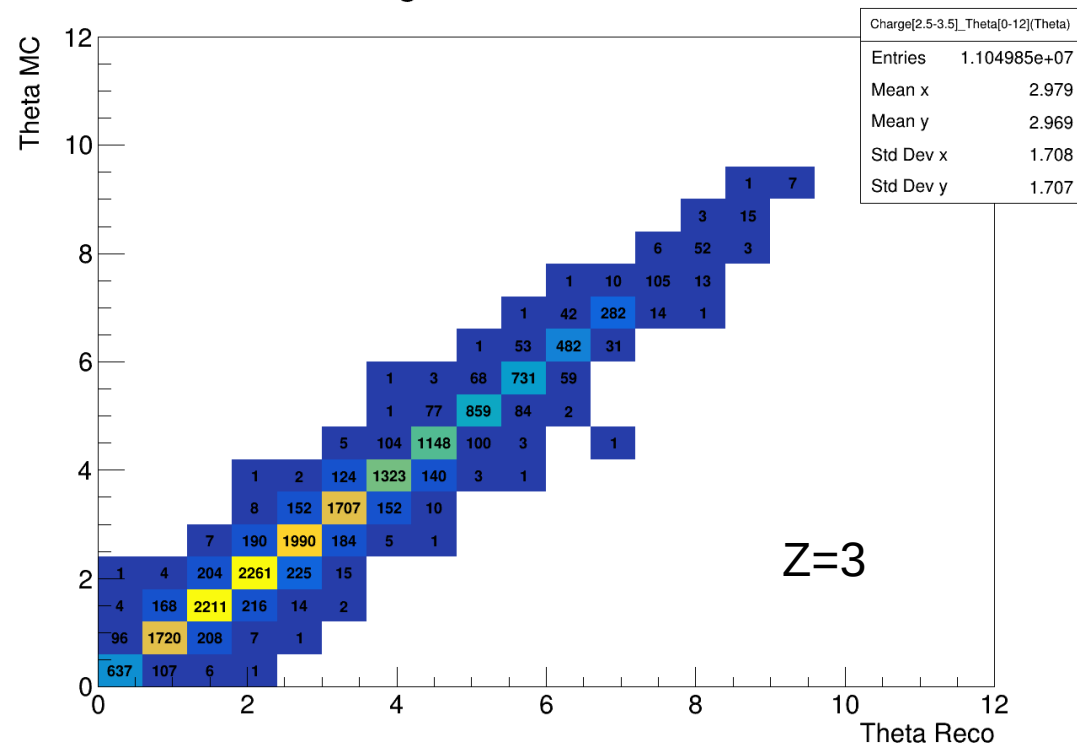
Reconstruction
Quality cut
Multi-tracks cut
TW point cut

Unfolding?

Migration Matrix Theta

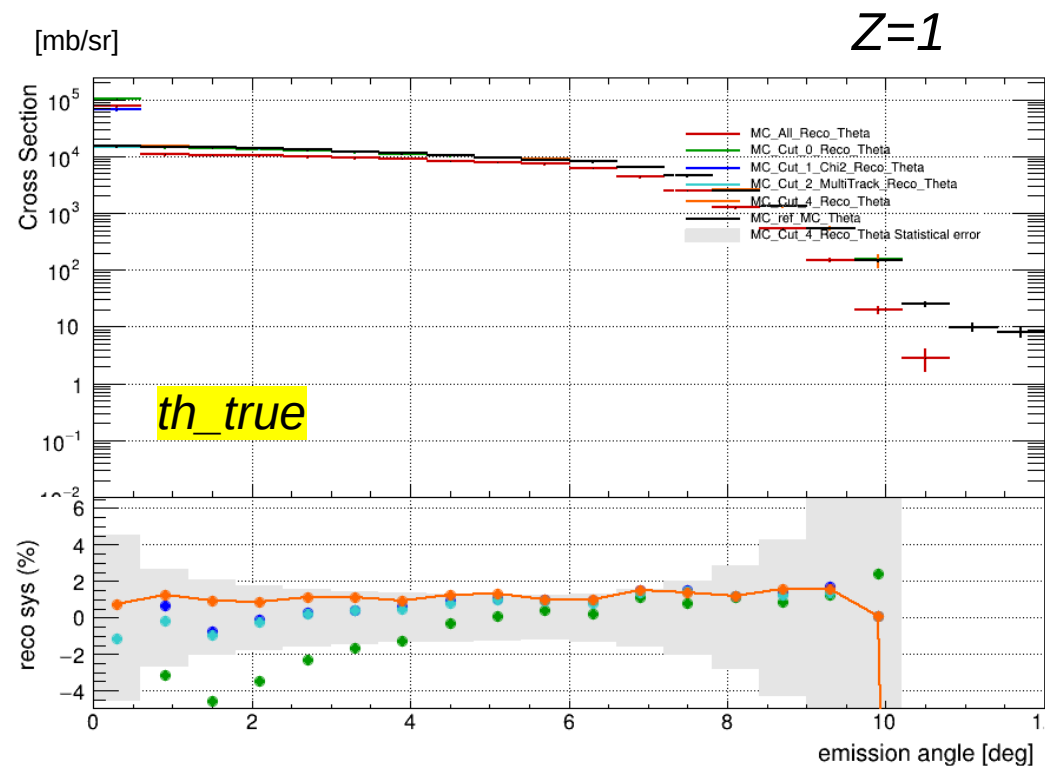
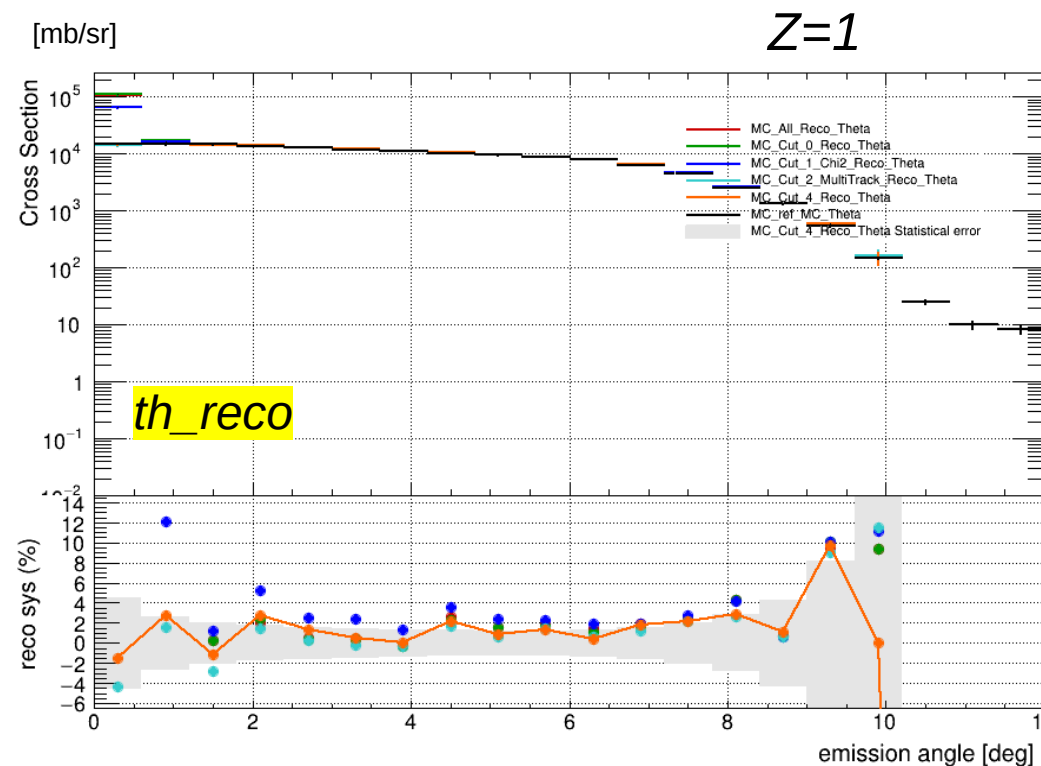


