W + N Jets Study

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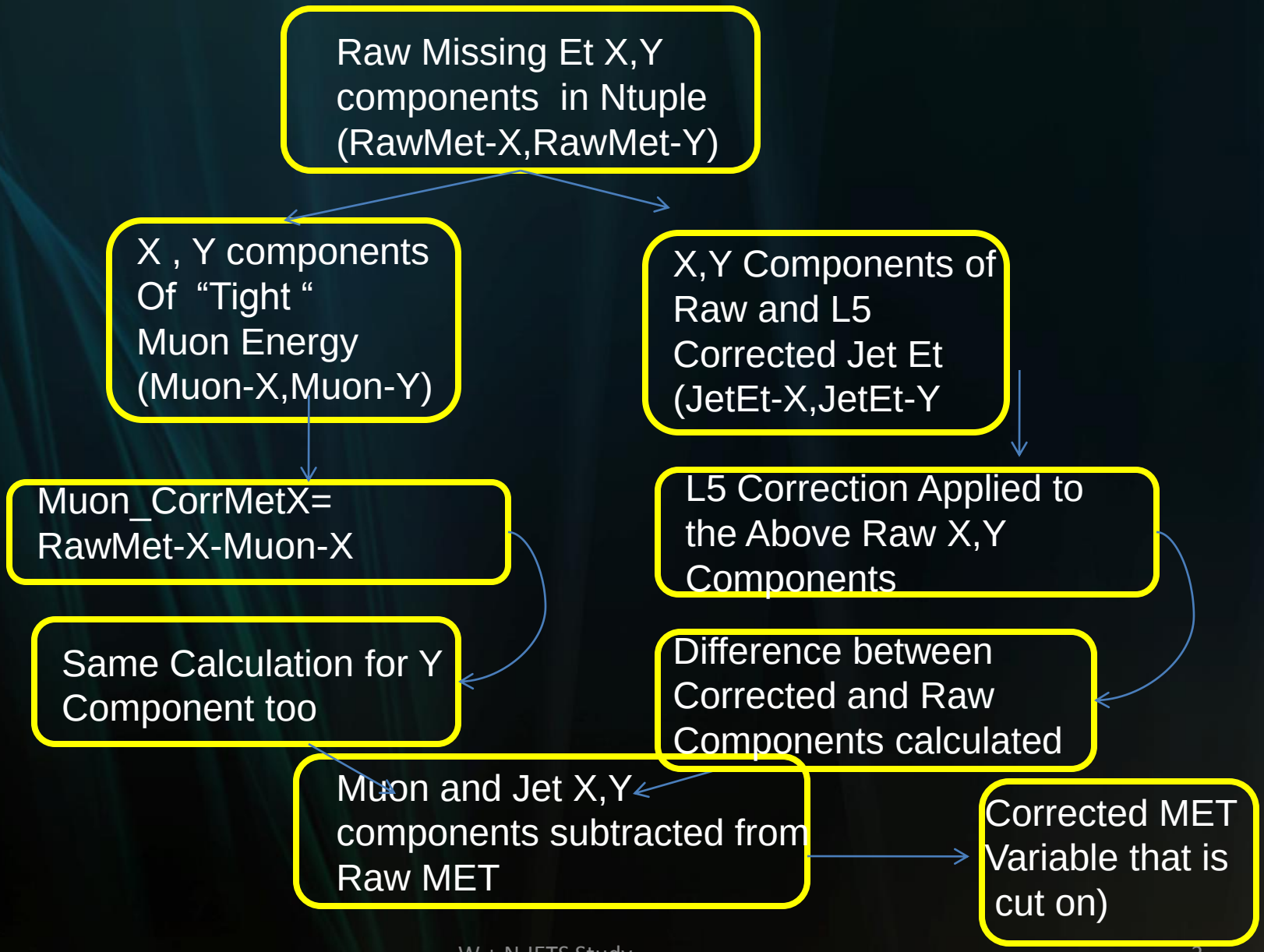
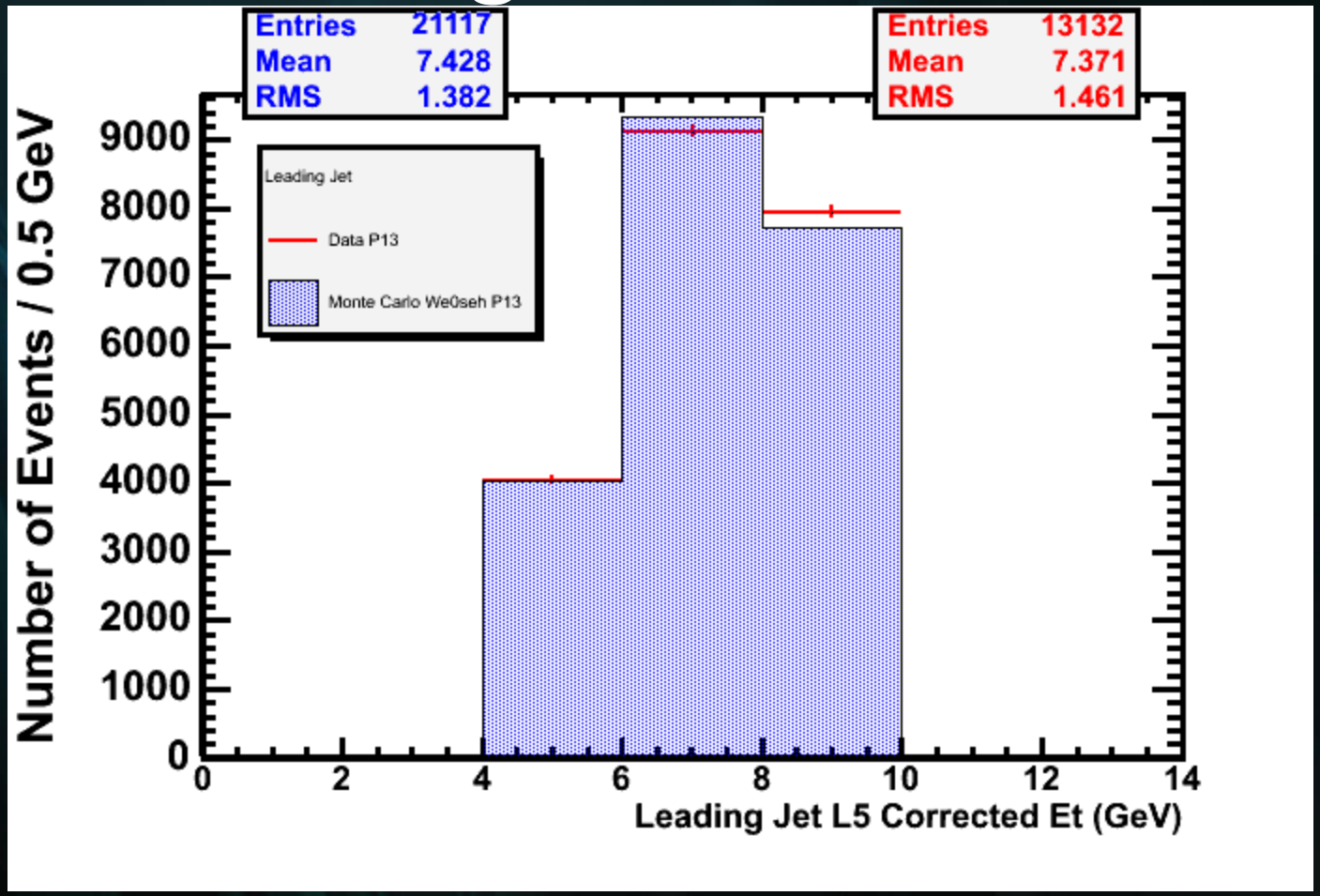
Talk Outline

- Study Opening angle Plots between W-Leading Jet for W+ (N Jets ≥ 1)
- Study Opening angle Plots between W-Next-To-Leading Jet for W+ (N Jets ≥ 2) as well as Jet-Jet Opening angles
- Study Opening angle Plots between W-Third Jet for W+ (N Jets ≥ 3) as well as Jet-Jet Opening angles
- Look at properties of Tracks Alogrithm 11 and 23

Correction Applied to Raw Missing Et



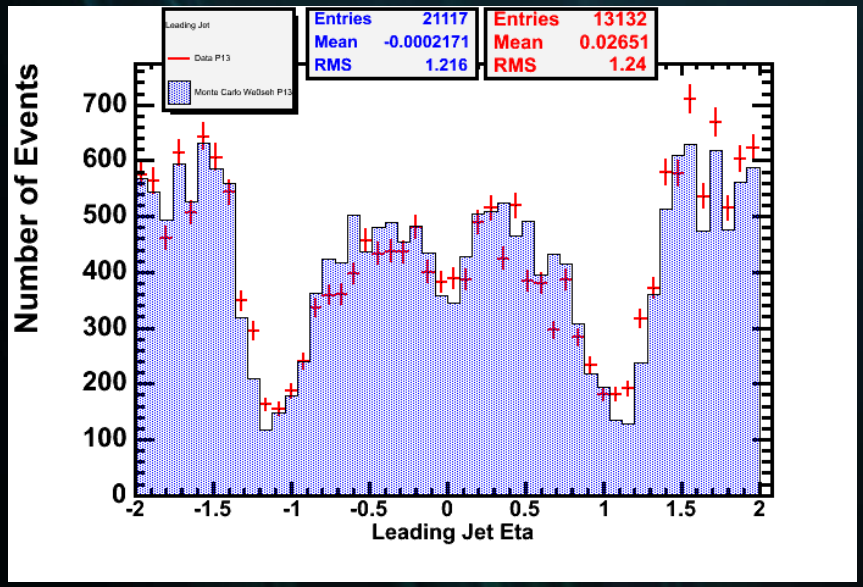
Leading Jet Variables



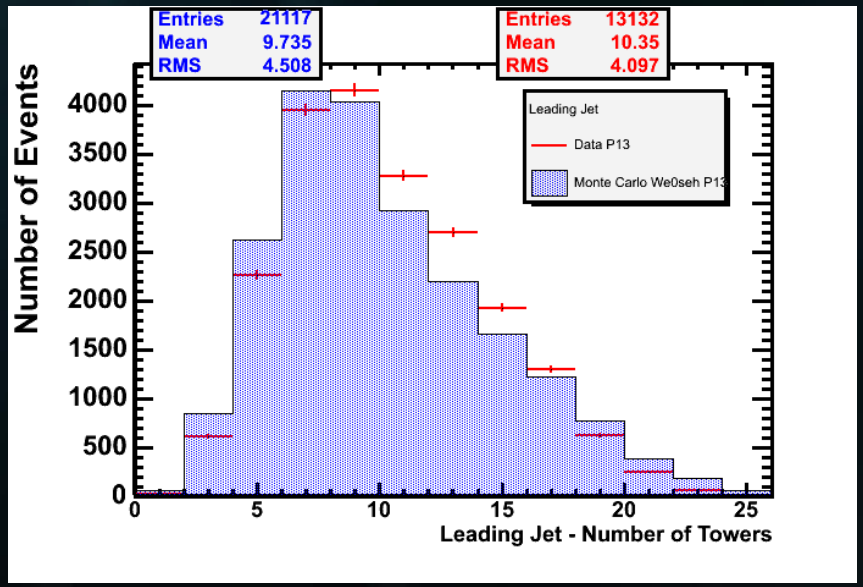
- All Jets Selected with L5 Corrected E_T
- 5 GeV < E_T < 10 GeV
- All Jets $|\eta| < 2$

Leading Jet Variables

Leading Jet Eta



Number of Towers

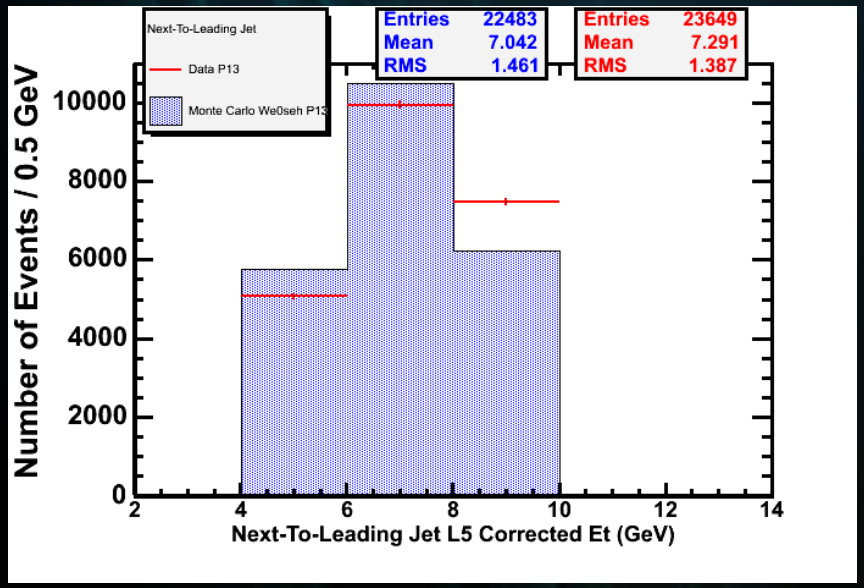


- More Jets in Forward Region than Central ?

