Currently SNOMAN scales up the number of hit tubes for RSP in:

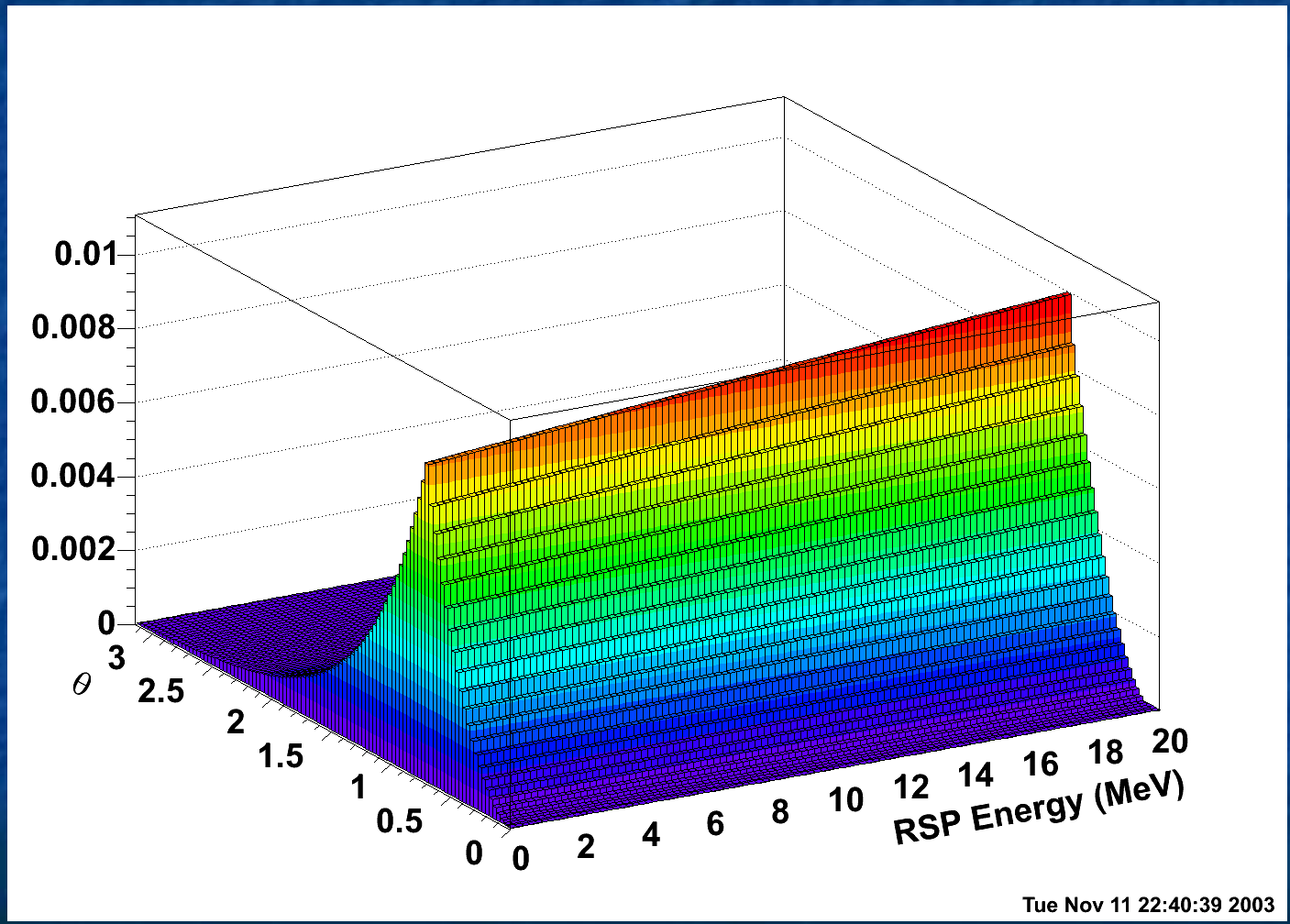
$$N_{eff} \rightarrow N_{eff} \frac{N_{all\ channels}}{N_{working}}$$

What is not accounted for is:

$P_{ckv}\left(E_e\right)$ $\frac{1}{r_{prime}^2}$ $\hat{n} \cdot \vec{r}_{prime}$

ε

$$P_{ckv}\left(E_e\right) =$$



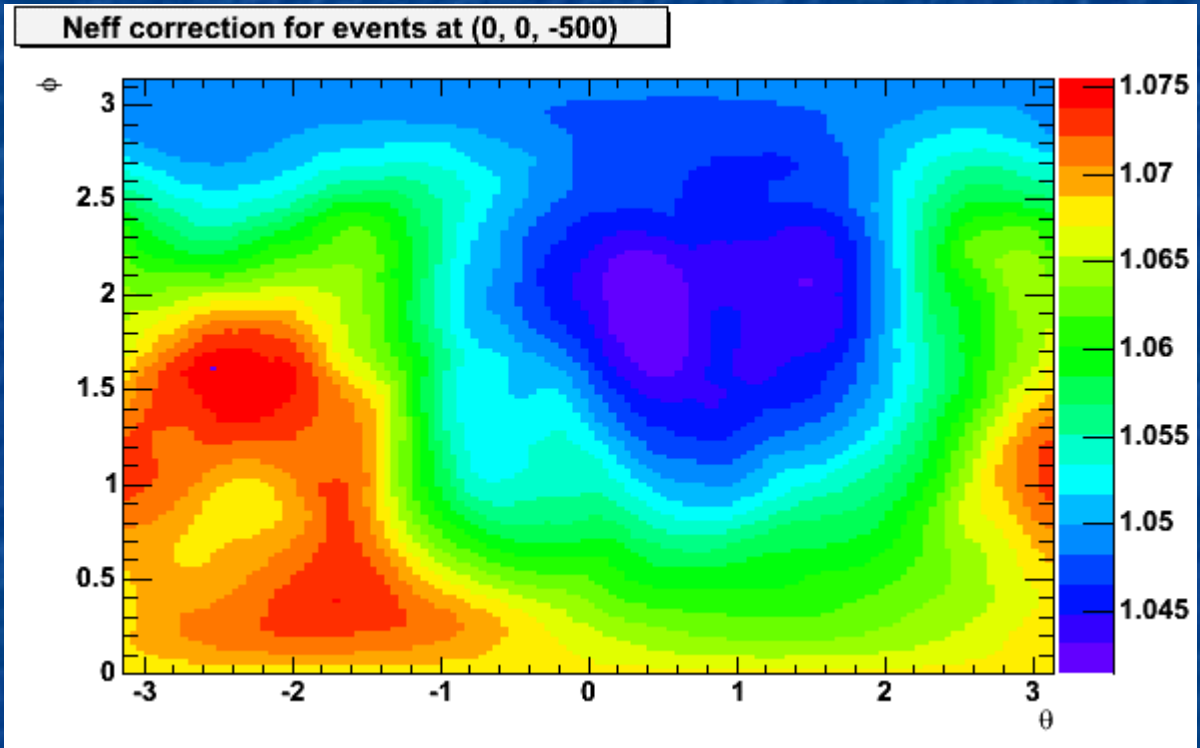
$$on = \sum_{\substack{all\ normal \\ working\ tubes}} P_{ckv} \frac{\hat{n} \cdot \vec{r}_{prime}}{r_{prime}^2} \varepsilon$$