Migration Matrix Theta



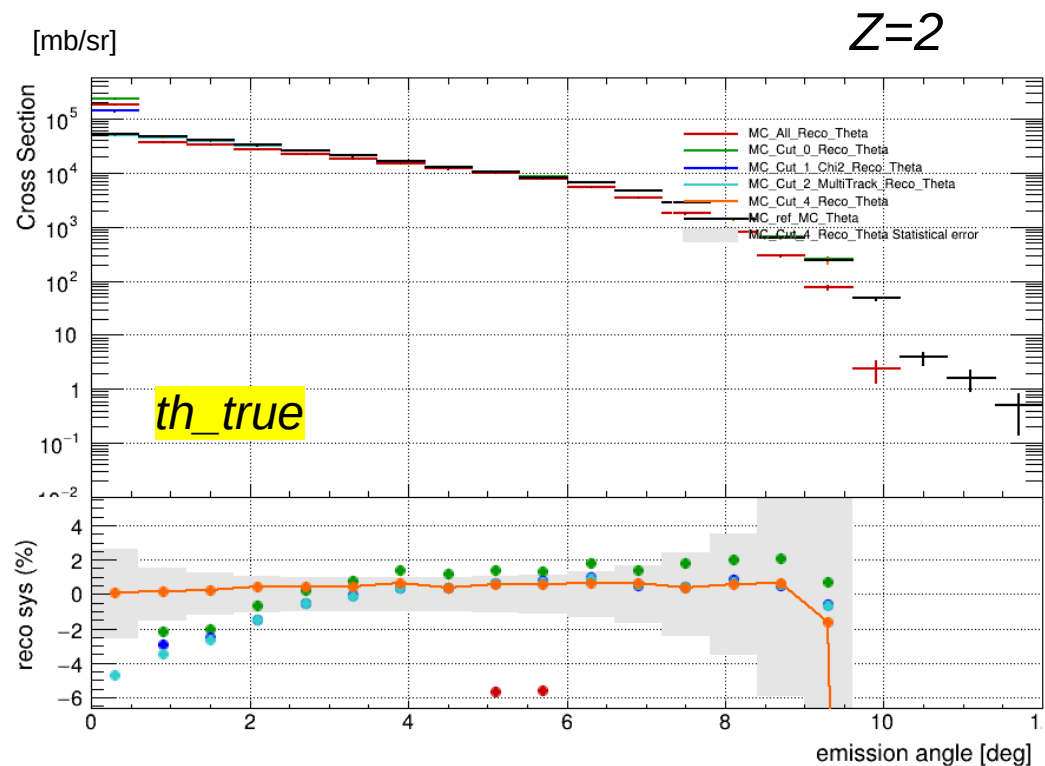
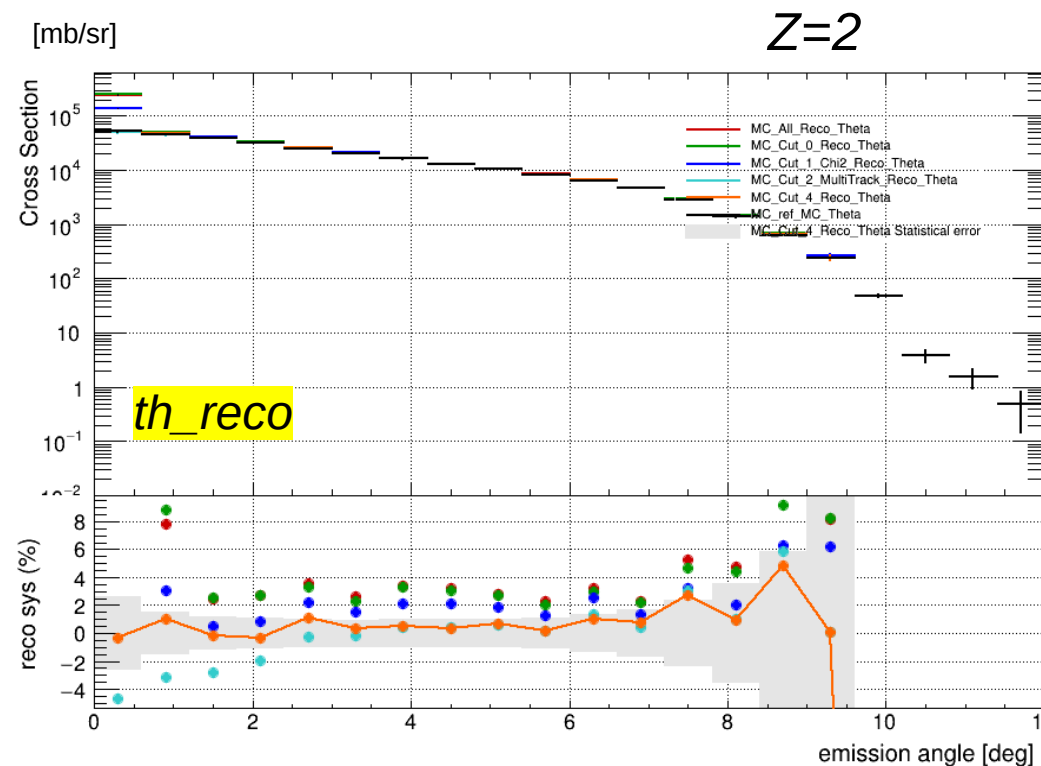
Let's do closure test with theta_mc rather than theta_reco

