

ND Flux Normalization

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Data and MC samples

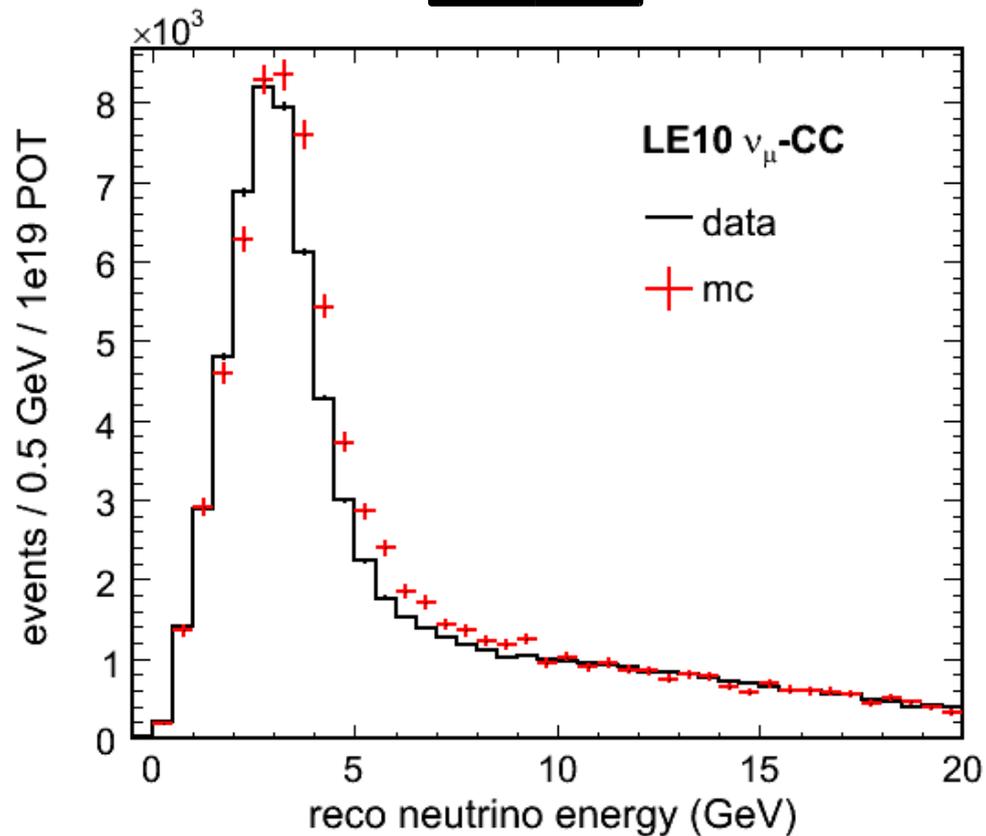
- Batch processed with R1.18.2
- LE-10 MC:
 - 363 files, 144916 snarls, 3.49e18 POT
- LE-10 data:
 - August data: runs span 8433 - 8695
 - 5.87e18 POT (TORTGT) after beam quality cuts