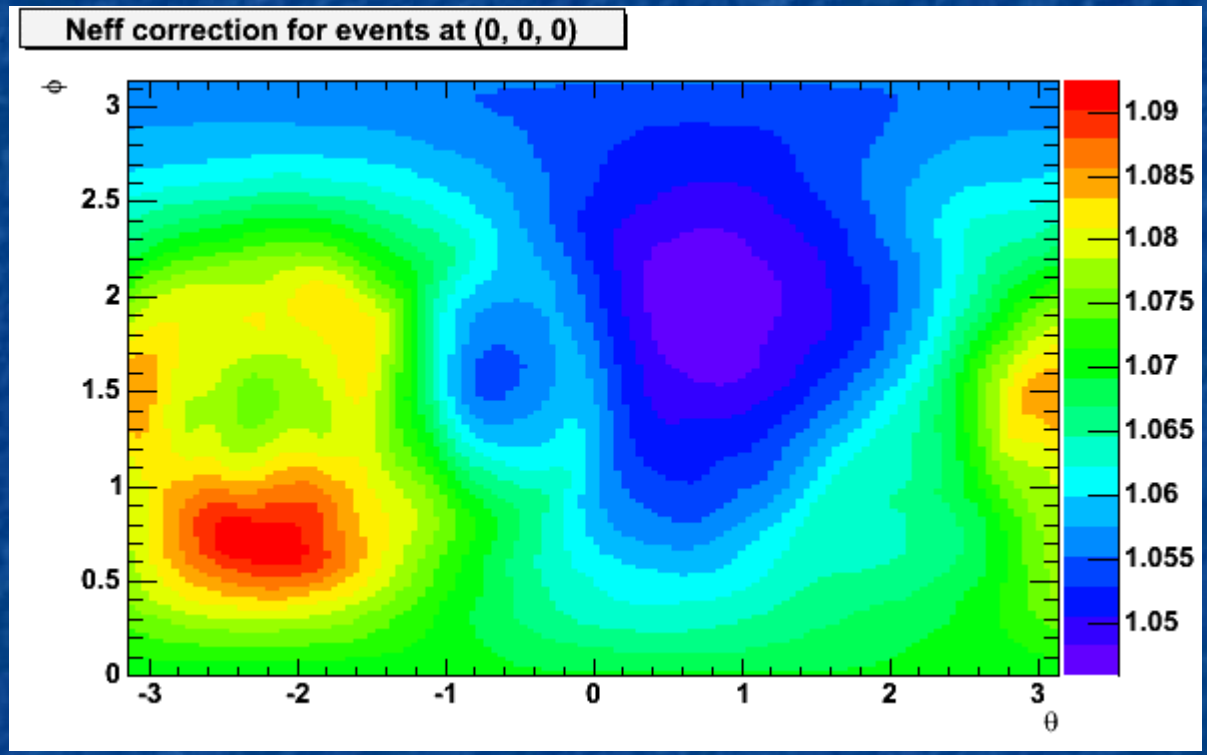
$$off = \sum_{\substack{all\ normal \\ non\text{-}working\ tubes}} P_{ckv} \frac{\hat{n} \cdot \vec{r}_{prime}}{r_{prime}^2} \varepsilon$$

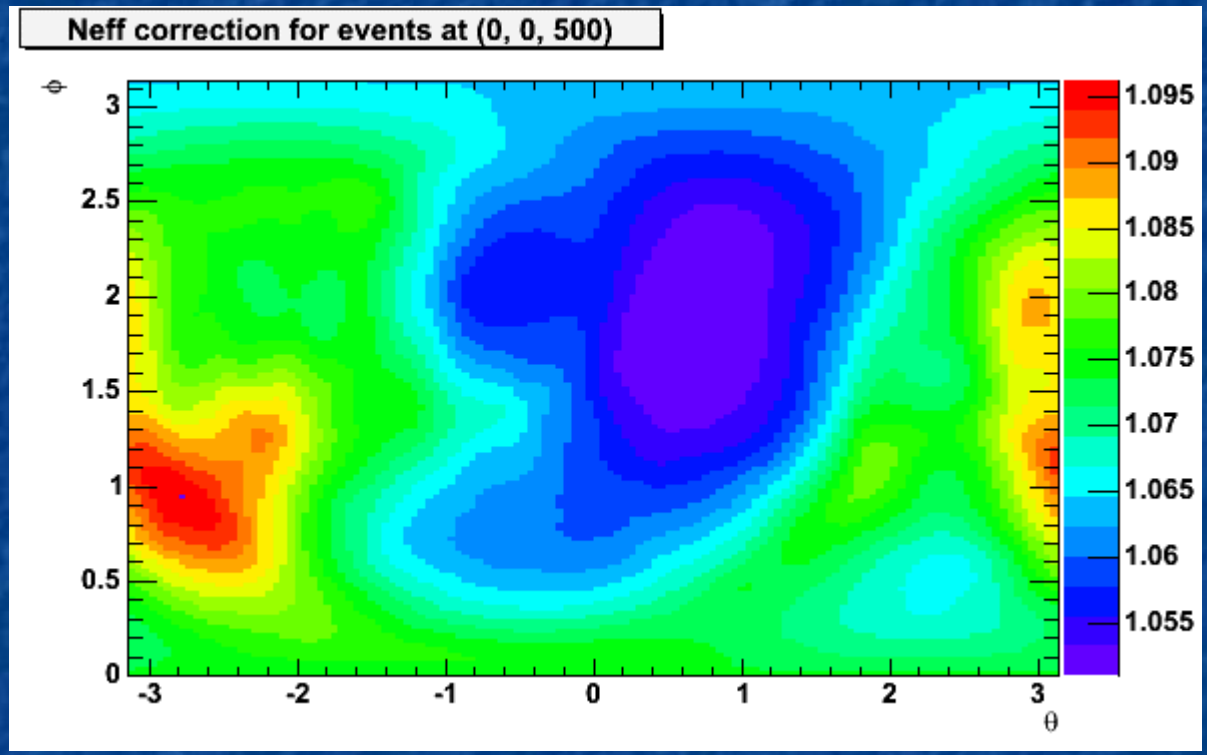
$$N_{eff} \rightarrow N_{eff} \frac{N_{all\ channels}}{N_{working}} \rightarrow N_{eff} \frac{on + off}{on}$$

For the run 21826 (^{16}N)