Cross Section closure test



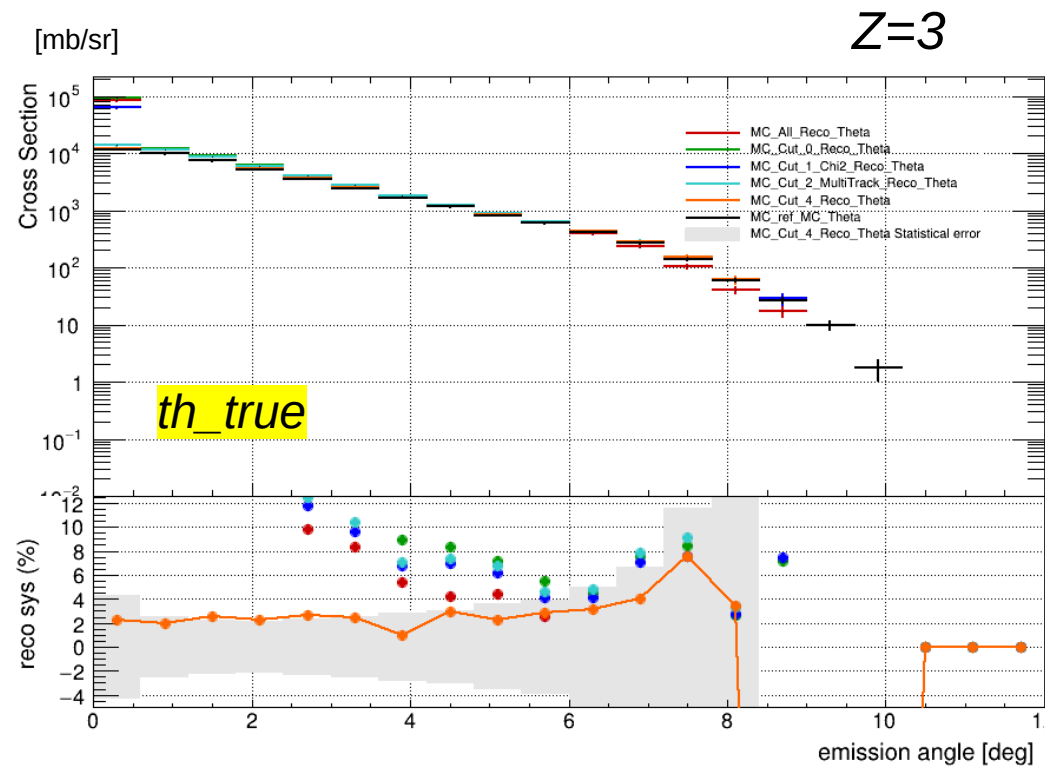
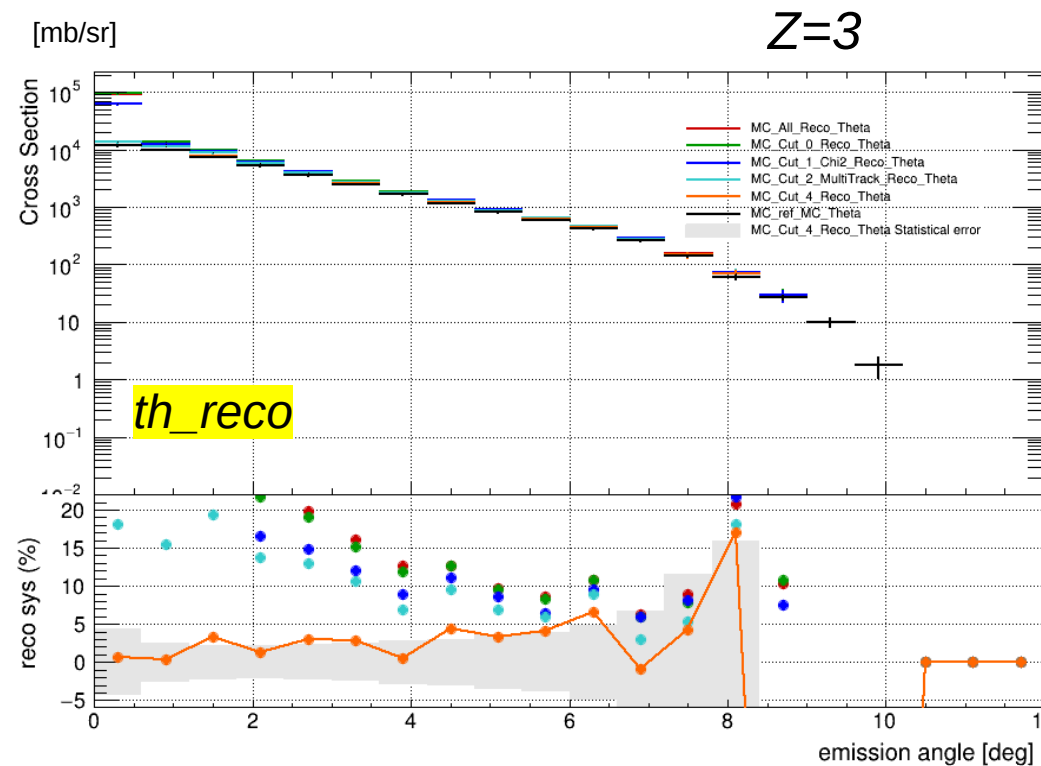
Reconstruction
Quality cut
Multi-tracks cut
TW point cut