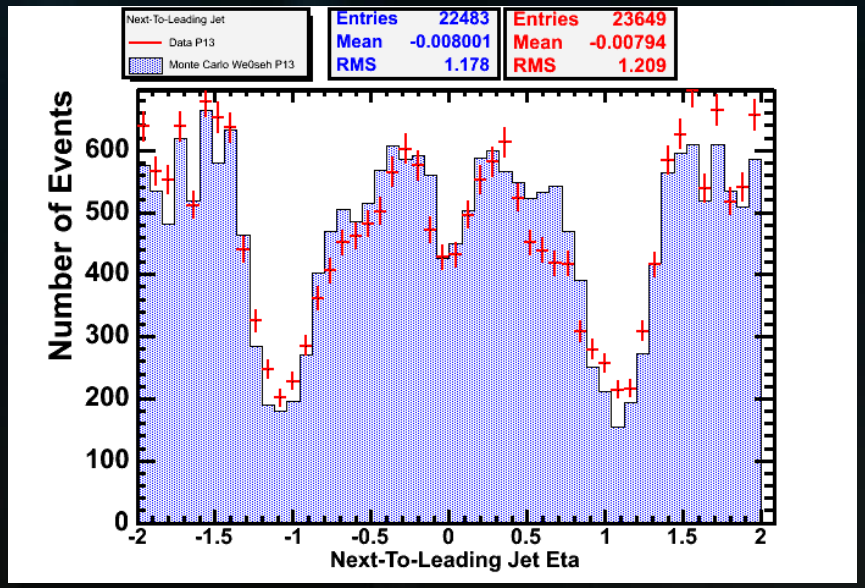
- Peak ~ 6 Towers , Jet Et in previous plot peaks ~6 GeV

Next-To-Leading Jet Variables

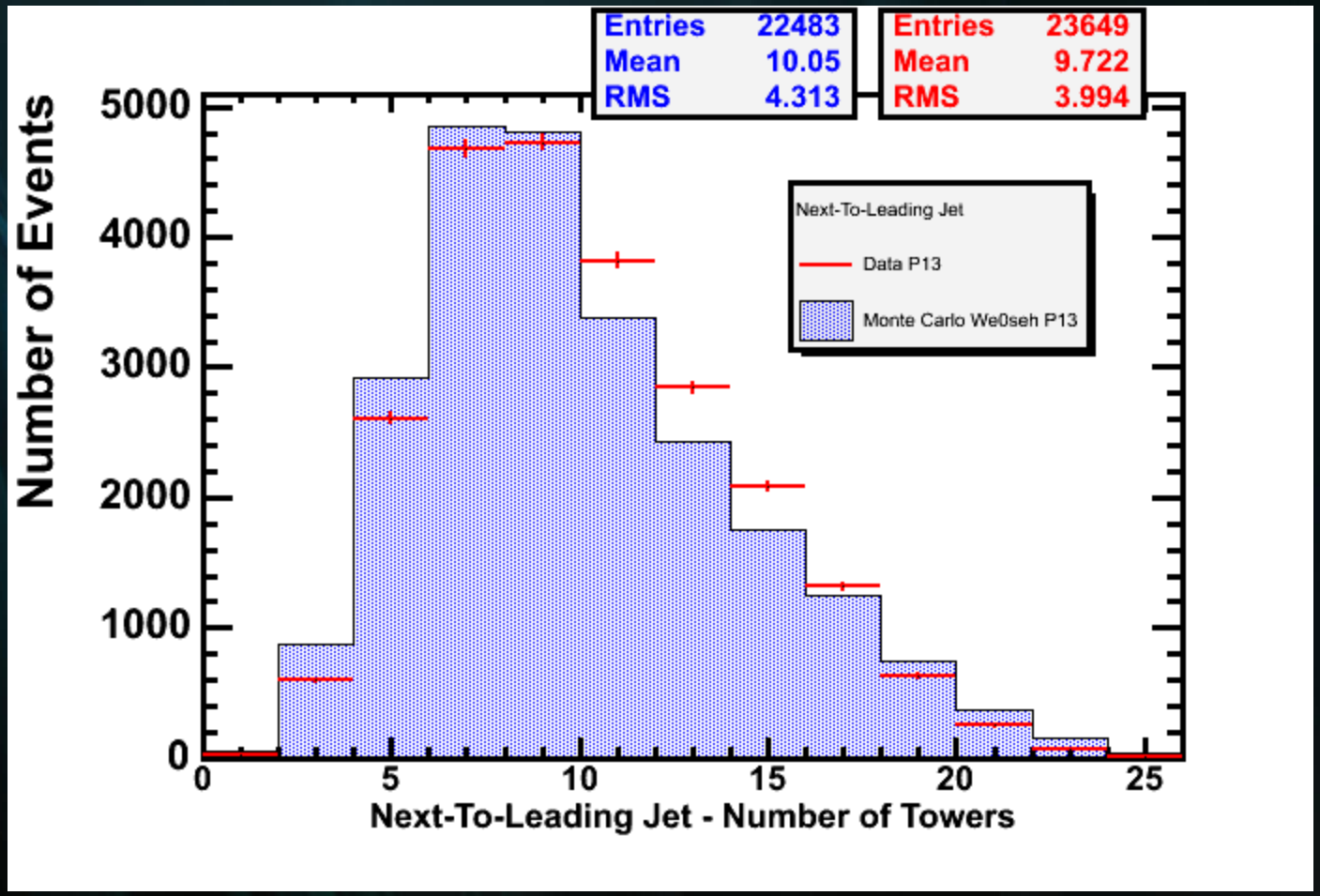
Next-To-Leading Jet Et L5 Corrected



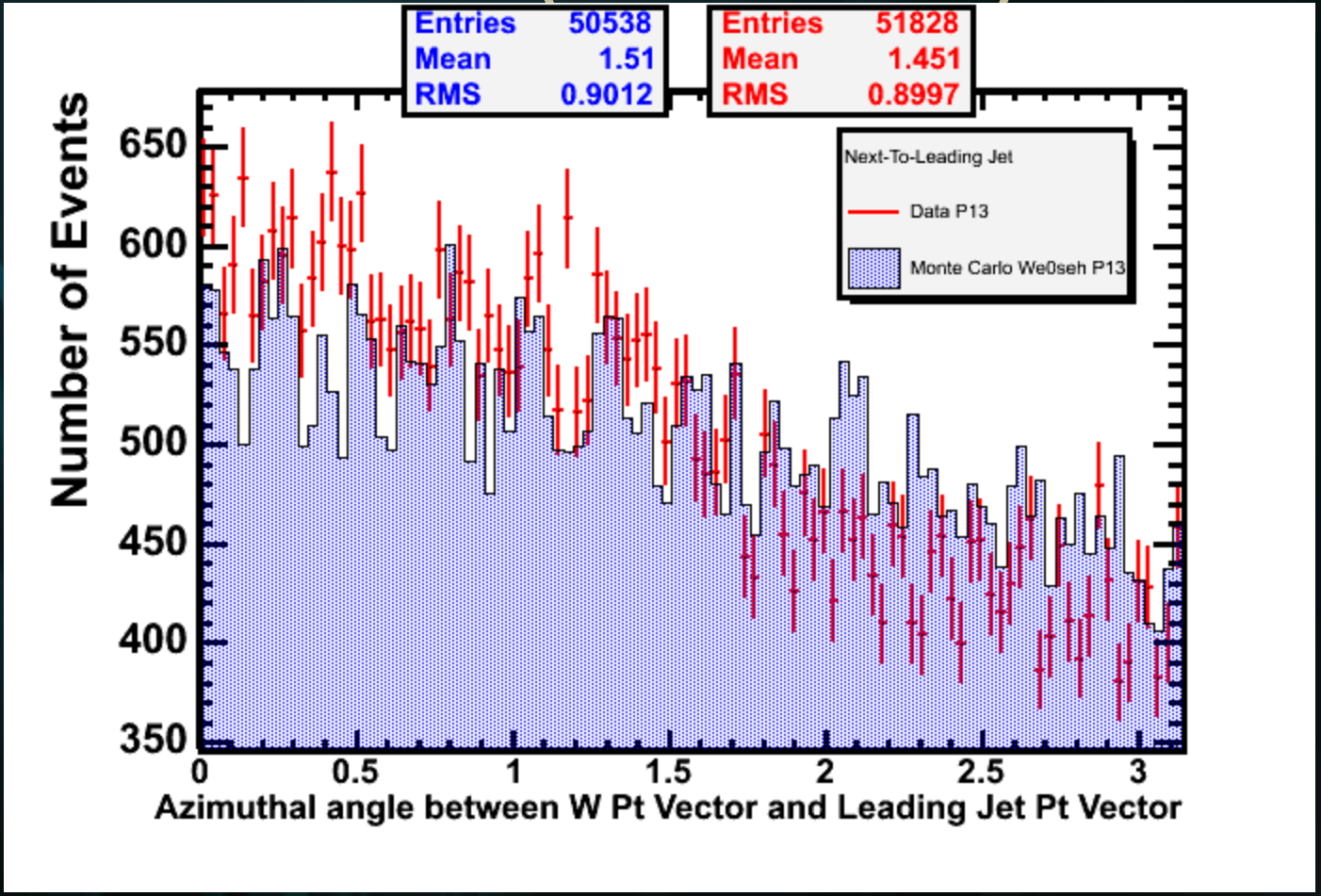
Next-To-Leading Jet Eta



Next-To-Leading Jet Variables



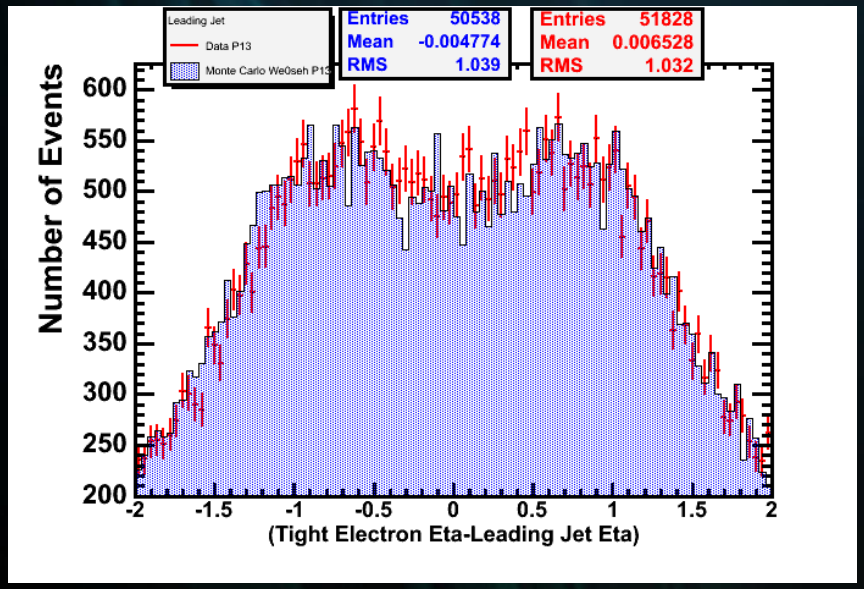
W + (N Jets ≥ 1)