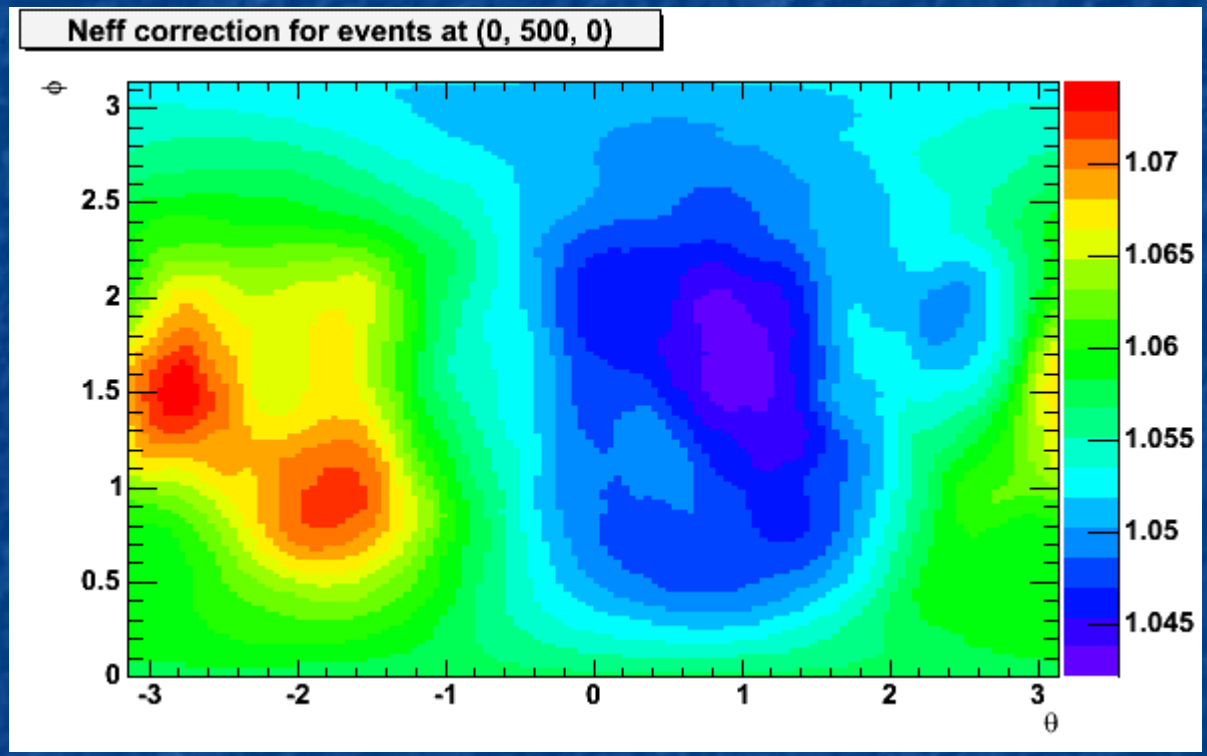
Going down the vertical axis

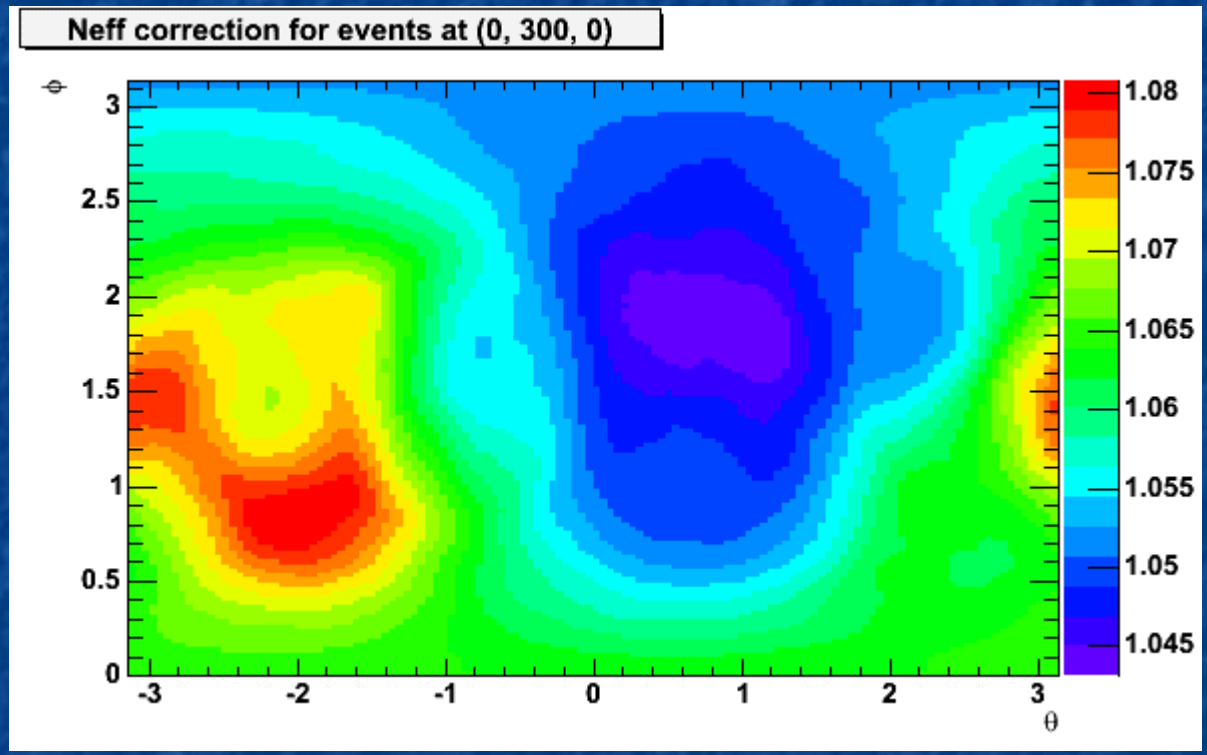


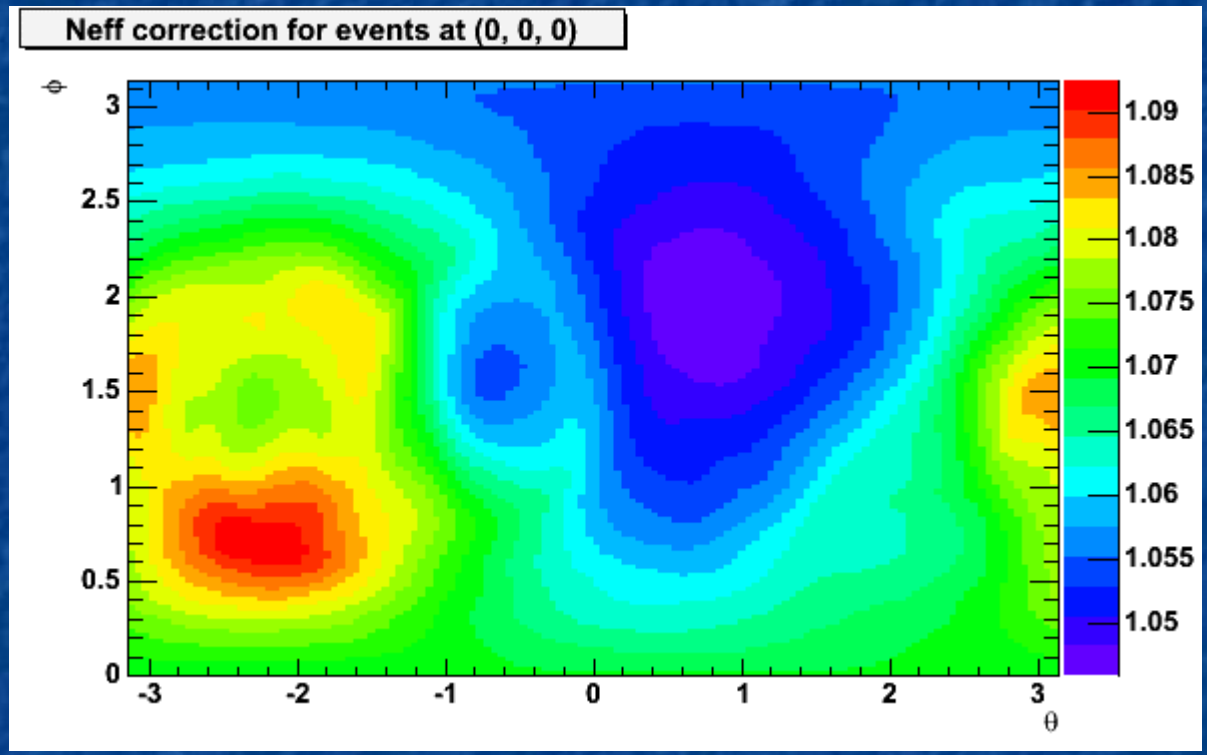

Neff correction for events at (0, 0, 0)
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
1.09
1.085
1.08
1.075
1.07
1.065
1.06
1.055
1.05