Cross Section closure test



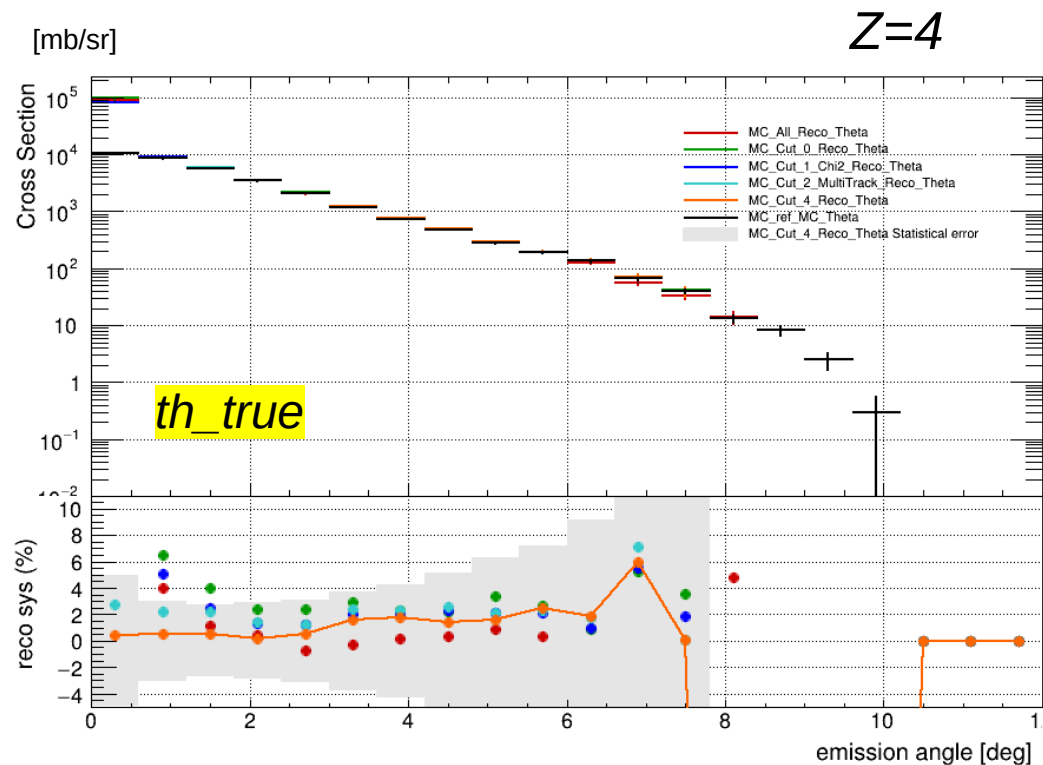
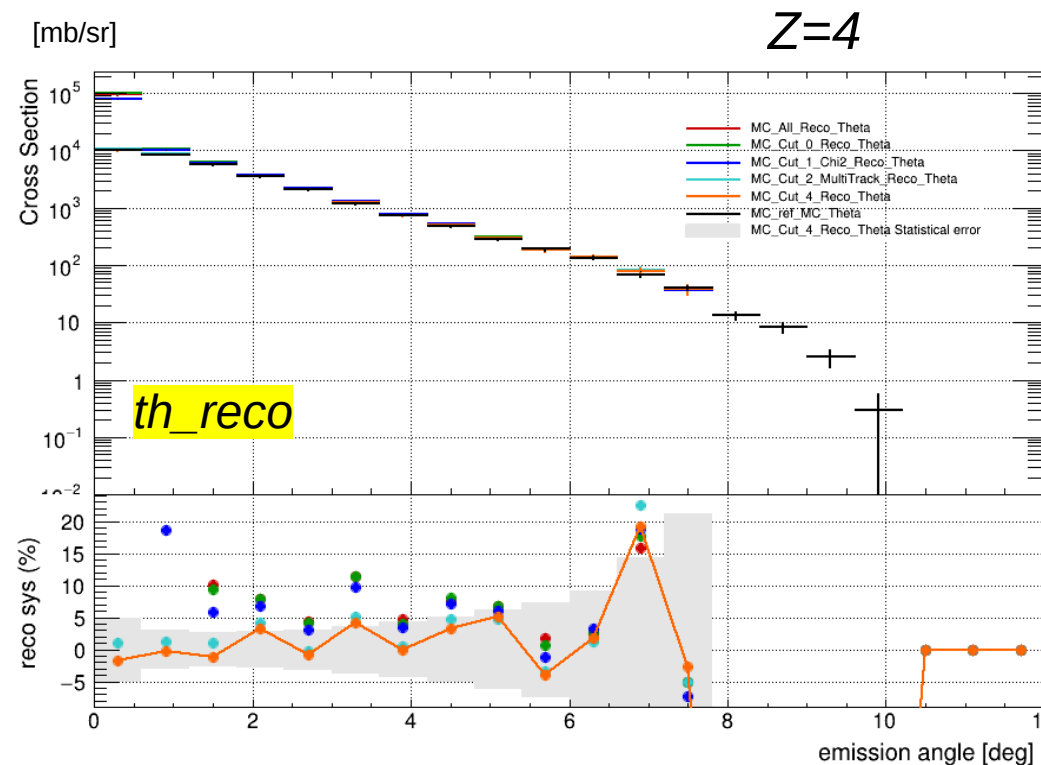
Reconstruction
Quality cut
Multi-tracks cut
TW point cut