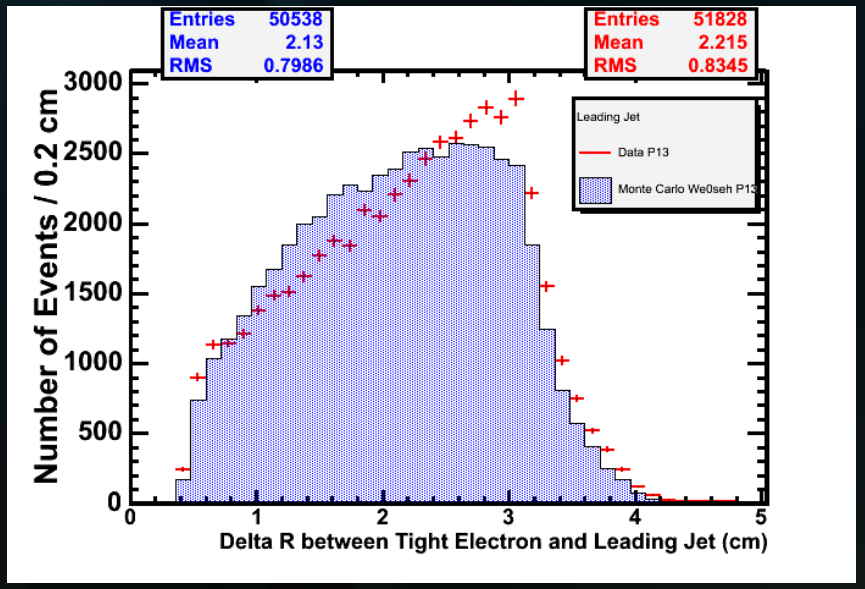
- Plot above is $\Delta\varphi$(W P_T and Leading Jet P_T)
- MET Corrected for Selected Jets and Muons in the Event

W + (N Jets ≥ 1)

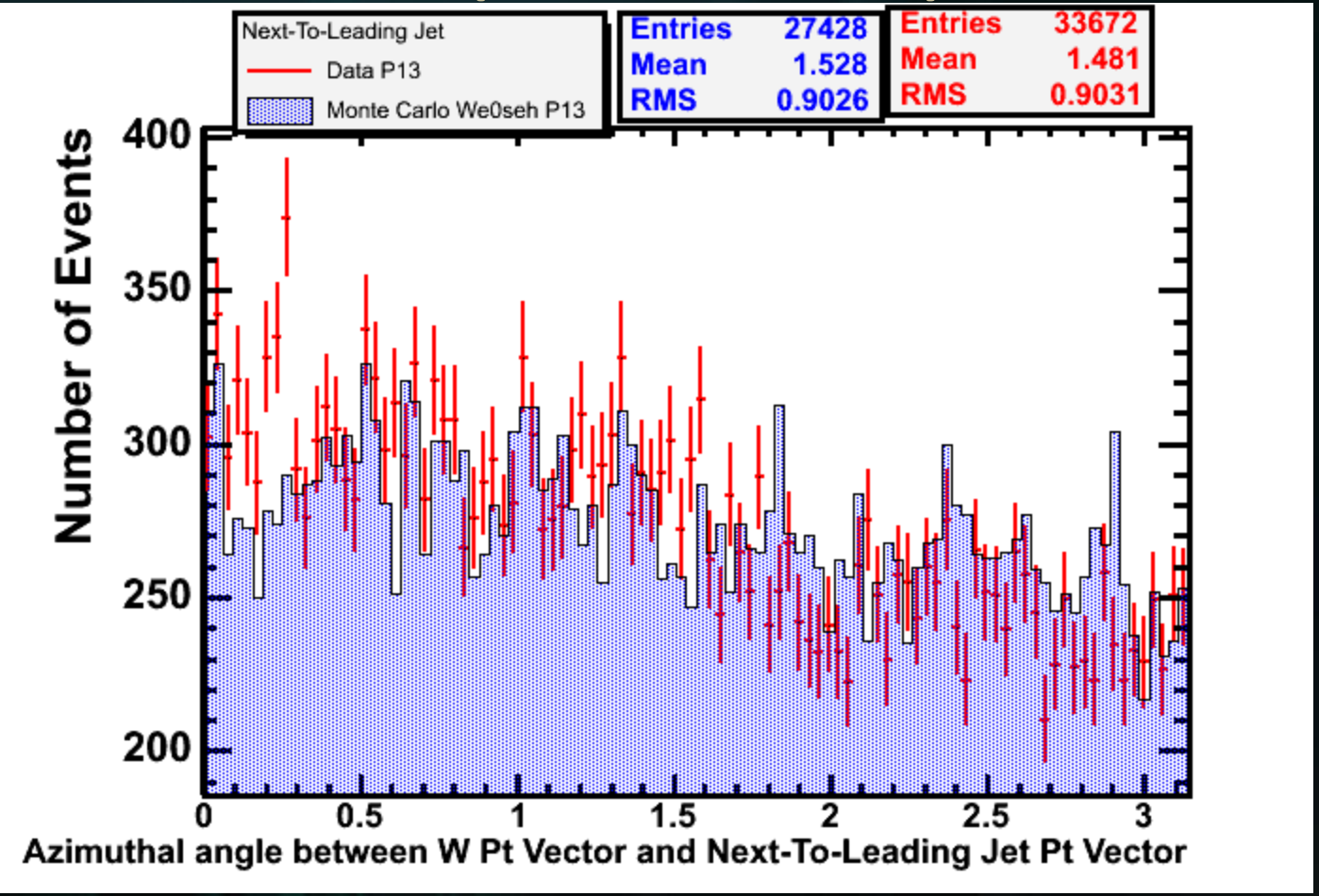
Δη(Tight electron – Leading Jet Eta)



ΔR(Tight electron – Leading Jet)



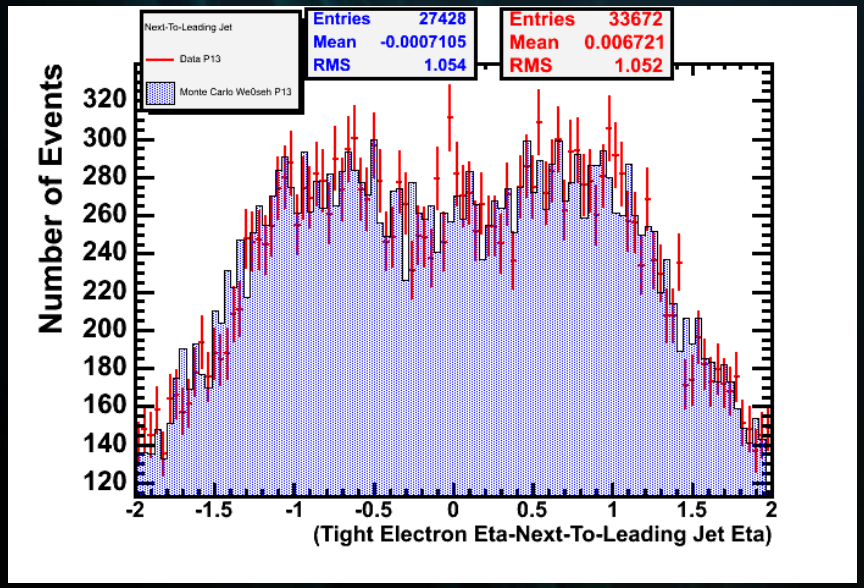
W + (N Jets ≥ 2)



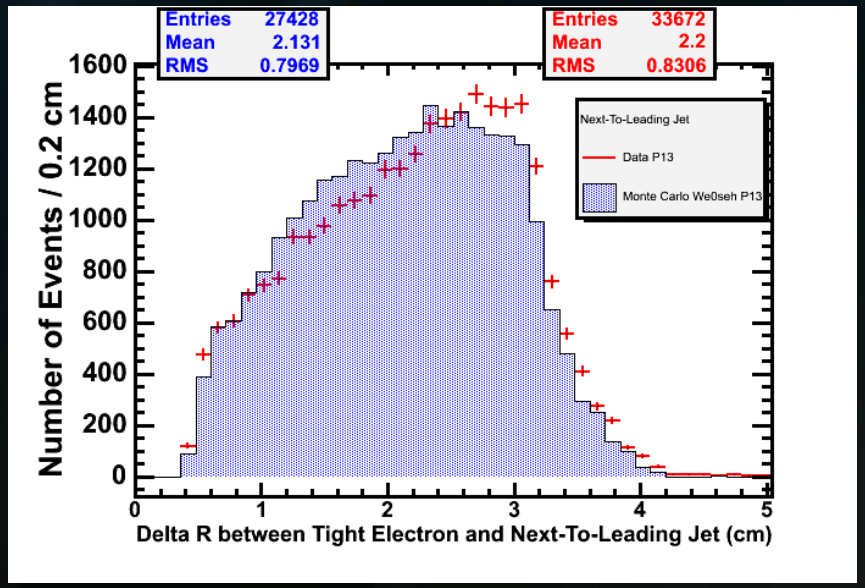
- Plot above is $\Delta\varphi$(W P_T and Next-To-Leading Jet P_T)
- Peaking at 0 could correspond to lack of ΔR separation between Leading and Next-To-Leading Jet

W + (N Jets ≥ 2)

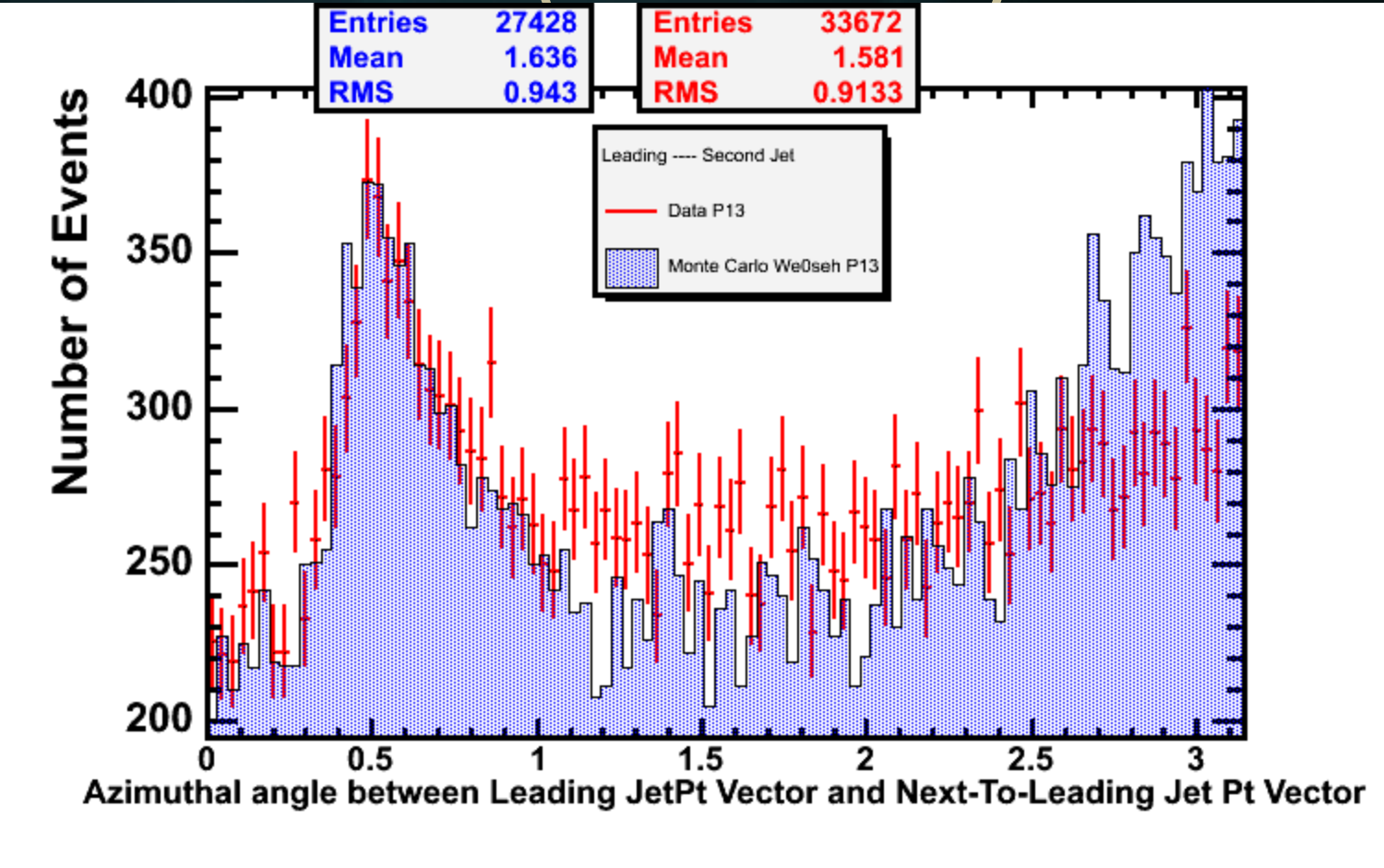
Δη(Tight electron – Next-To-Leading Jet Eta)