Event Selection

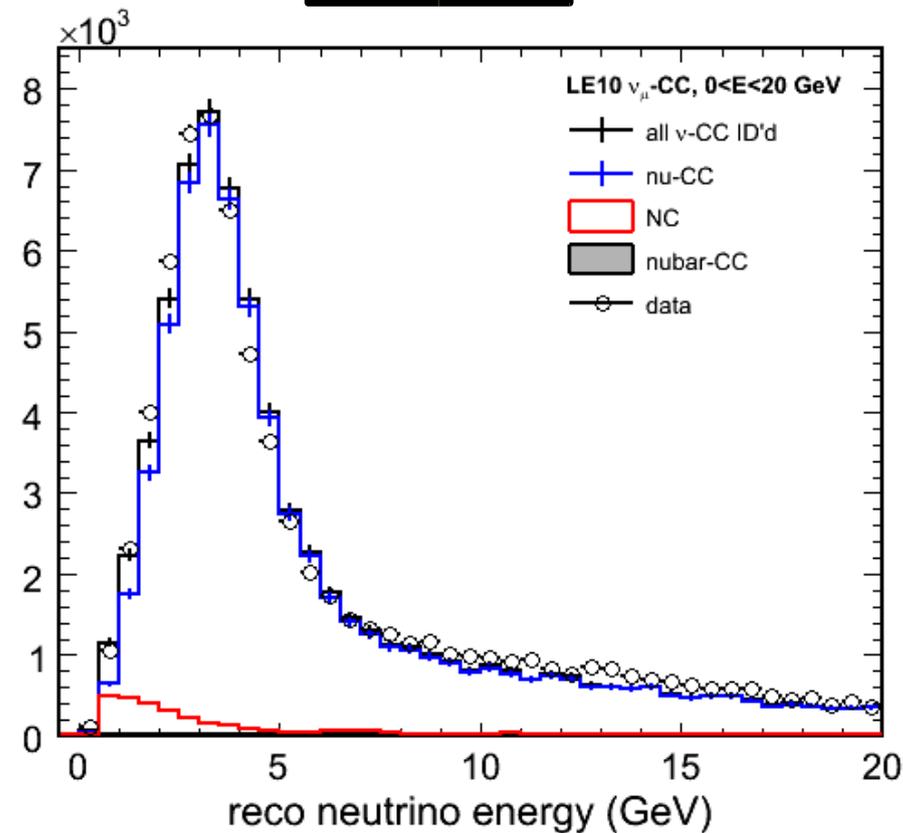
- Fiducial: “Pitt” (molded to ND shape)
 - $0.6 < Z < 3.56\text{m}$, $0.3 < U < 1.8\text{m}$, $-1.8 < V < -0.3\text{m}$,
 $X > 2.4\text{m}$, $R > 0.8\text{m}$
- Track quality:
 - `trk.fit.pass`, $\text{chi}^2/\text{ndf} < 20$, $|U-V|$ z-vertex < 6
- Fit quality: $|\sigma(q/p)/(q/p)| < 0.3$
- Dave Petyt CC PID > -0.4
- Cut on charge sign to select ν