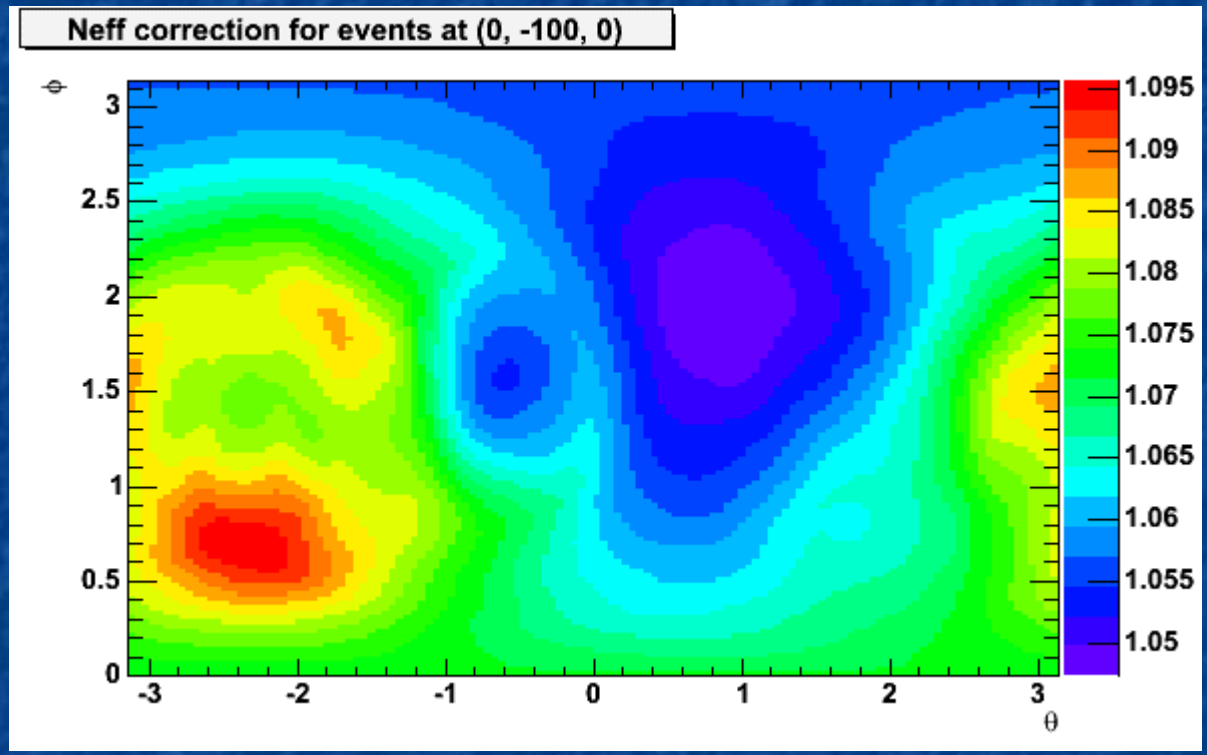

Neff correction for events at (0, 0, 500)
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
1.095
1.09
1.085
1.08
1.075
1.07
1.065
1.06
1.055

