

# shower

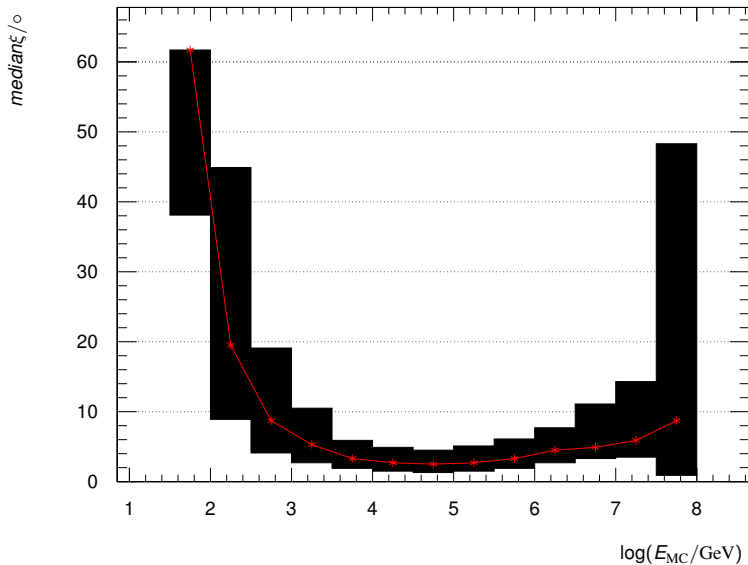
Tino Michael

National Institute for Subatomic Physics, Amsterdam

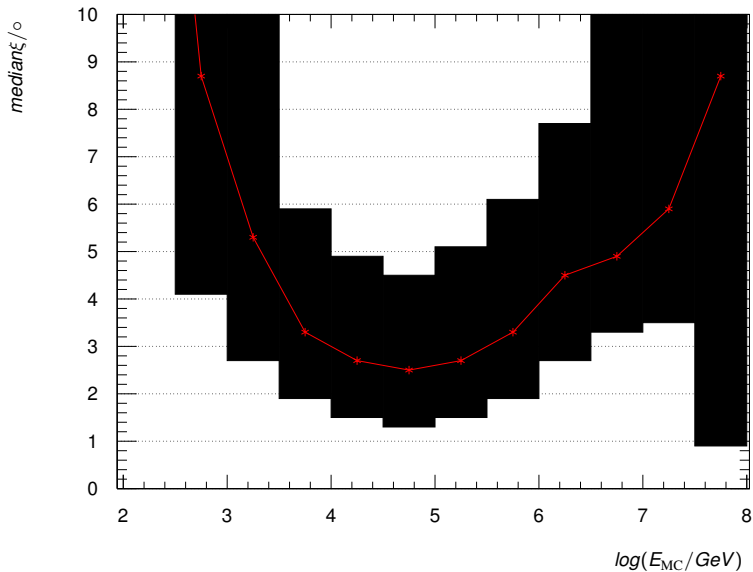
February 17, 2015



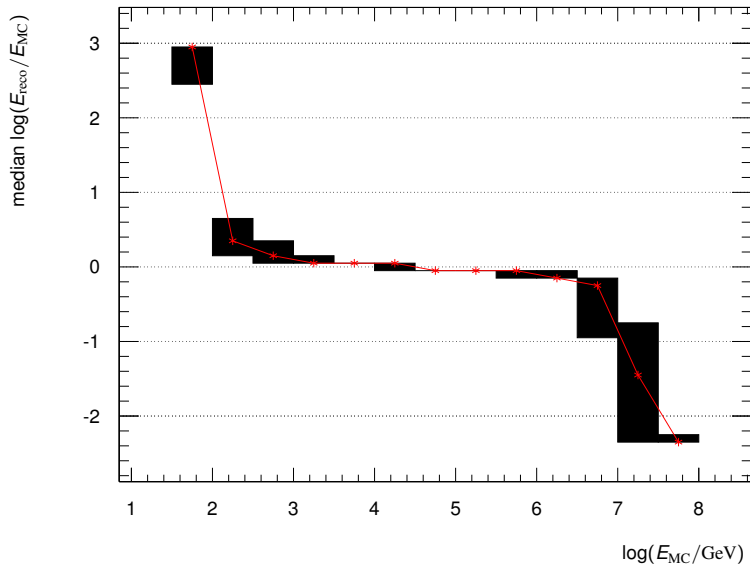
# Angular Error on nue\_CC



# Angular Error on nue\_CC

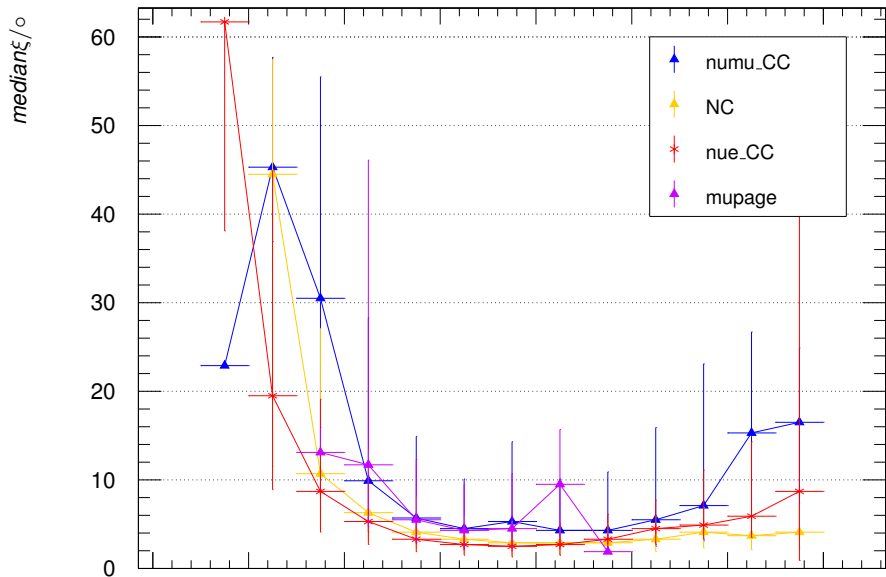


# relative Energy Error on nue\_CC

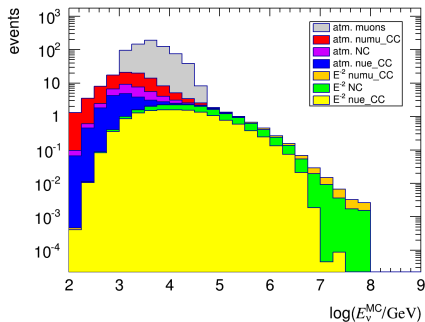
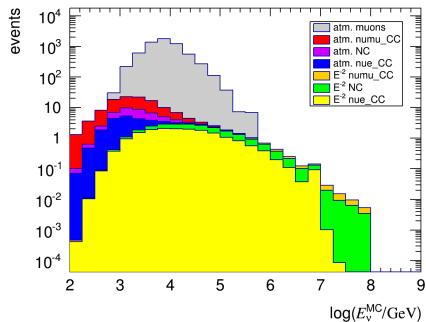


Type	Condition
Containment	$\rho < 100 \text{ m}$ $-200 \text{ m} < z < 200 \text{ m}$
Error Estimator	$\beta < 10^\circ$
GridFit-NHits	$\left(\frac{N_{\text{Hits}}}{150}\right)^3 + \left(\frac{\text{GridFitRatio}}{1.3}\right)^3 > 1$
selected Charge up-going	$q_{\text{selected}}/q_{\text{Event}} > 0.4$ $zenith < \pi/2$