Cross Section closure test



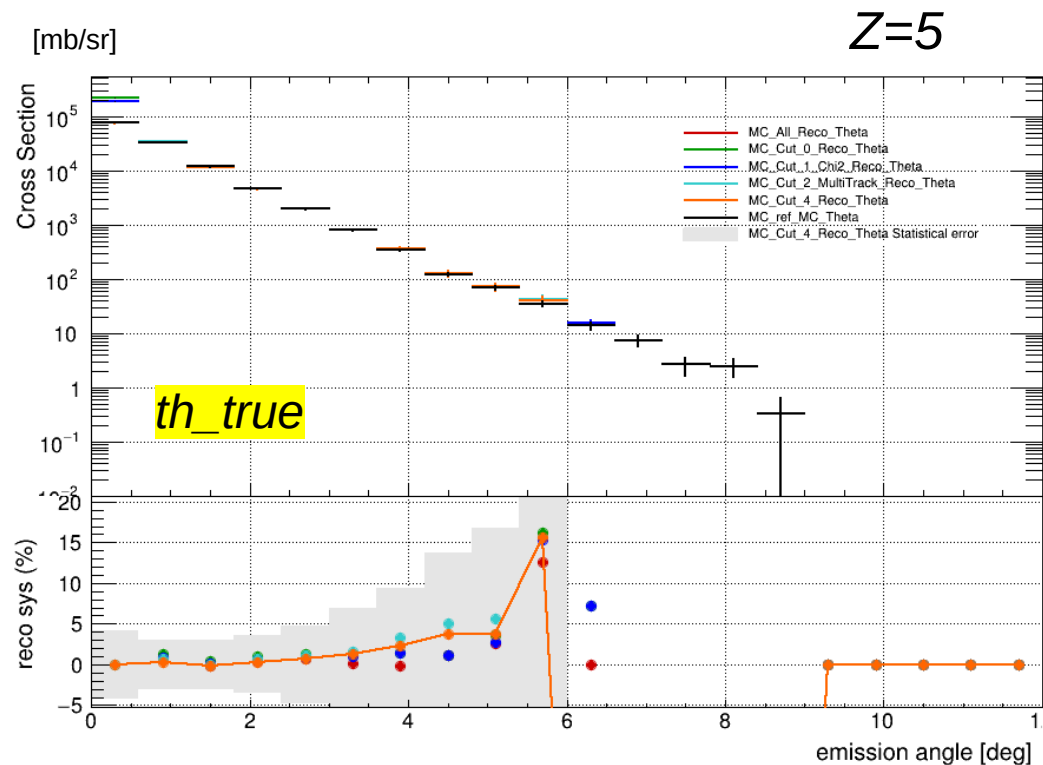
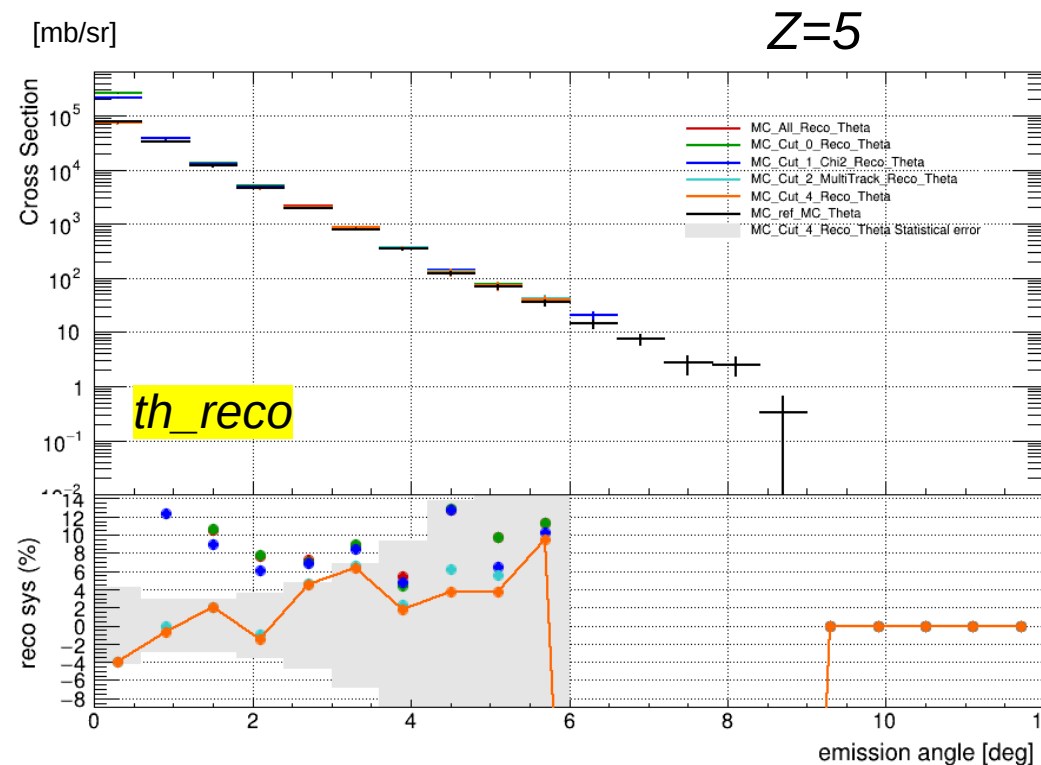
Reconstruction
Quality cut
Multi-tracks cut
TW point cut