ΔR(Tight electron – Leading Jet)

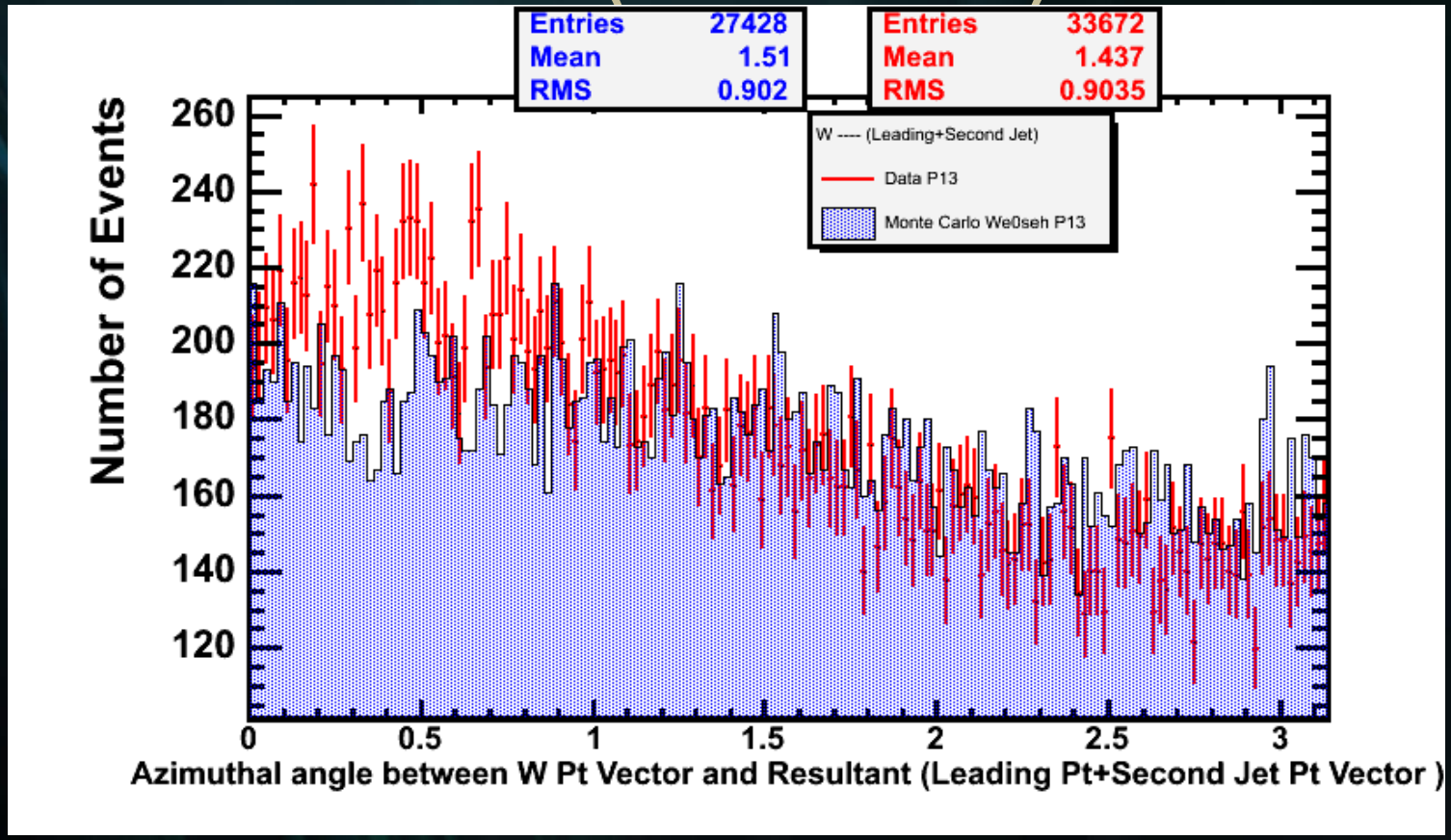


W + (N Jets ≥ 2)



- Plot above is $\Delta\varphi$(Leading Jet P_T and Next-To-Leading Jet P_T)
- Monte Carlo overestimates Back-to-Back Dijets

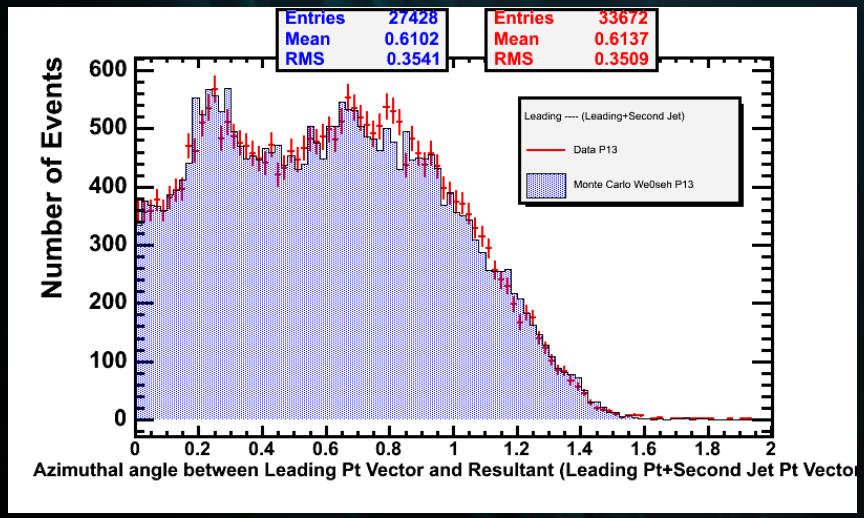
W + (N Jets ≥ 2)



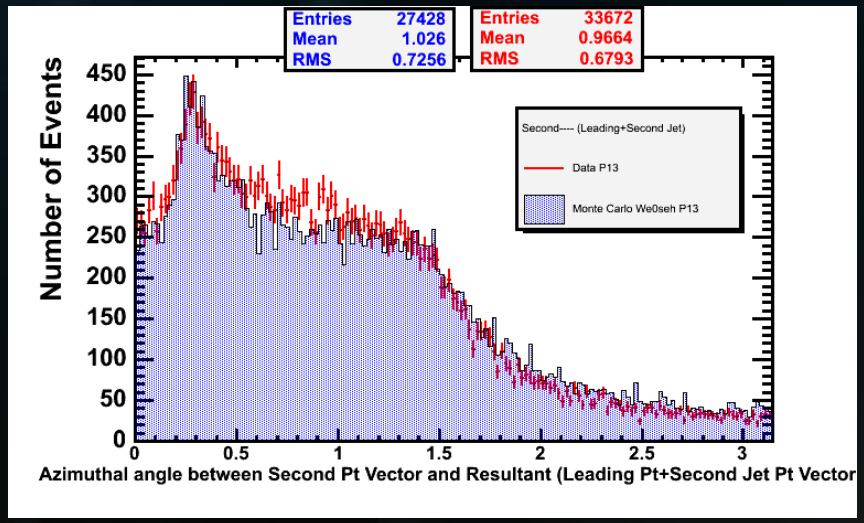
- Resultant P_T Vector = Leading Jet P_T + Next-To-Leading Jet P_T
- Plot above is $\Delta\varphi$(W P_T and Resultant P_T vector)

W + (N Jets ≥ 2)

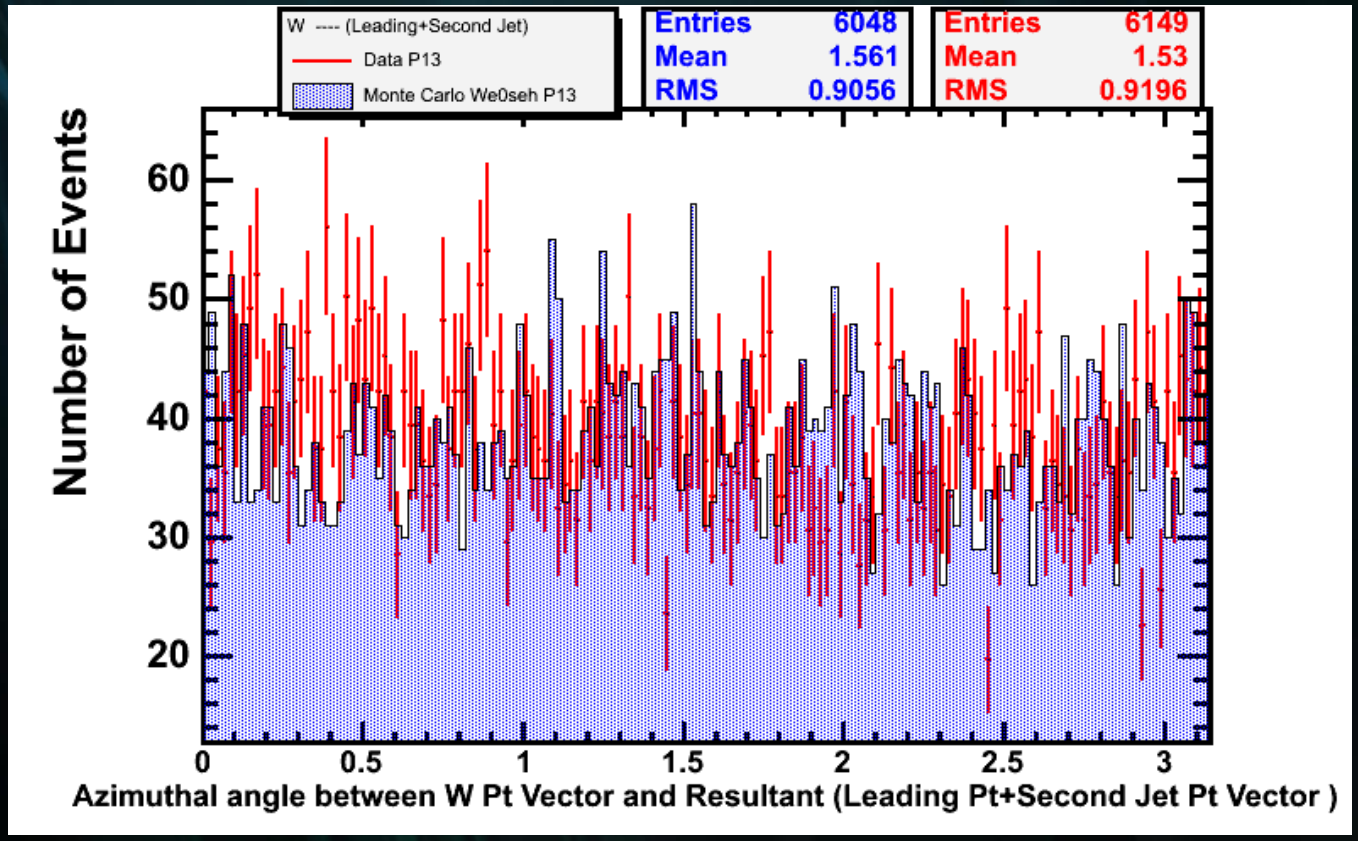
Δφ (Leading and Resultant Vector)



Δφ (Next-To-Leading ,Resultant Vector)