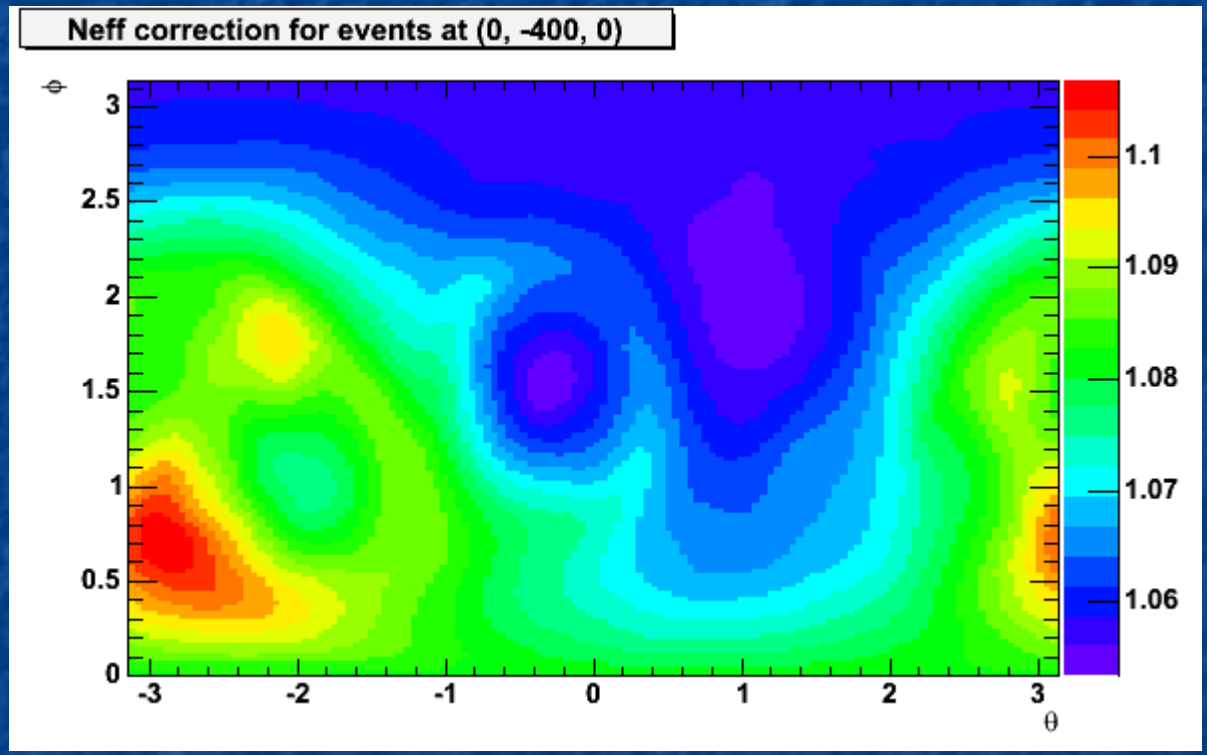
From +’ve to –’ve along the y-axis

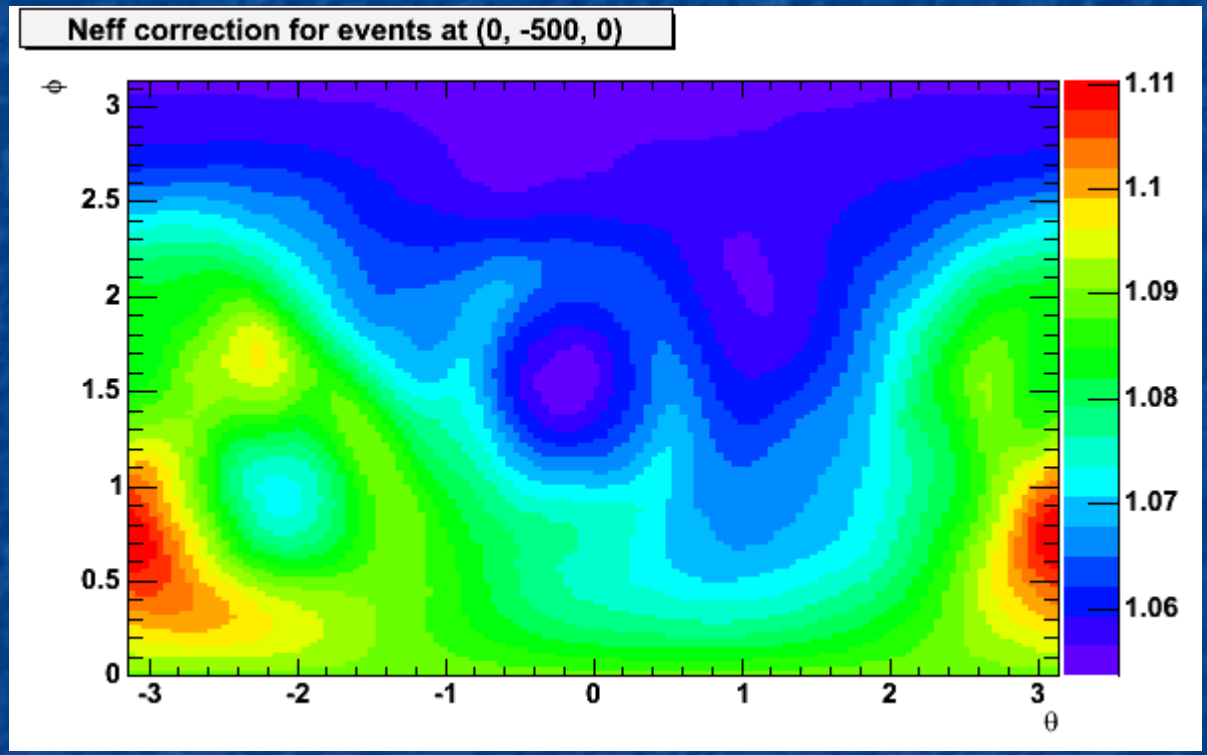



Neff correction for events at (0, 300, 0)
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
1.08
1.075
1.07
1.065
1.06
1.055
1.05
1.045

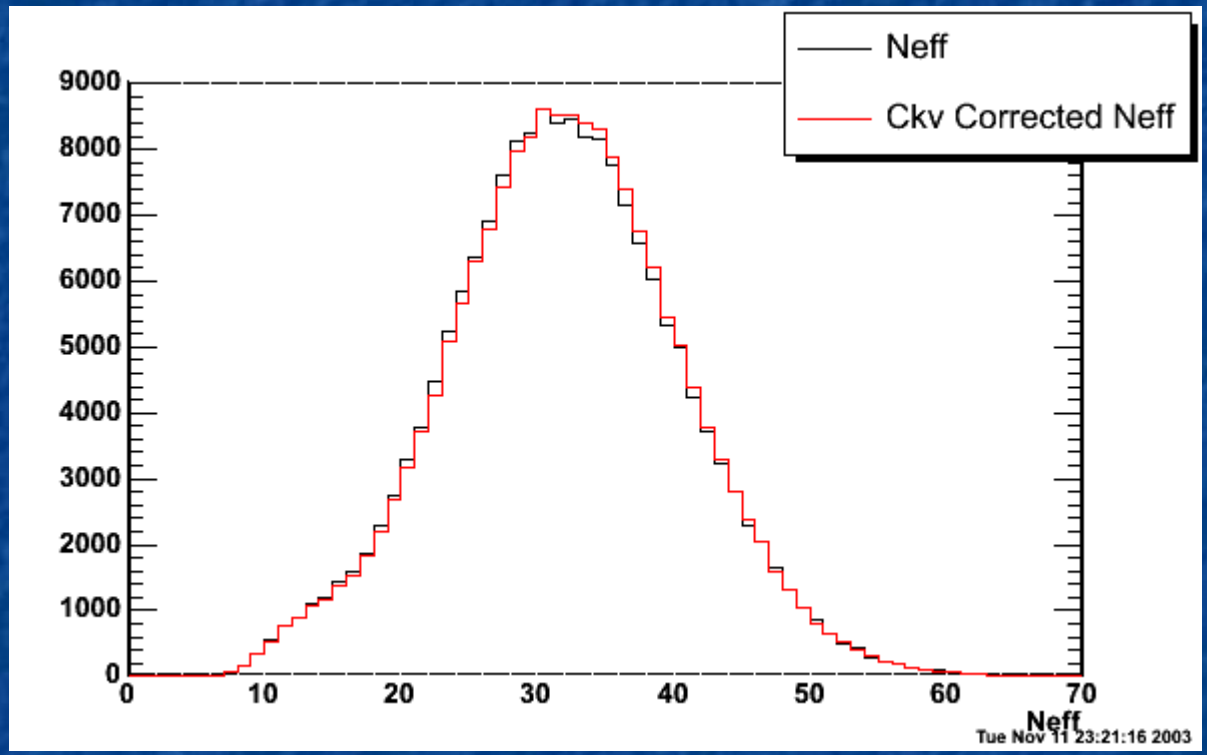

Neff correction for events at (0, 0, 0)
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
1.09
1.085
1.08
1.075
1.07
1.065
1.06
1.055
1.05