Cross Section closure test



Reconstruction
Quality cut
Multi-tracks cut
TW point cut

Cross Section closure test



Reconstruction
Quality cut
Multi-tracks cut
TW point cut

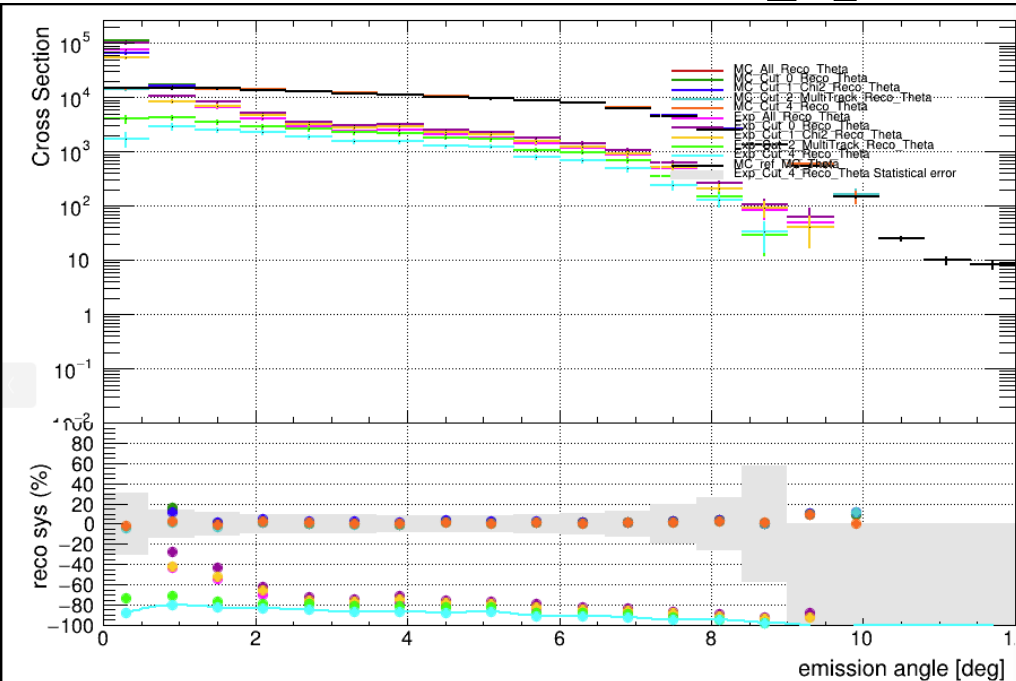
CNAO22 VS CNAO24 closure test

CNAO22: run 5468 5471

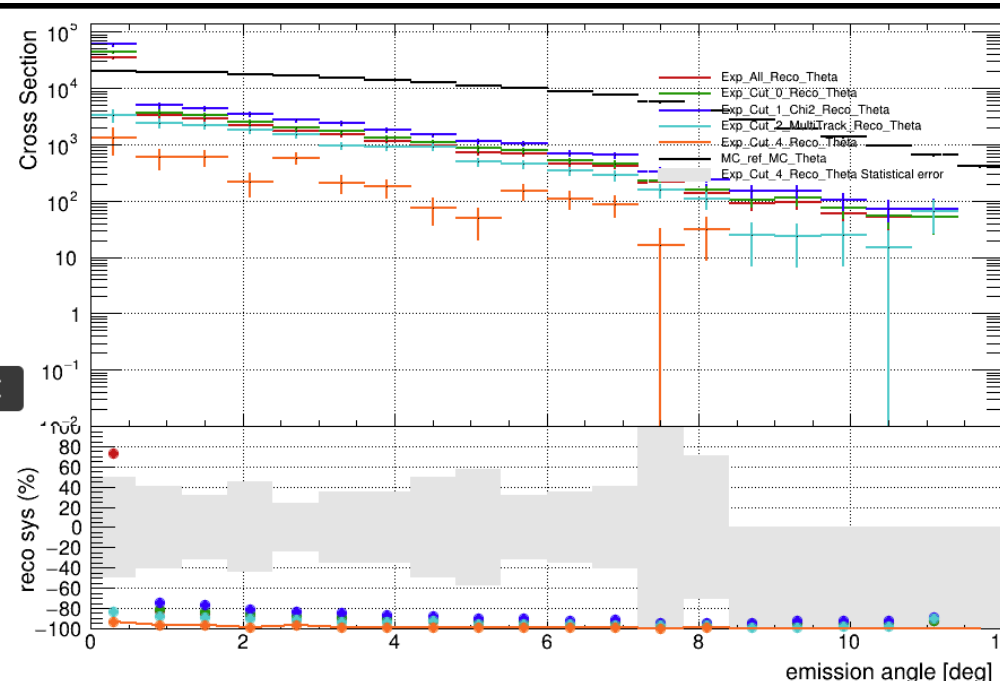
CNAO24:

CNAO22 VS CNAO24 closure test

$Z=1$



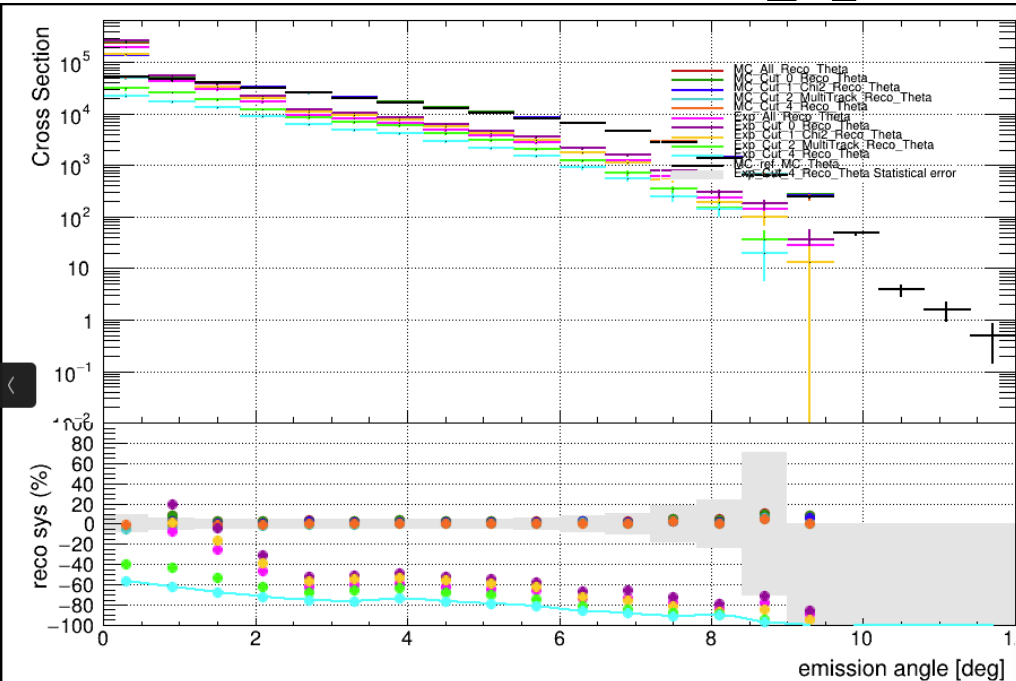
CNAO22



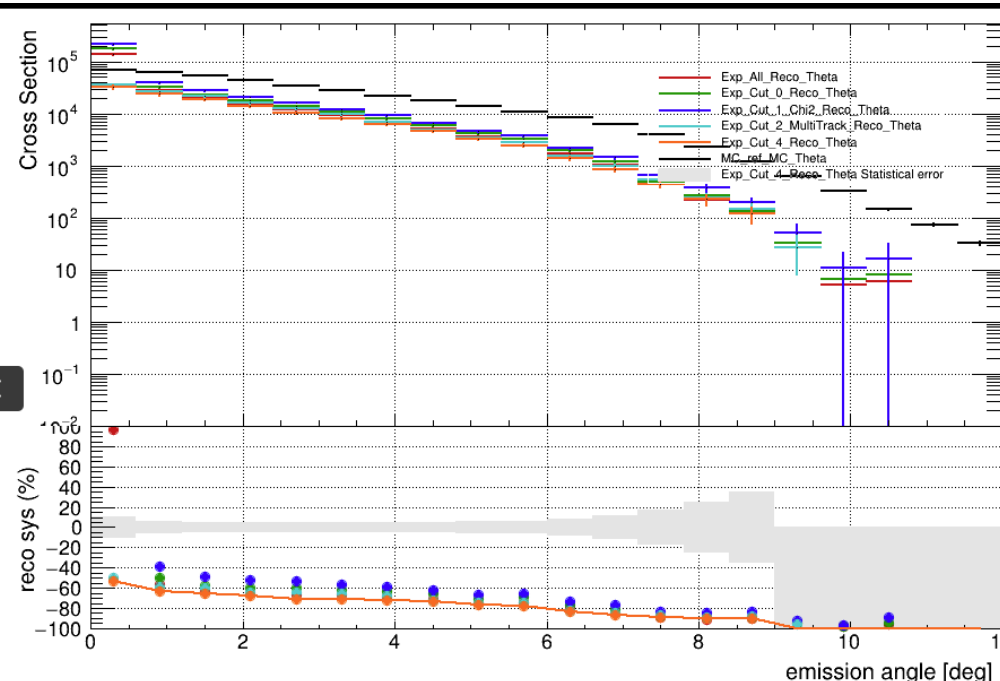
CNAO24

CNAO22 VS CNAO24 closure test

$Z=2$



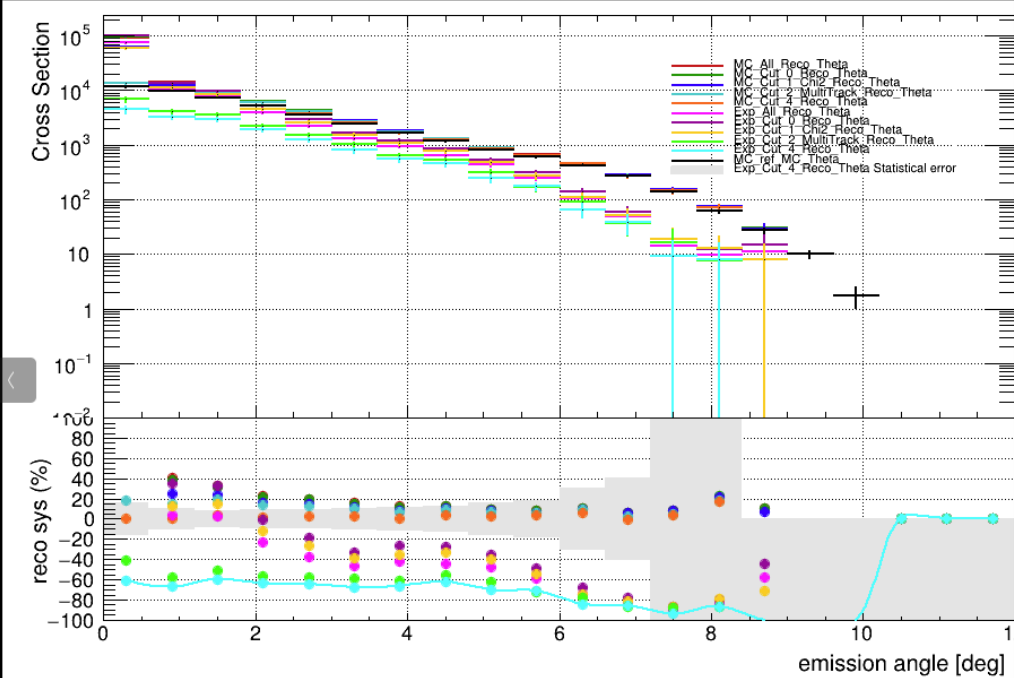
CNAO22



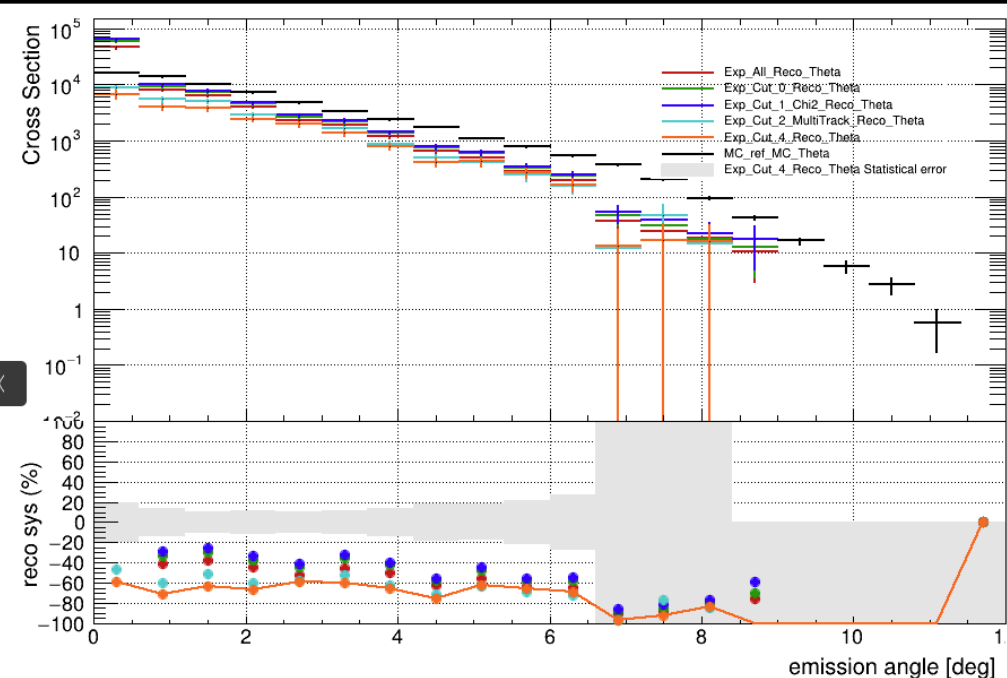