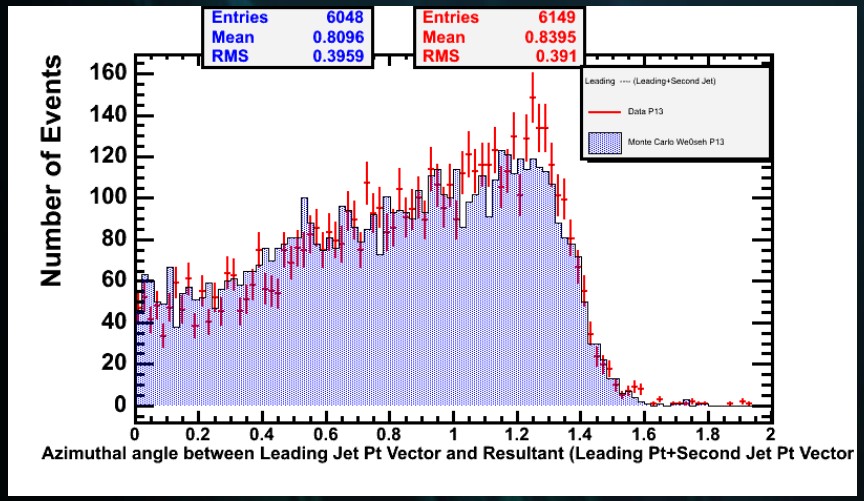
W + (N Jets ≥ 2)



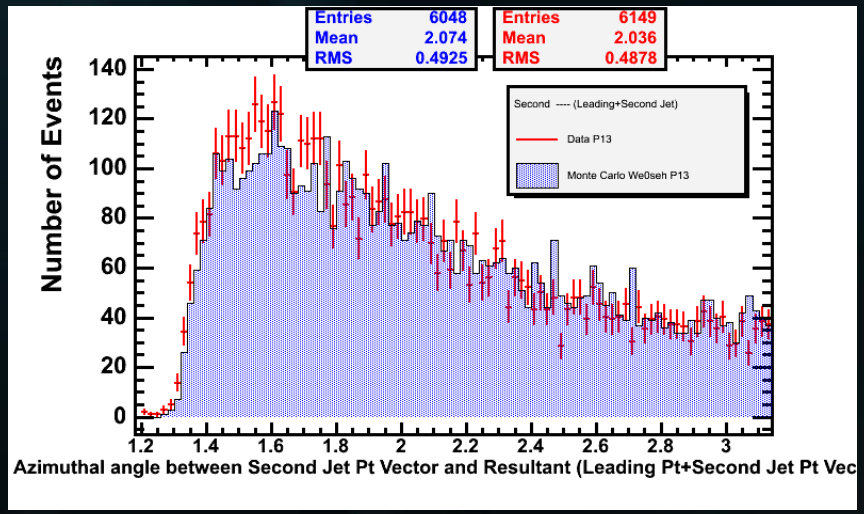
- $\Delta\varphi$(Leading Jet P_T – Next-To-Leading Jet P_T) > 2.6 rad is applied
- Resultant Jet P_T Vector = Leading Jet P_T + Next-To-Leading Jet P_T
- Plot above is $\Delta\varphi$(W P_T – Resultant Jet P_T)

W + (N Jets ≥ 2)

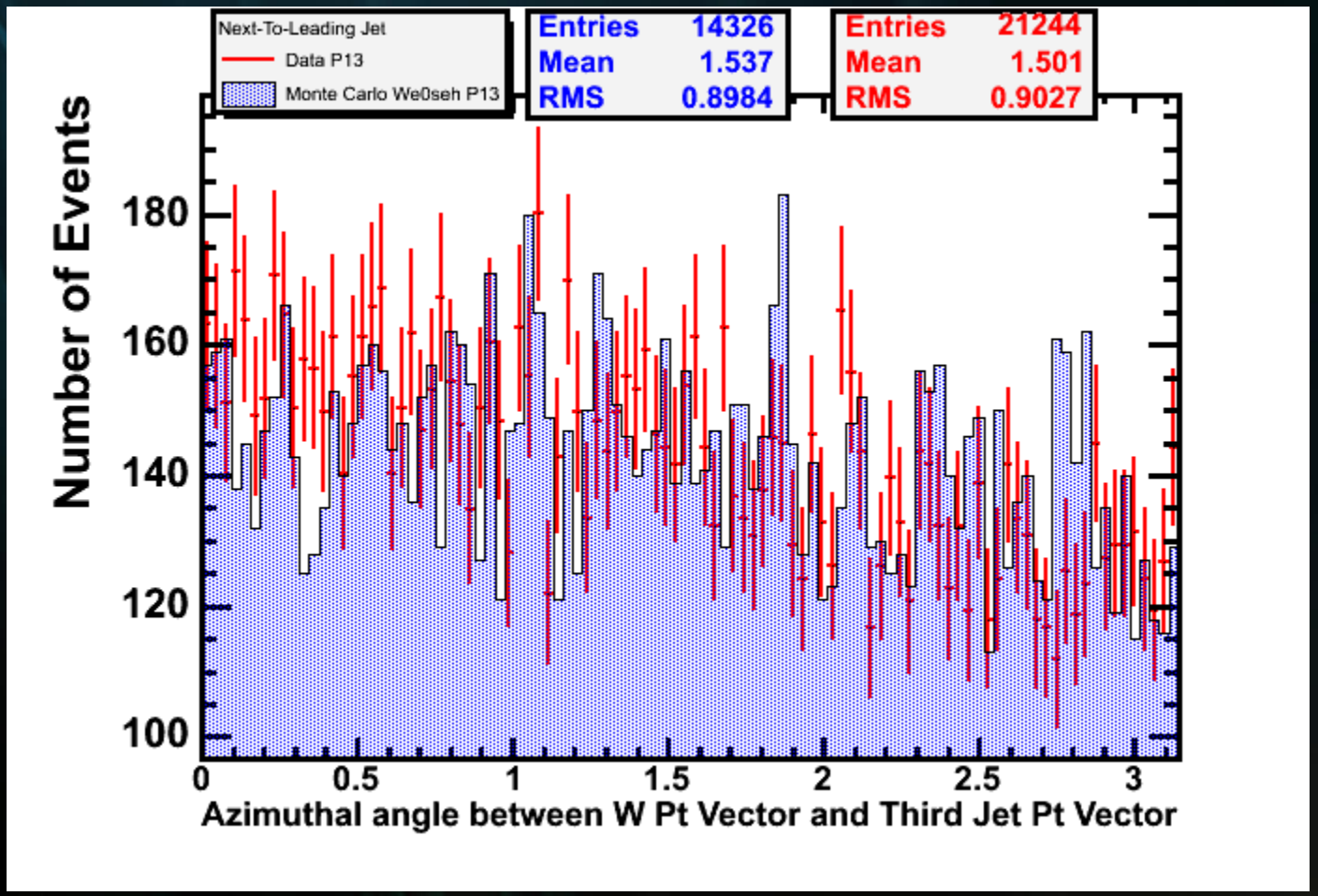
Δφ(Leading and Resultant)



Δφ(Second Jet and Resultant)

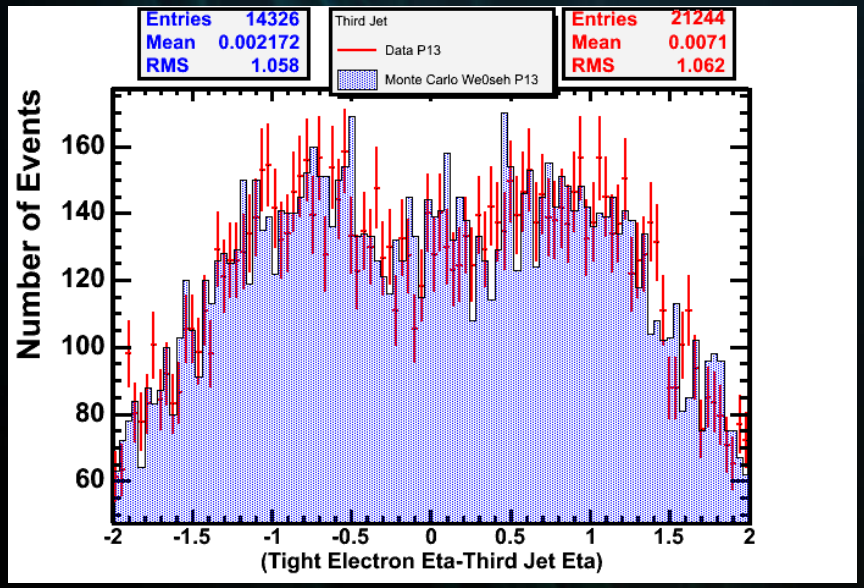


W + (N Jets ≥ 3)

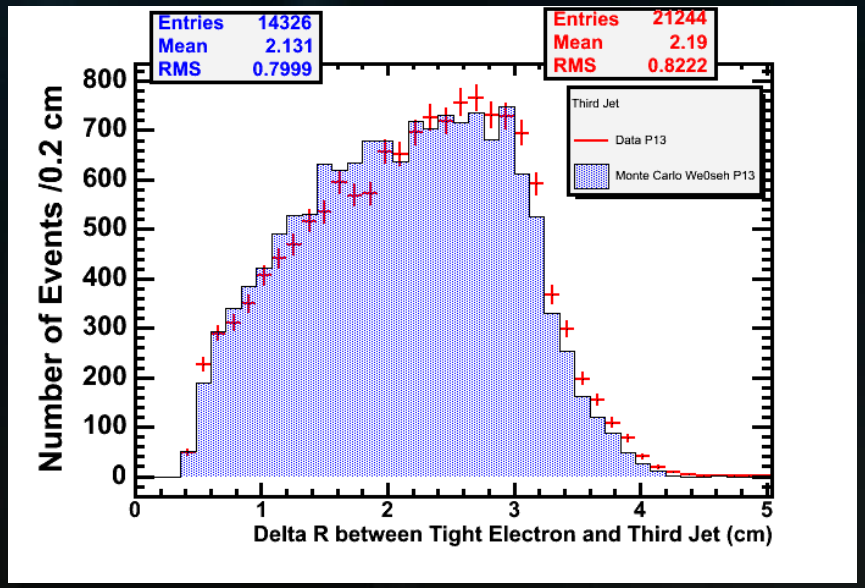

Next-To-Leading Jet
Data P13
Monte Carlo We0seh P13
Entries 14326
Mean 1.537
RMS 0.8984
Entries 21244
Mean 1.501
RMS 0.9027
Number of Events
100
120
140
160
180
0
0.5
1
1.5
2
2.5
3
Azimuthal angle between W Pt Vector and Third Jet Pt Vector

W + (N Jets ≥ 3)