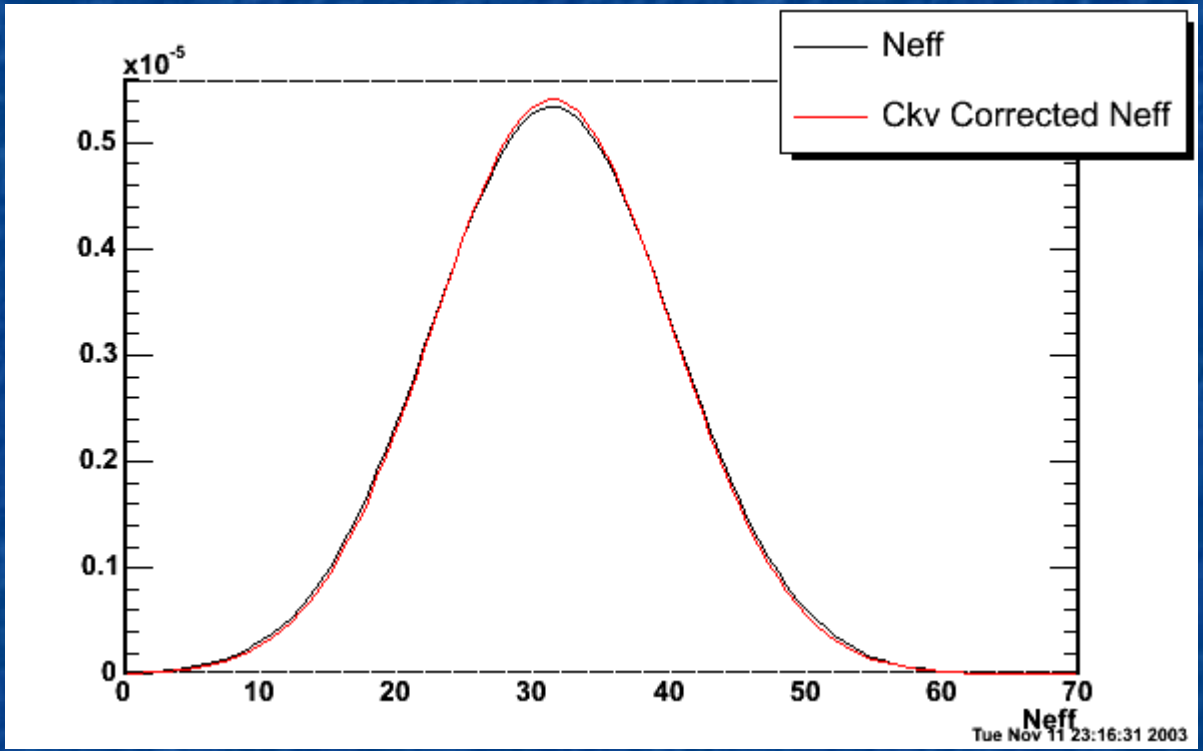

Neff correction for events at (0, -100, 0)
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
1.095
1.09
1.085
1.08
1.075
1.07
1.065
1.06
1.055
1.05

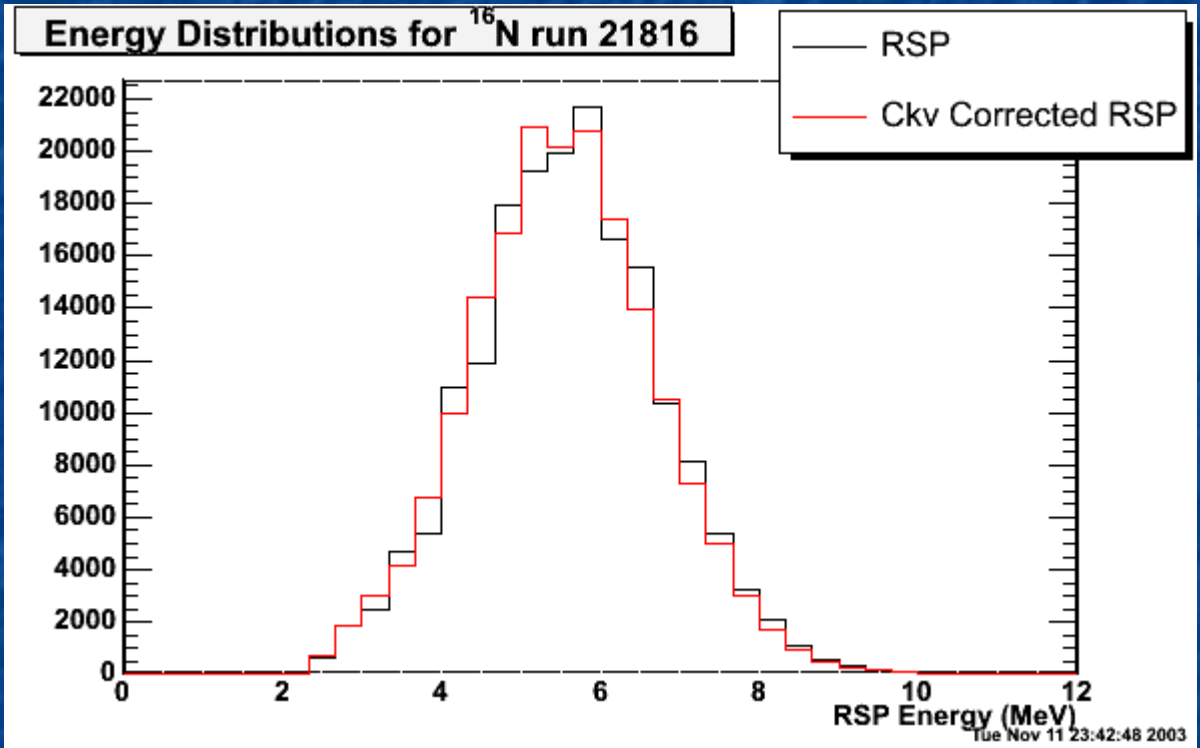

Neff correction for events at (0, -400, 0)
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
1.1
1.09
1.08
1.07
1.06


Neff correction for events at (0, -500, 0)
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
1.11
1.1
1.09
1.08
1.07
1.06

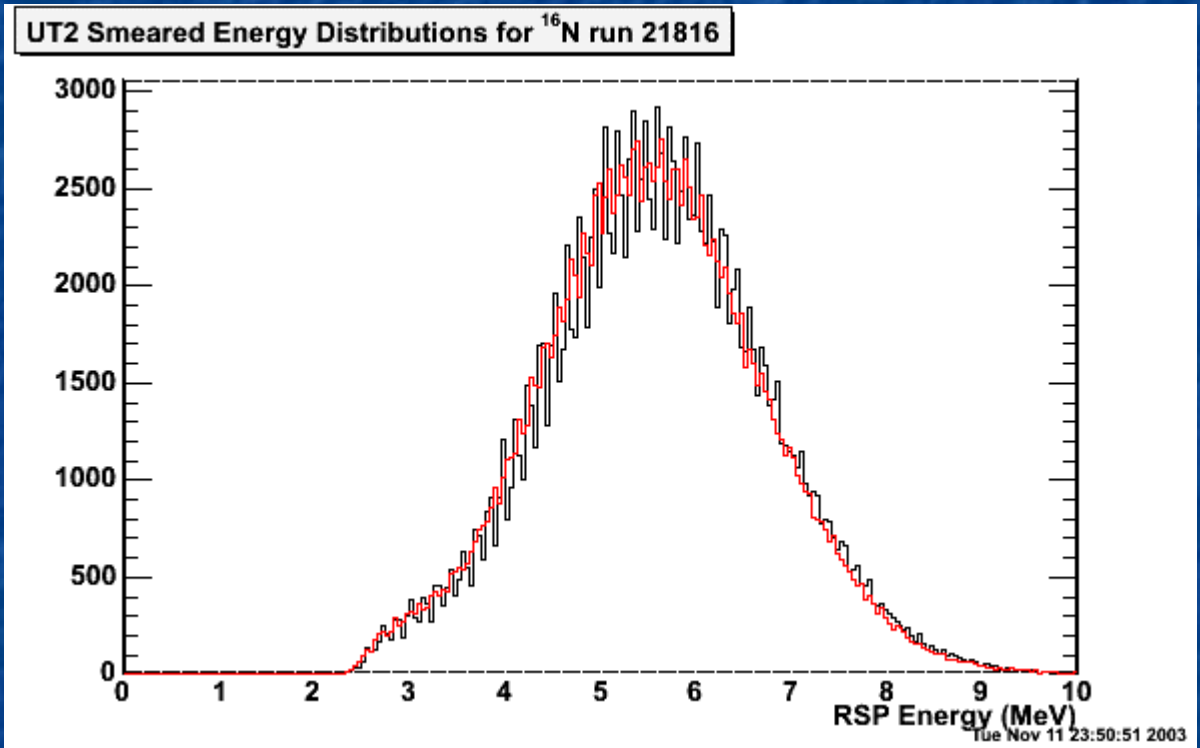
What does the correction look like applied to ^{16}N run 21826???