Selected Sample: Data

R1.18



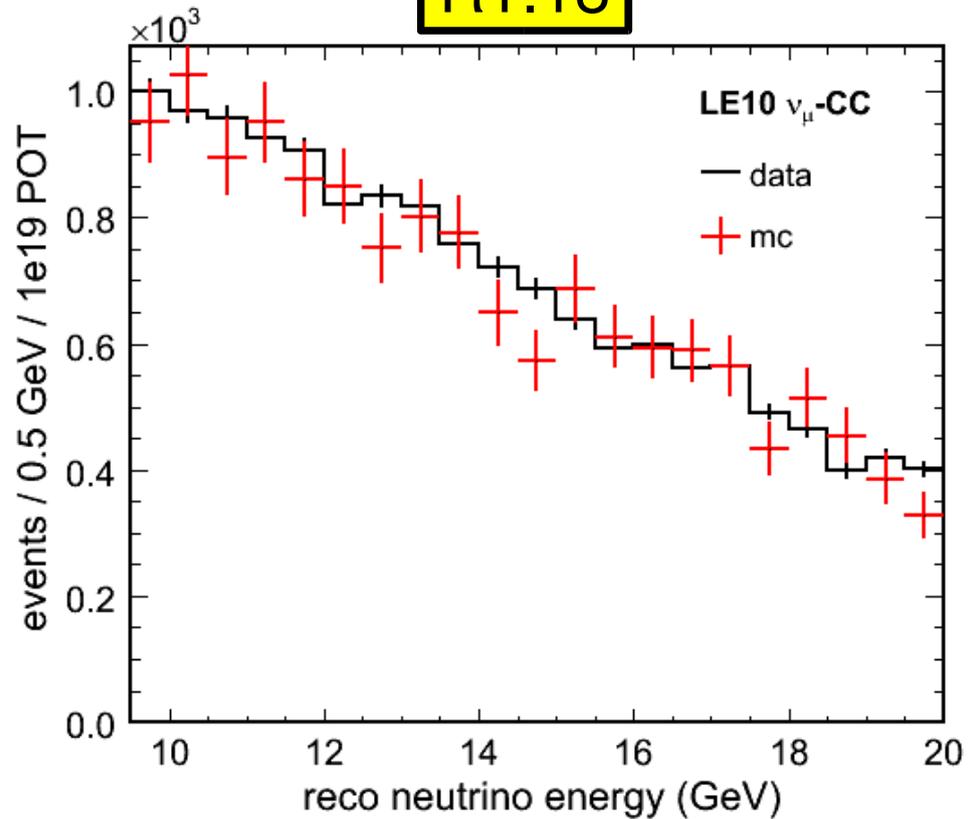
R1.18.2



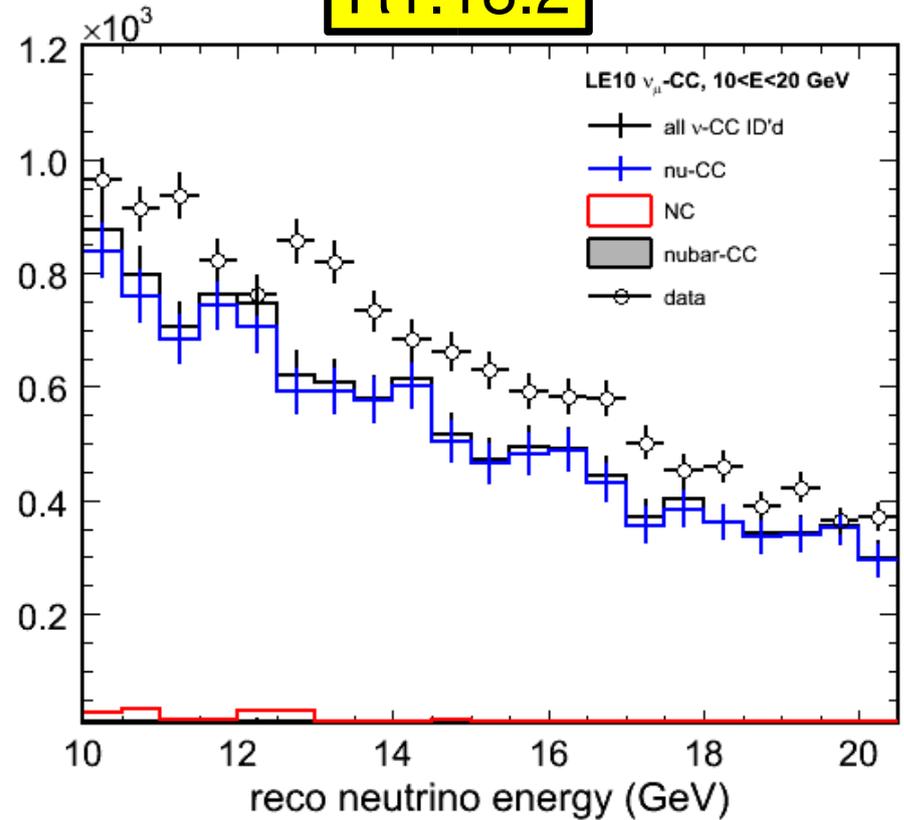
n.b - change in legend

10-20 GeV region

R1.18



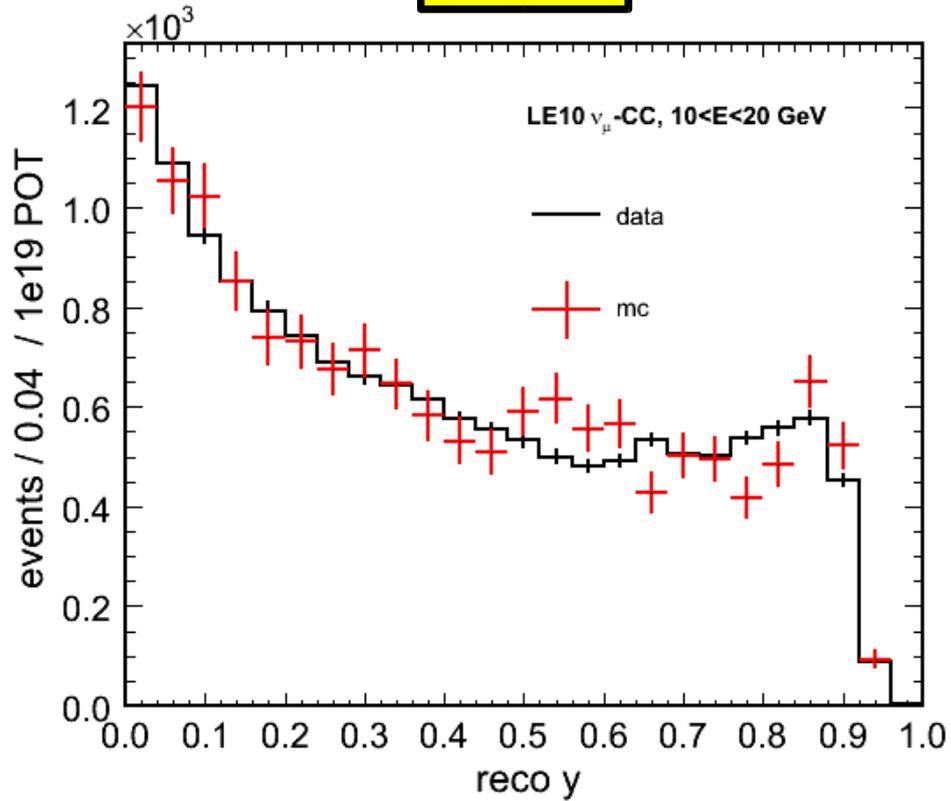
R1.18.2



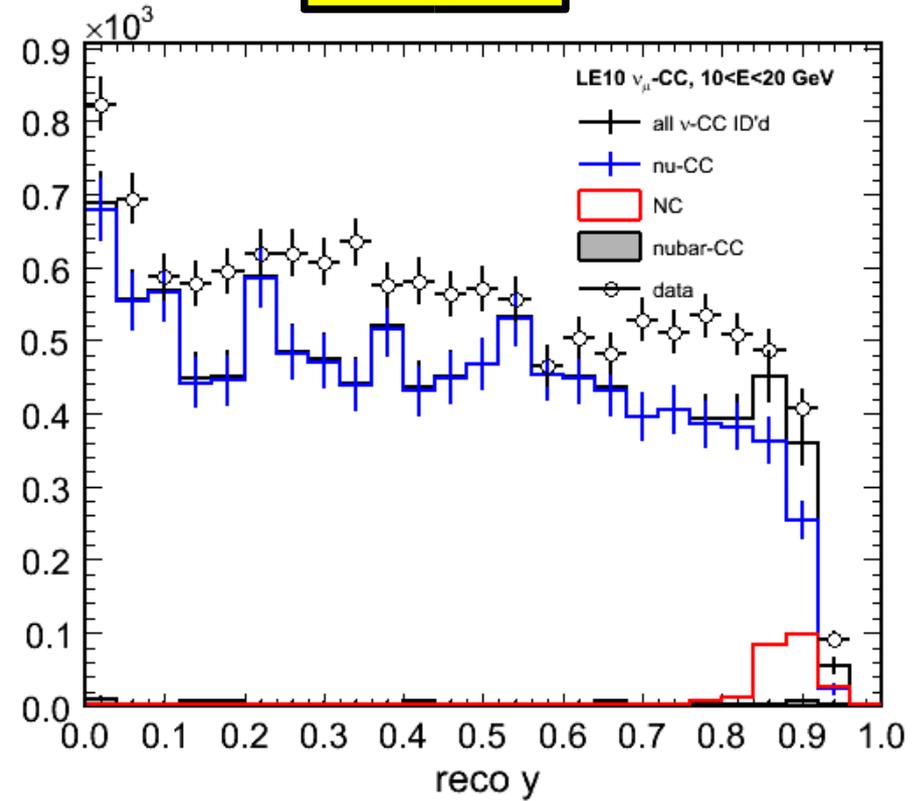
n.b - change in legend & scale

y-distribution