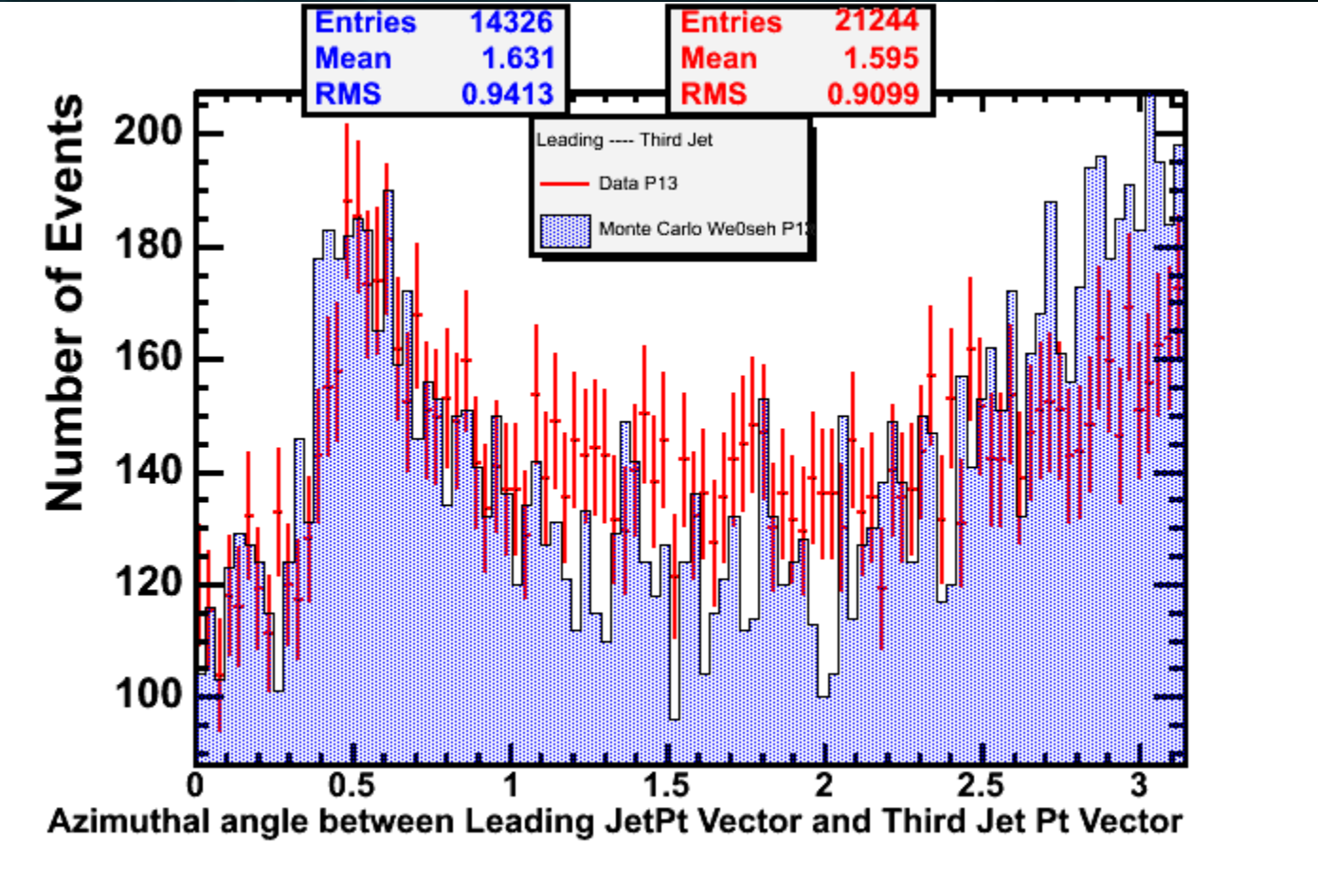
Δη(Leading Jet- Third Jet)



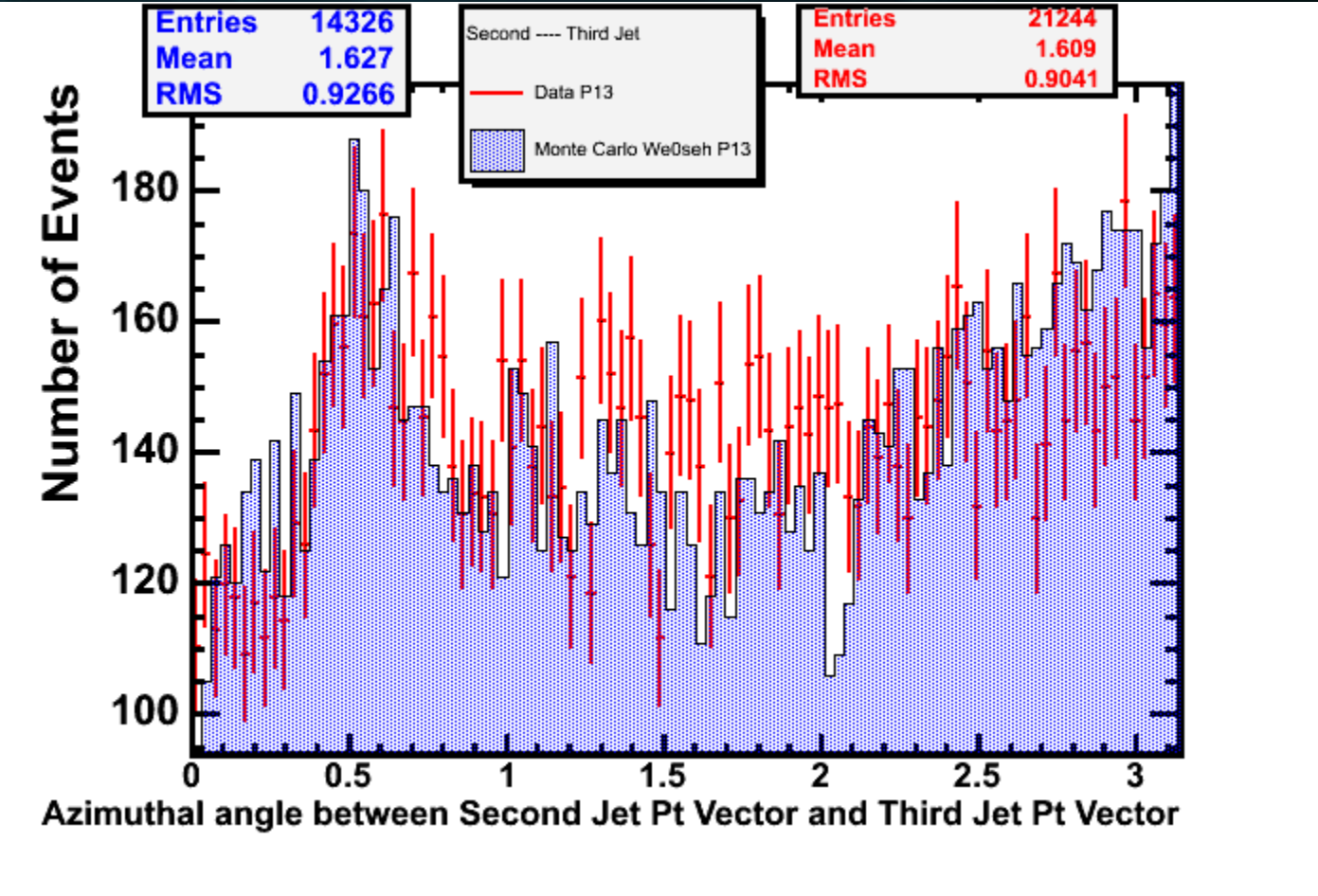
ΔR(Leading Jet- Third Jet)



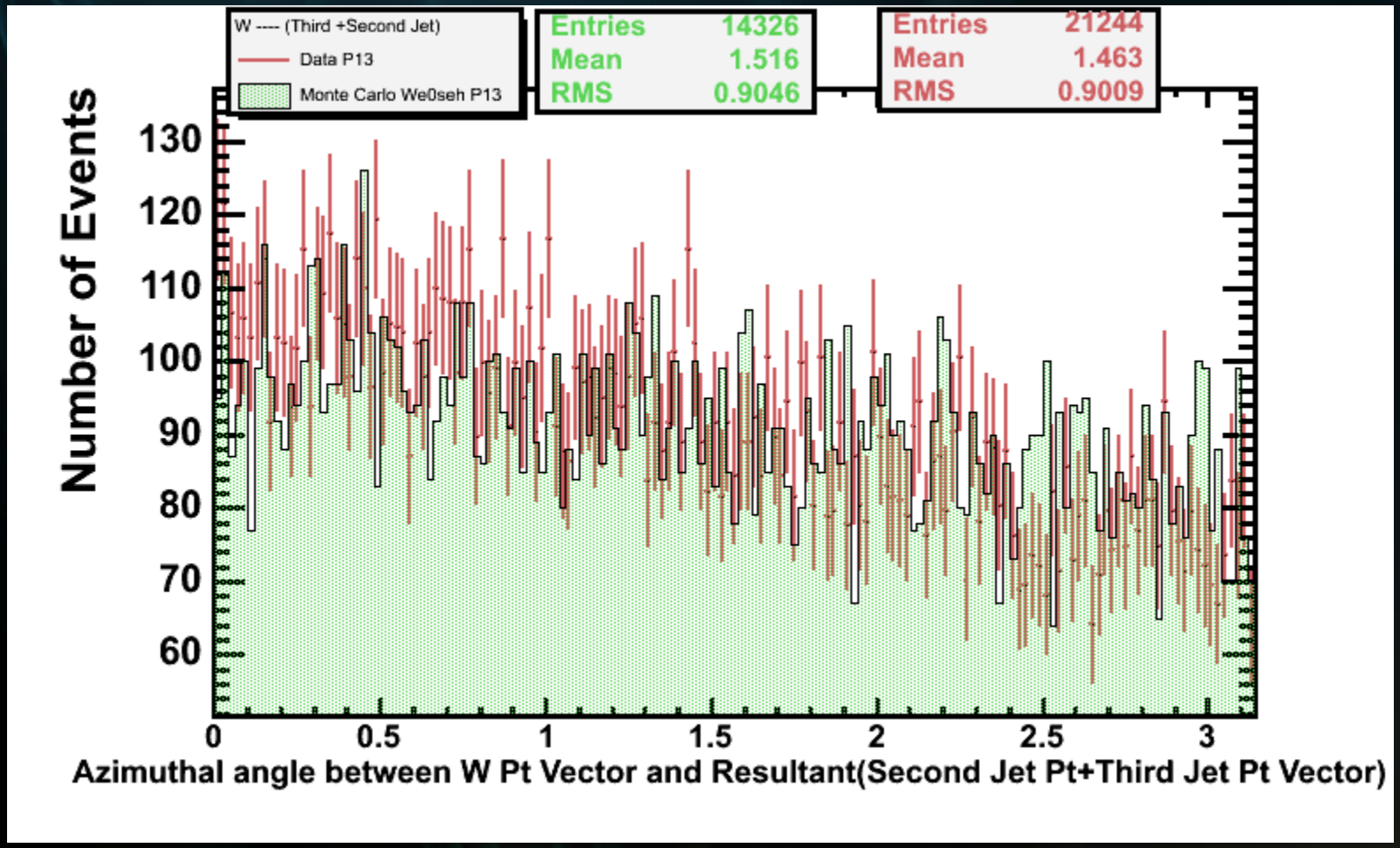
W + (N Jets ≥ 3)


Entries 14326
Mean 1.631
RMS 0.9413
Entries 21244
Mean 1.595
RMS 0.9099
Leading ---- Third Jet
Data P13
Monte Carlo We0seh P13
Number of Events
200
180
160
140
120
100
0
0.5
1
1.5
2
2.5
3
Azimuthal angle between Leading JetPt Vector and Third Jet Pt Vector

W + (N Jets ≥ 3)

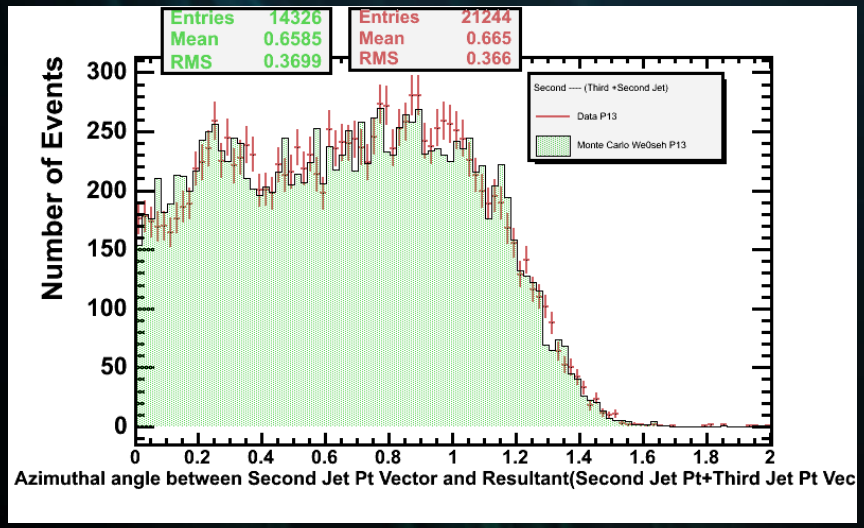

Entries 14326
Mean 1.627
RMS 0.9266
Second ---- Third Jet
Data P13
Monte Carlo We0seh P13
Entries 21244
Mean 1.609
RMS 0.9041
Number of Events
180
160
140
120
100
0
0.5
1
1.5
2
2.5
3
Azimuthal angle between Second Jet Pt Vector and Third Jet Pt Vector

W + (N Jets ≥ 3)