CNAO24

CNAO22 VS CNAO24 closure test

Z=3



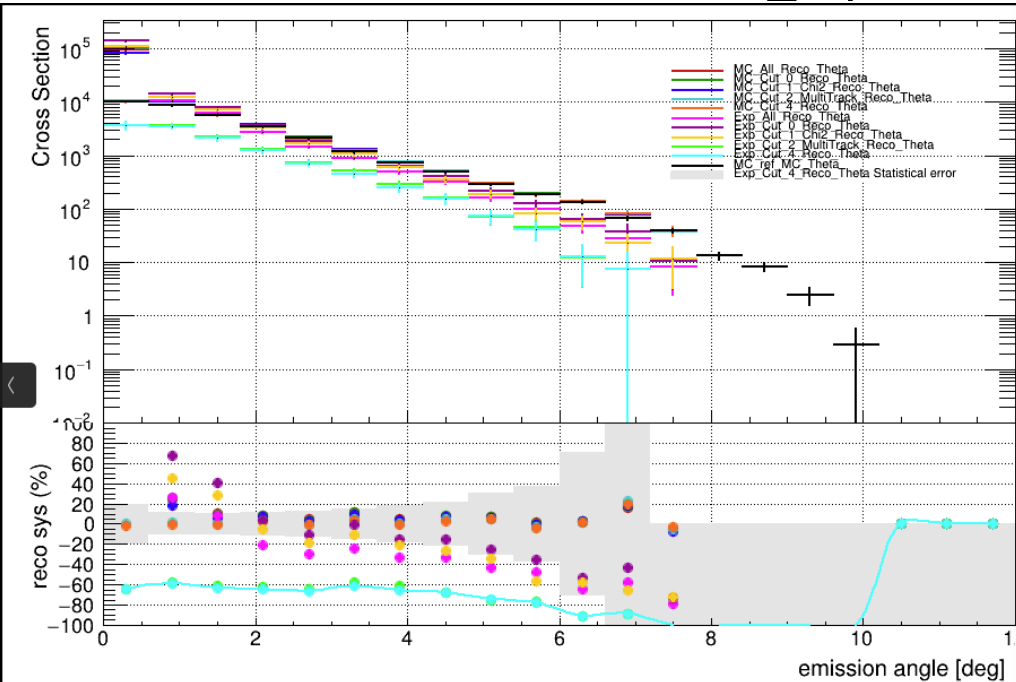
CNAO22



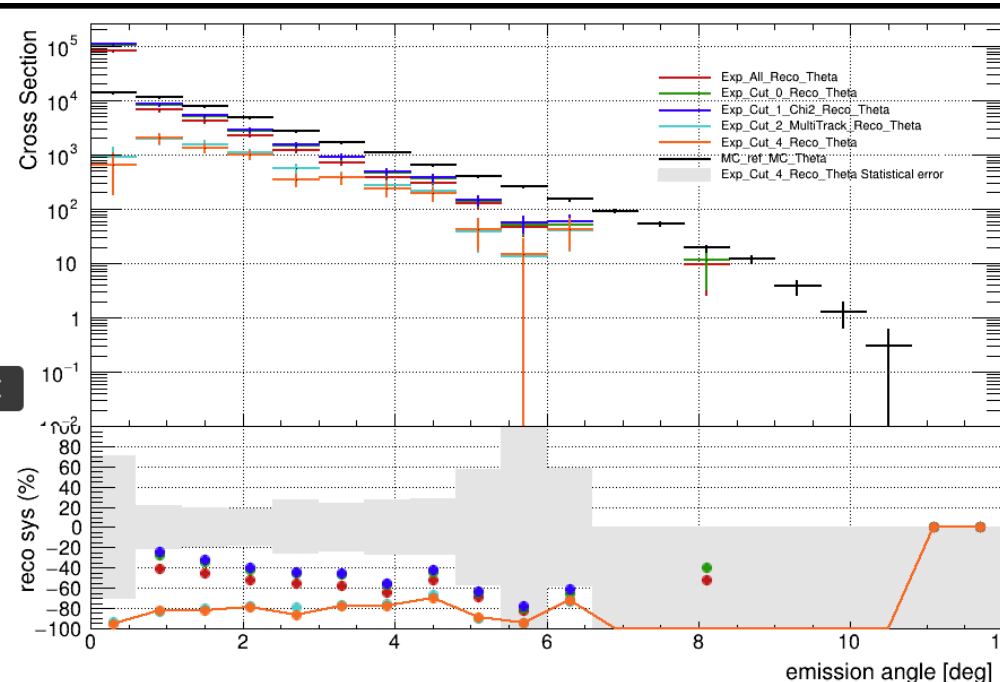
CNAO24

CNAO22 VS CNAO24 closure test

$Z=4$



CNAO22



CNAO24

CNAO22 VS CNAO24 closure test

$Z=5$