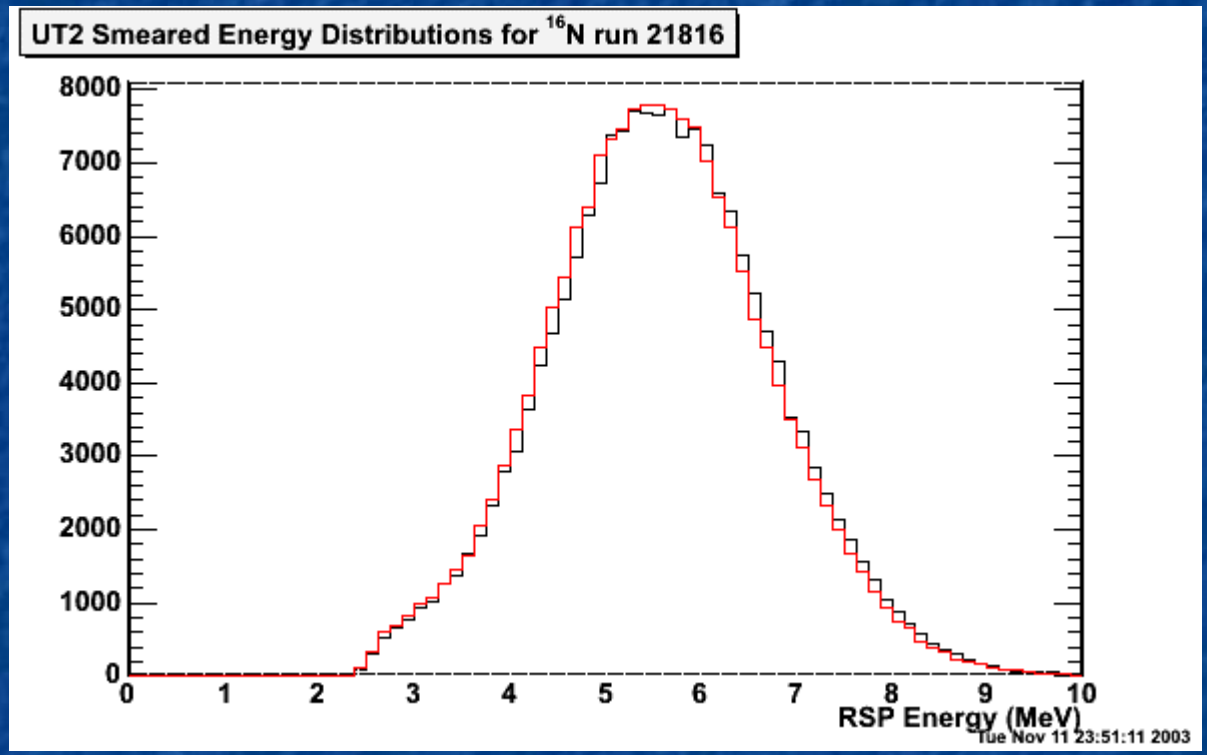



Neff
Ckv Corrected Neff
x10^-5
0.5
0.4
0.3
0.2
0.1
0
0
10
20
30
40
50
60
70
Neff
Tue Nov 11 23:16:31 2003

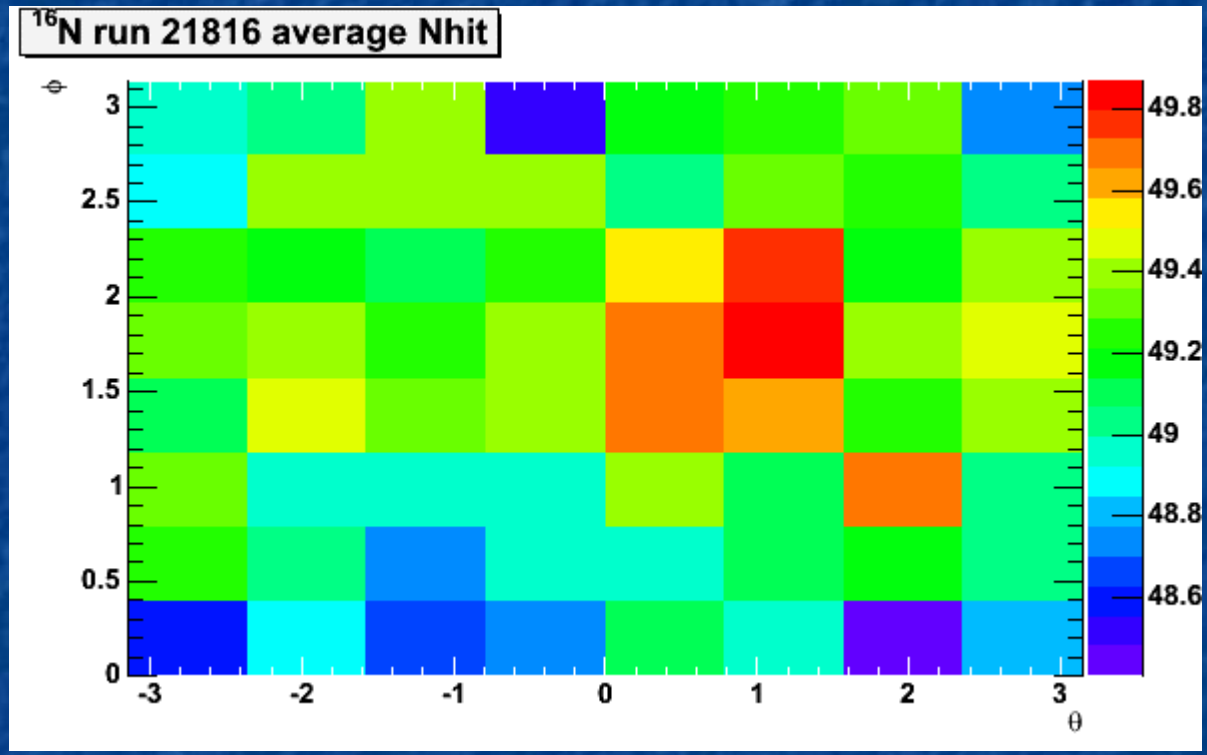

Energy Distributions for ^{16}N run 21816
RSP
Ckv Corrected RSP
22000
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
0
2
4
6
8
10
12
RSP Energy (MeV)
Tue Nov 11 23:42:48 2003

Does RSP still require smearing for binning finer than ~ 0.5MeV???