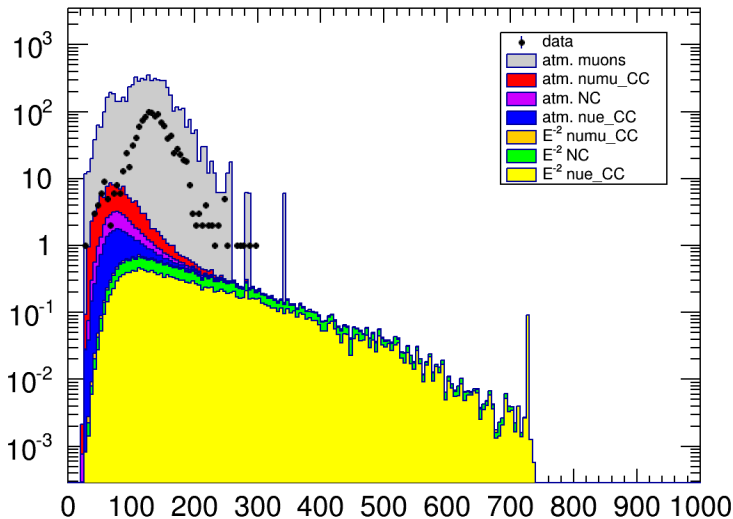
# Angular Error on all flavours



left: without / right: with up-going cut



# Number of used Hits (Stacked Plot)



$N_{\text{Hits}}$



Cut	abs. eff. <sup>1</sup>	rel. eff. <sup>2</sup>	abs. eff. <sup>1</sup> (err < 5°)	rel. eff. <sup>2</sup> (err < 5°)	abs atm. muons <sup>1</sup>
Containment	100 %	100 %	100 %	100 %	100 %
maxErrEst	43.68 %	43.68 %	92.3611 %	92.3611 %	2.6528 %
GridFitRNHits	38.3353 %	87.7639 %	85.8608 %	92.9621 %	0.178554 %
ChargeSelect	33.5656 %	87.558 %	82.2135 %	95.7521 %	0.114785 %
minZenith	17.6006 %	52.4364 %	45.1381 %	54.9035 %	0.00153046 %

1: efficiency with respect to Containment

2: efficiency with respect to last cut