R1.18



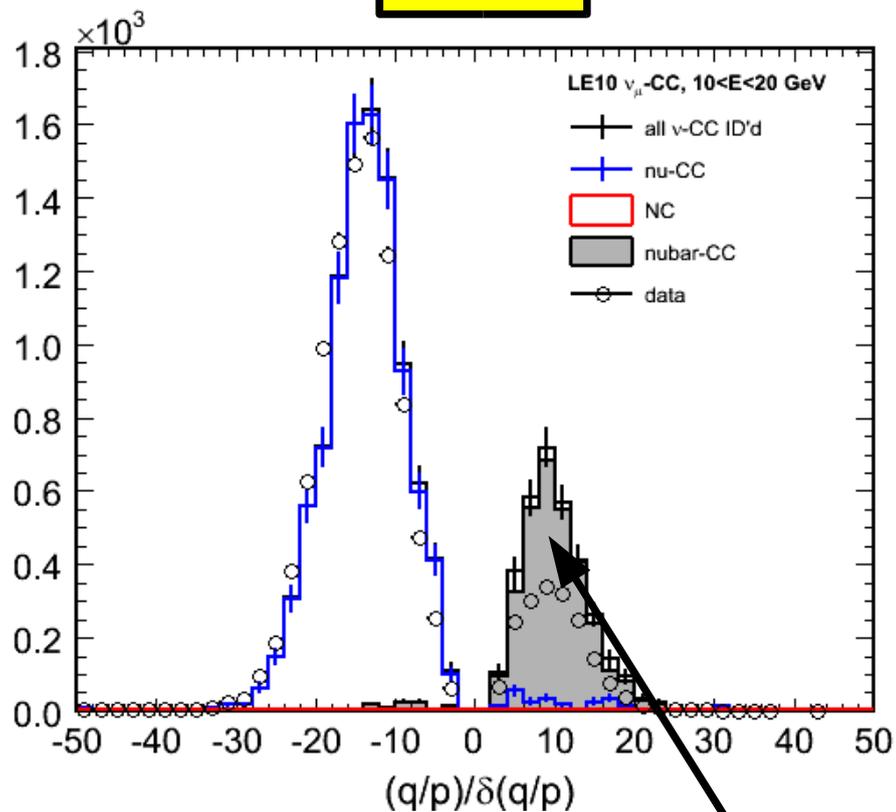
R1.18.2



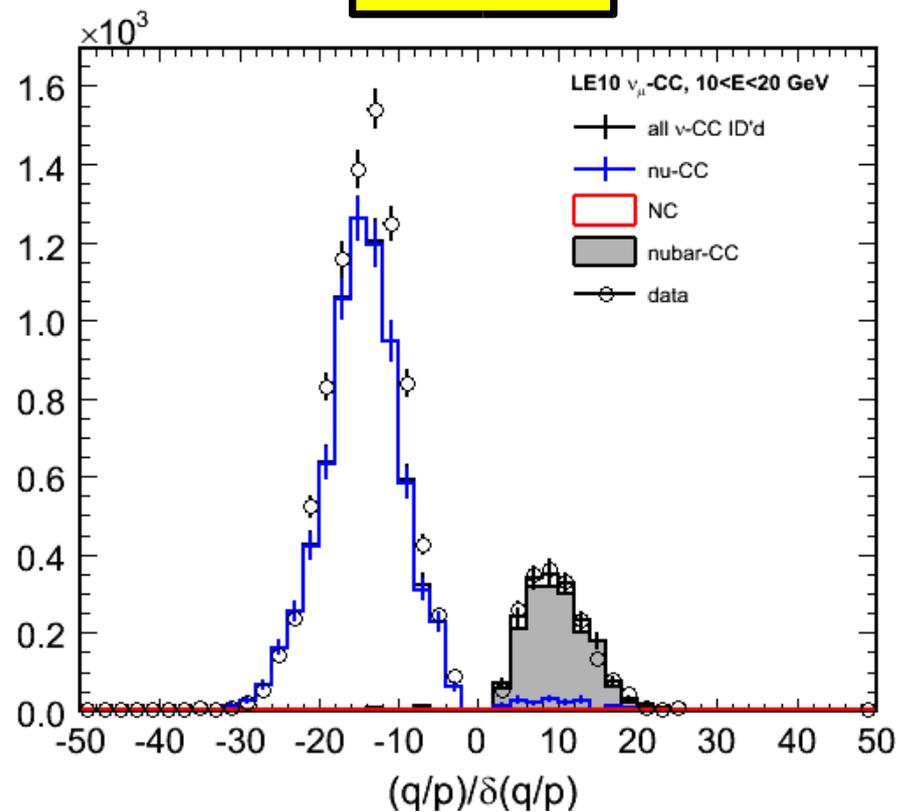
n.b – recalibration of eshw

$(q/p)/\delta(q/p)$

R1.18



R1.18.2



This is was the intended topic!

Conclusions

- Apparent changes in both MC and data
 - y distribution
 - spectral shape
 - recall shower energy was “off” in R1.18
- Similar number of ν events in $10 < E < 20$ GeV region in data
 - R1.18.2 MC has fewer ν events
- charge sign:
 - Dramatic change in MC... less so in data
- **Is this all normalization?** Probably of MC?
 - I calculate MC POT: $\#files * 400 * 2.42e13$ POT
 - Data: counting raw snarls + beam monitoring DB.