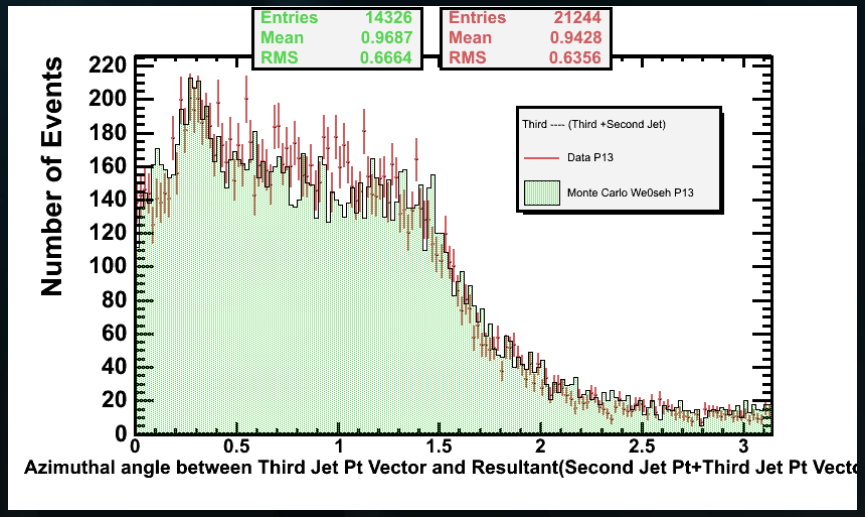

W ---- (Third +Second Jet)
Data P13
Monte Carlo We0seh P13
Entries 14326
Mean 1.516
RMS 0.9046
Entries 21244
Mean 1.463
RMS 0.9009
Number of Events
130
120
110
100
90
80
70
60
0
0.5
1
1.5
2
2.5
3
Azimuthal angle between W Pt Vector and Resultant(Second Jet Pt+Third Jet Pt Vector)

W + (N Jets ≥ 3)

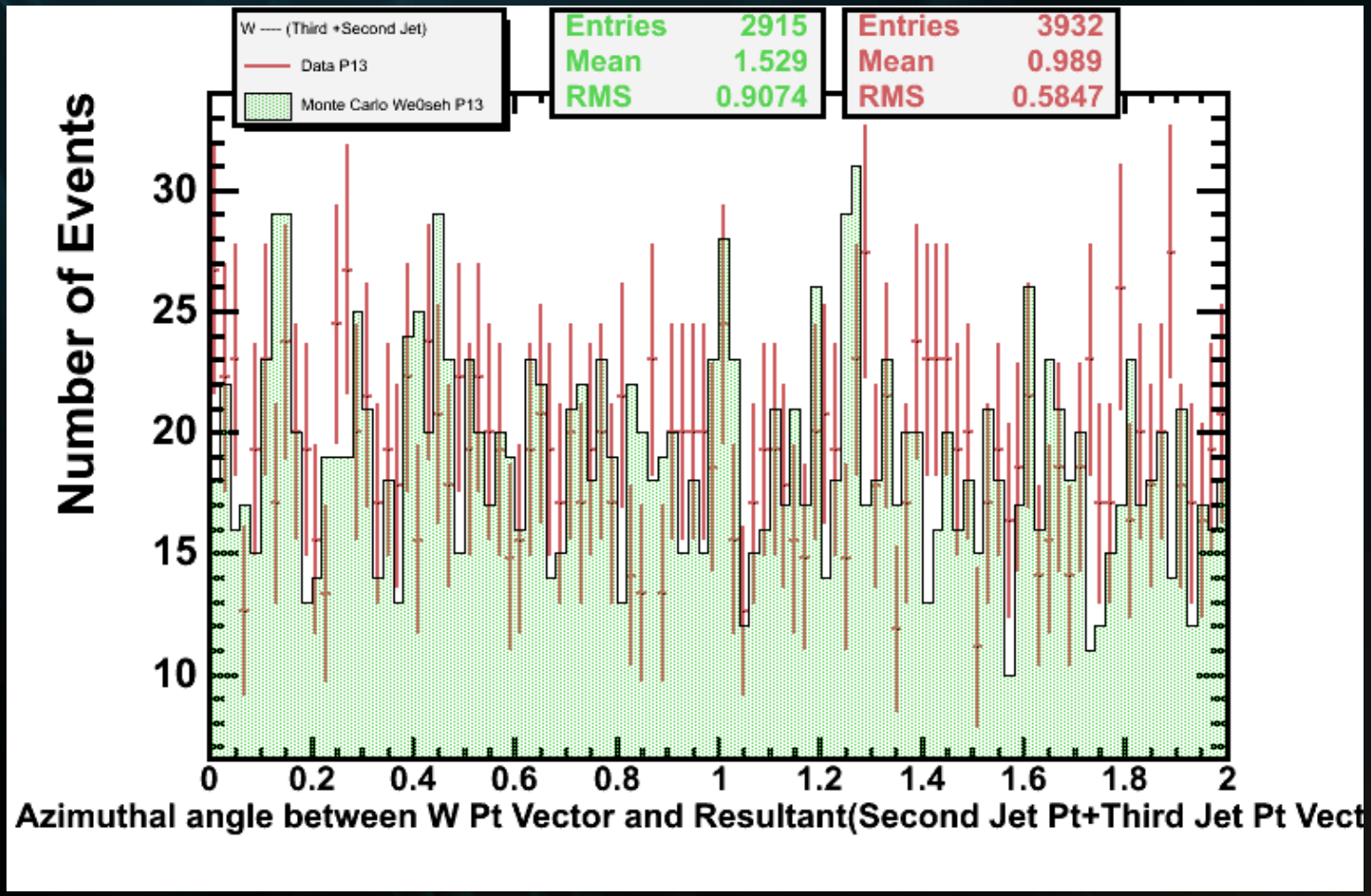
Second and Resultant



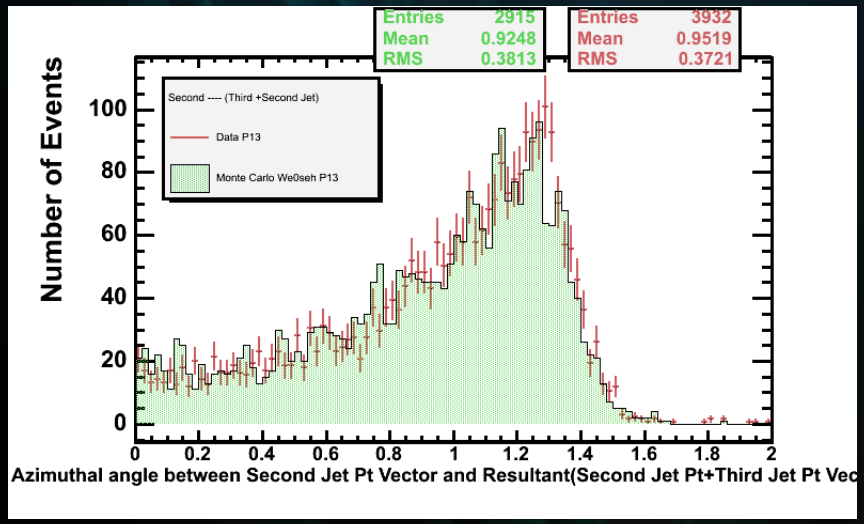
Third and Resultant

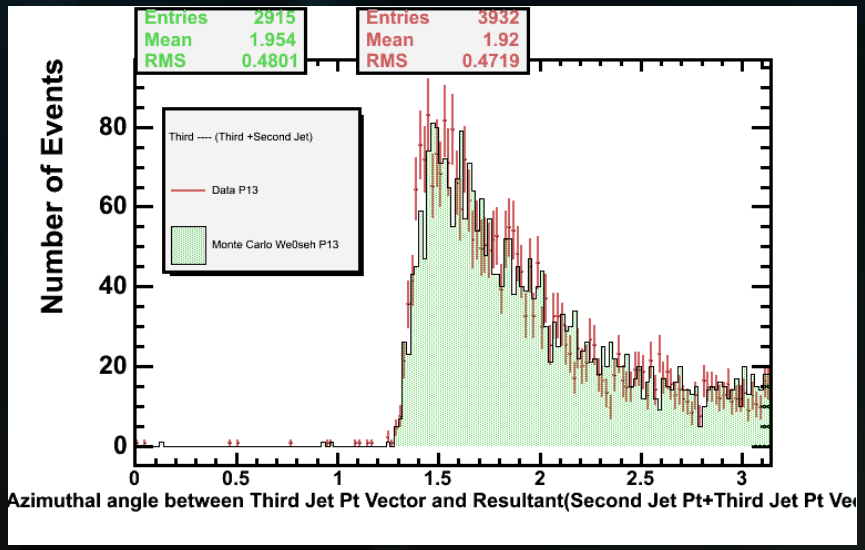


W + (N Jets ≥ 3)

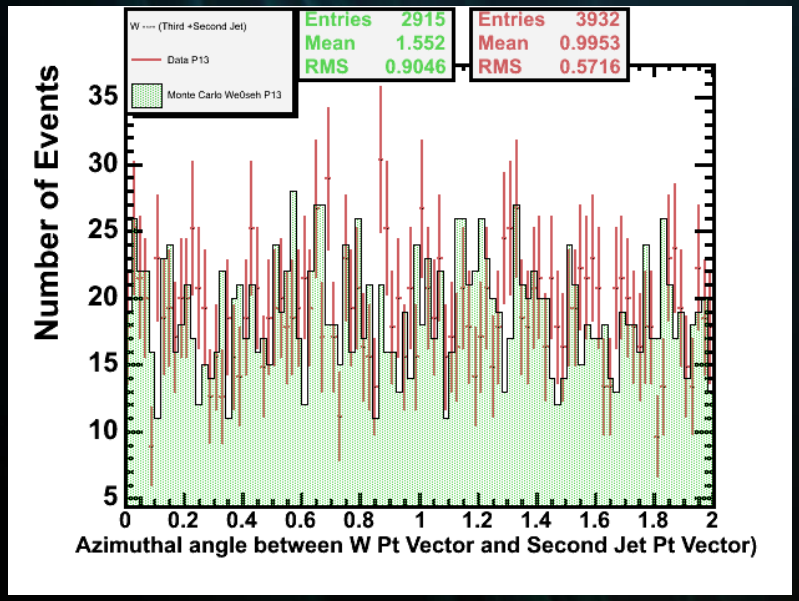

W ---- (Third +Second Jet)
Data P13
Monte Carlo We0seh P13
Entries 2915
Mean 1.529
RMS 0.9074
Entries 3932
Mean 0.989
RMS 0.5847
Number of Events
10
15
20
25
30
0
0.2
0.4
0.6
0.8
1
1.2
1.4
1.6
1.8
2
Azimuthal angle between W Pt Vector and Resultant(Second Jet Pt+Third Jet Pt Vect

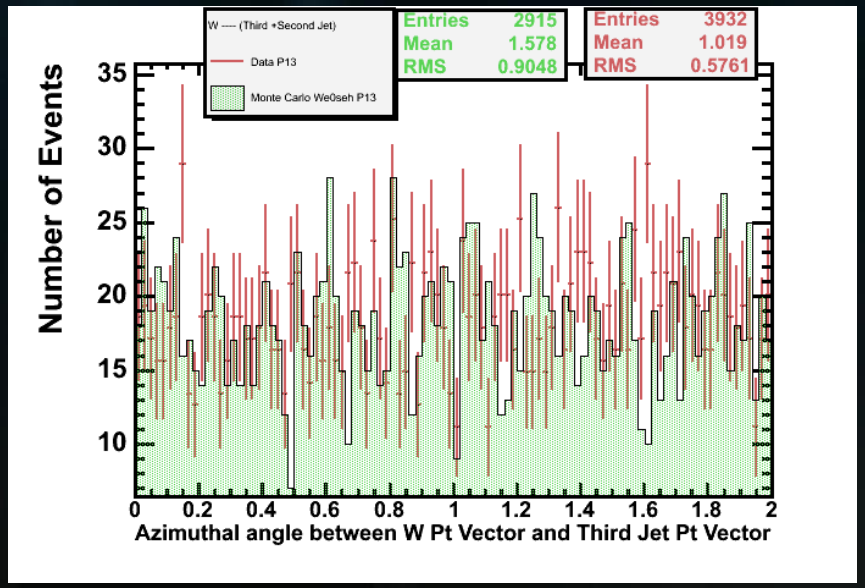
W + (N Jets ≥ 3)


Entries 2915
Mean 0.9248
RMS 0.3813
Entries 3932
Mean 0.9519
RMS 0.3721
Second ---- (Third +Second Jet)
Data P13
Monte Carlo We0seh P13
Number of Events
Azimuthal angle between Second Jet Pt Vector and Resultant(Second Jet Pt+Third Jet Pt Vec


Entries 2915
Mean 1.954
RMS 0.4801
Entries 3932
Mean 1.92
RMS 0.4719
Third ---- (Third +Second Jet)
Data P13
Monte Carlo We0seh P13
Number of Events
Azimuthal angle between Third Jet Pt Vector and Resultant(Second Jet Pt+Third Jet Pt Ve

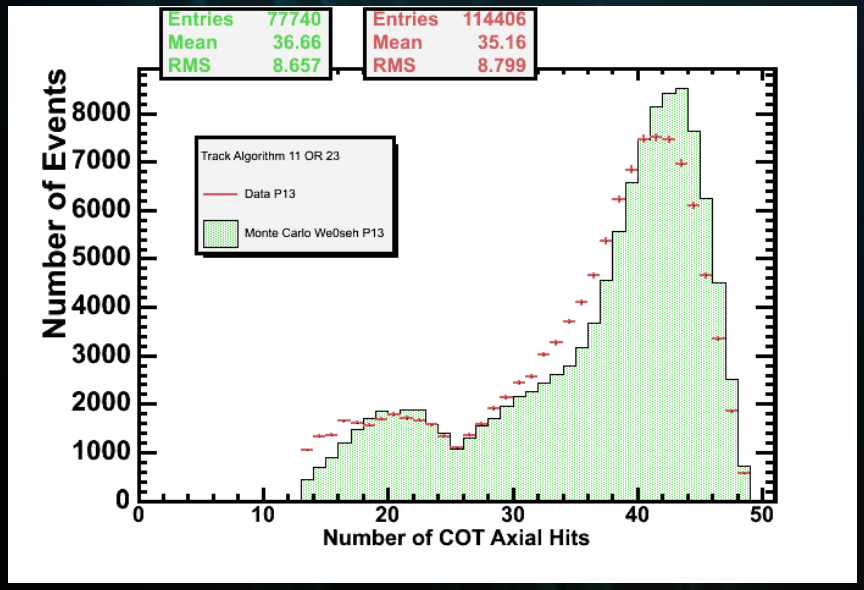
W + (N Jets ≥ 3)


W ---- (Third +Second Jet)
Data P13
Monte Carlo We0seh P13
Entries 2915
Mean 1.552
RMS 0.9046
Entries 3932
Mean 0.9953
RMS 0.5716
Number of Events
Azimuthal angle between W Pt Vector and Second Jet Pt Vector)

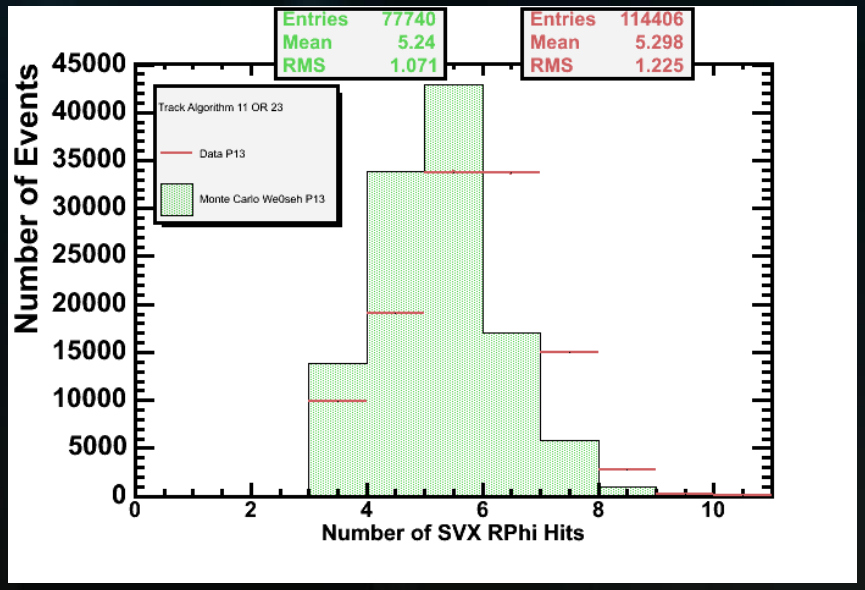

W ---- (Third +Second Jet)
Data P13
Monte Carlo We0seh P13
Entries 2915
Mean 1.578
RMS 0.9048
Entries 3932
Mean 1.019
RMS 0.5761
Number of Events
Azimuthal angle between W Pt Vector and Third Jet Pt Vector

Tracks Algorithm 11 OR 23

Number of COT Axial Hits

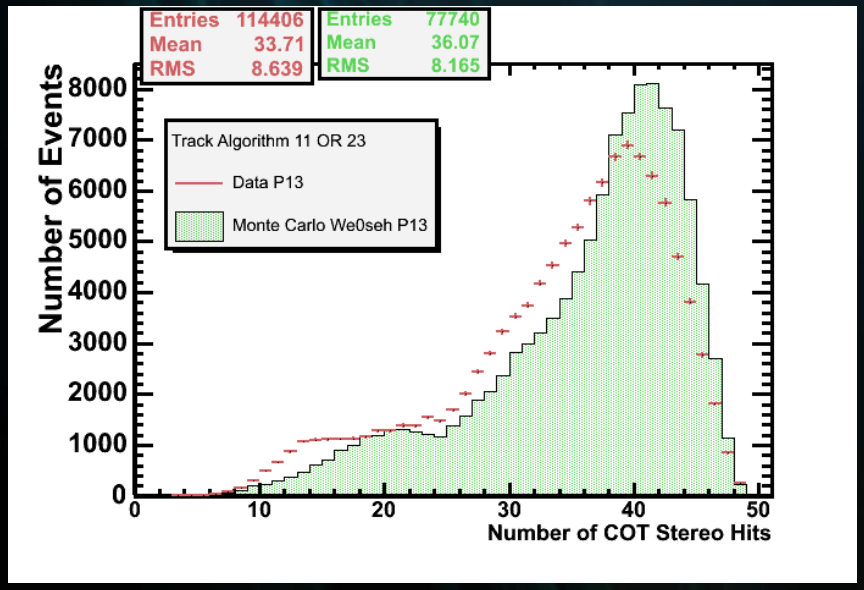


Number of Silicon RPhi Hits

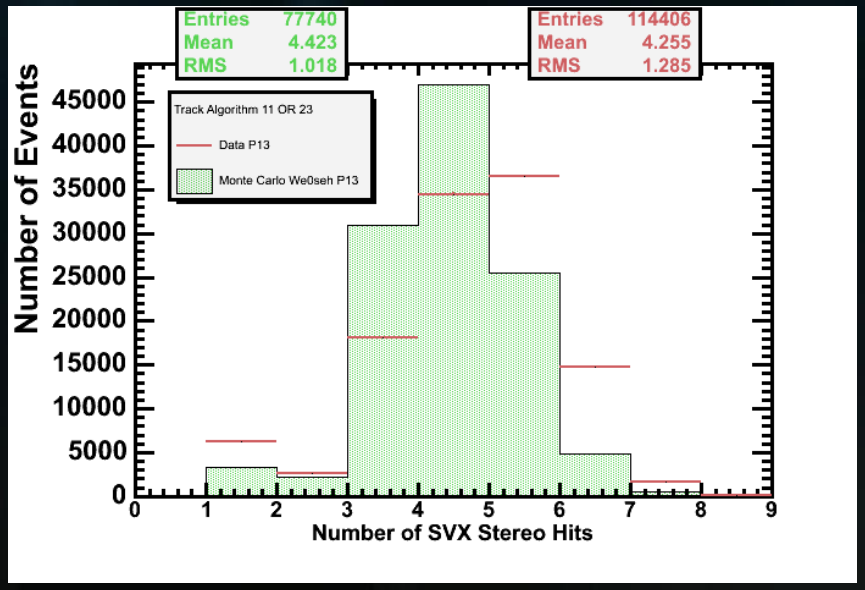


Tracks Algorithm 11 OR 23

Number of COT Stereo Hits

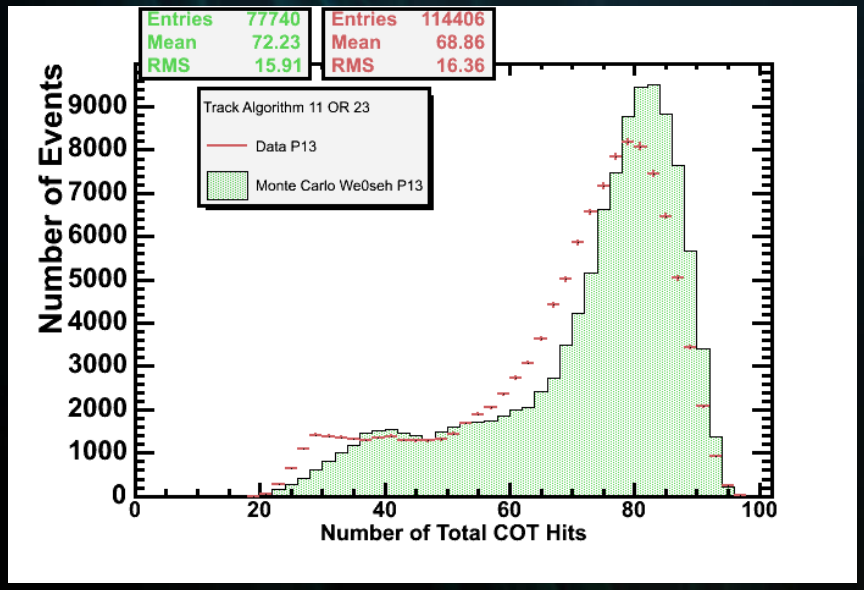


Number of SVX Stereo Hits

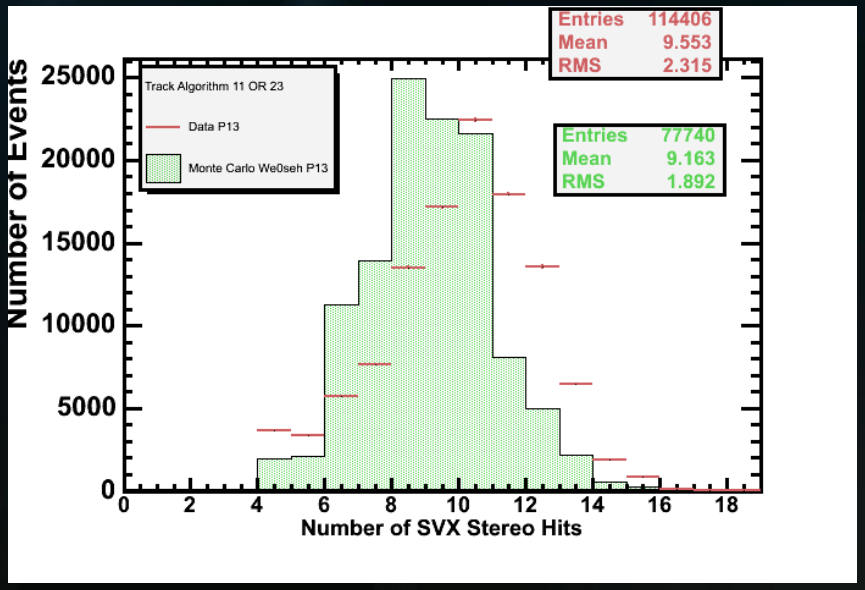


Tracks Algorithm 11 OR 23

Total Number of COT Hits (Axial+Stereo)



Total Number of Silicon Hits (Axial+Stereo)



Conclusions

- Need to understand the effect of Muon Correction on MET with resepct to Low energy Jets
- Make the same plots for Jet Et >15 GeV