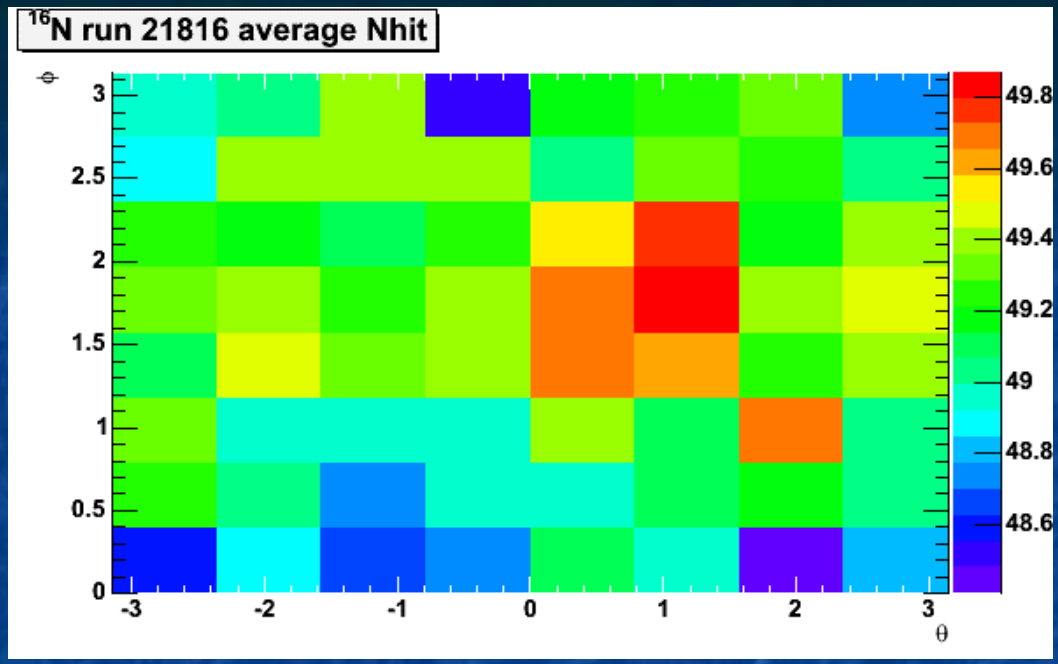


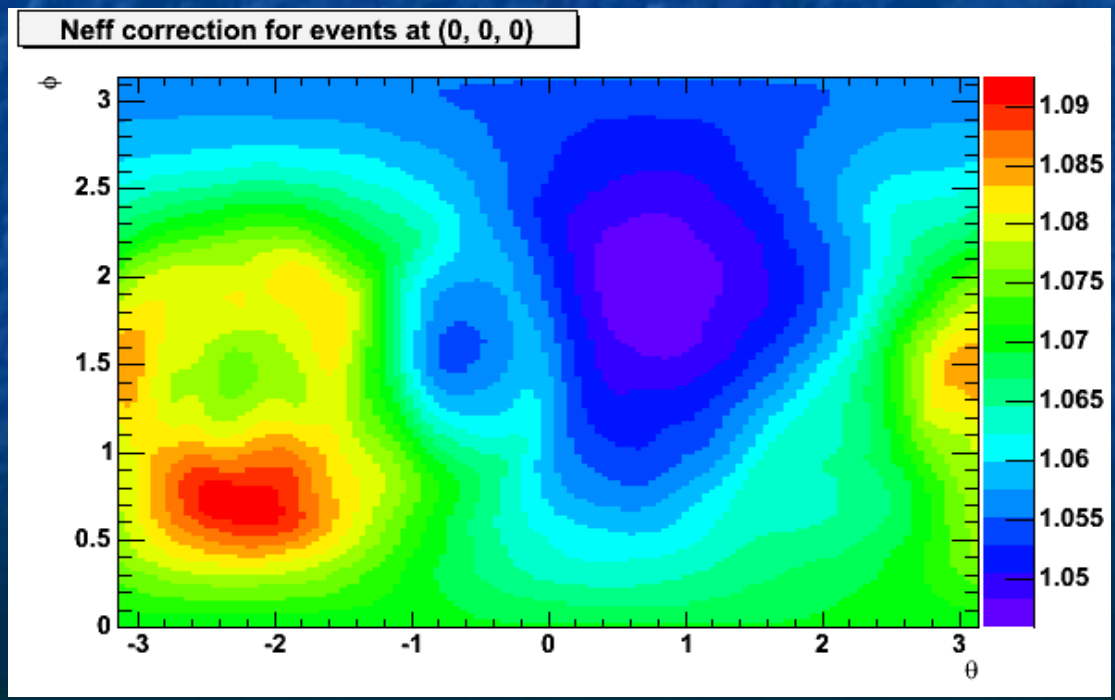

UT2 Smeared Energy Distributions for ^{16}N run 21816
8000
7000
6000
5000
4000
3000
2000
1000
0
0
1
2
3
4
5
6
7
8
9
10
RSP Energy (MeV)
Tue Nov 11 23:51:11 2003

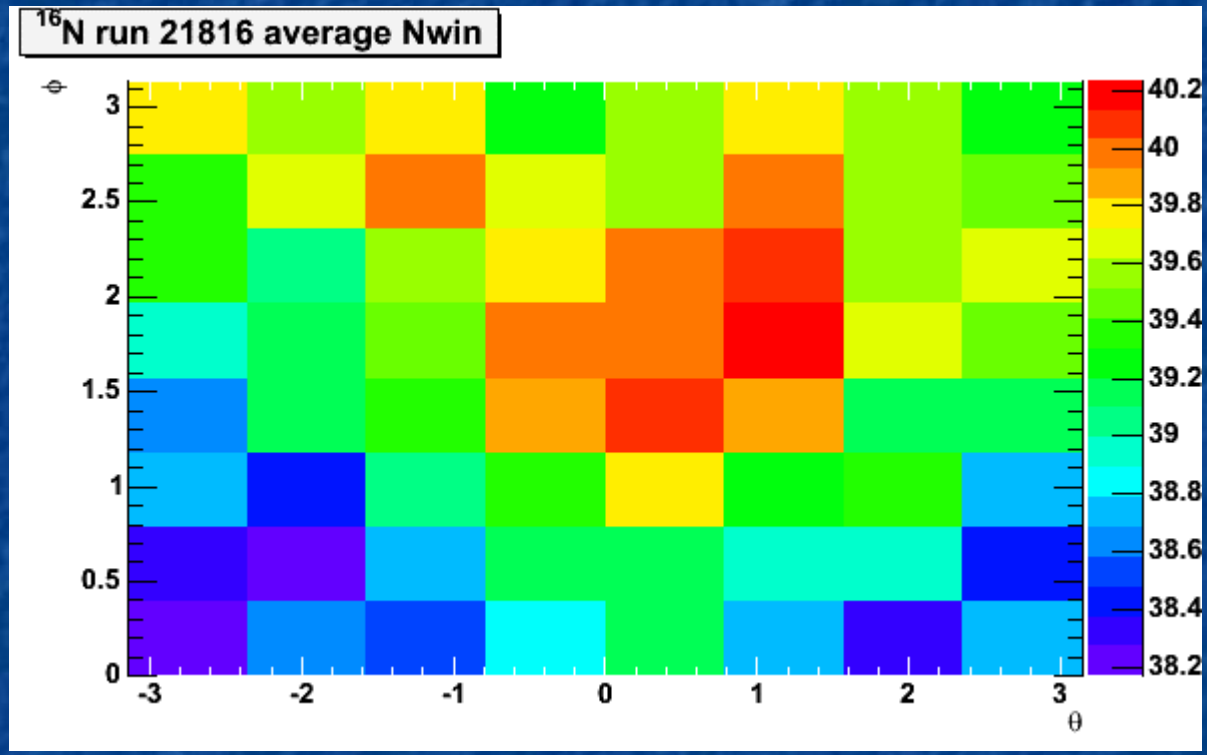
For a central 16N run the Nhit distribution should be anti-correlated with the point source correction map.

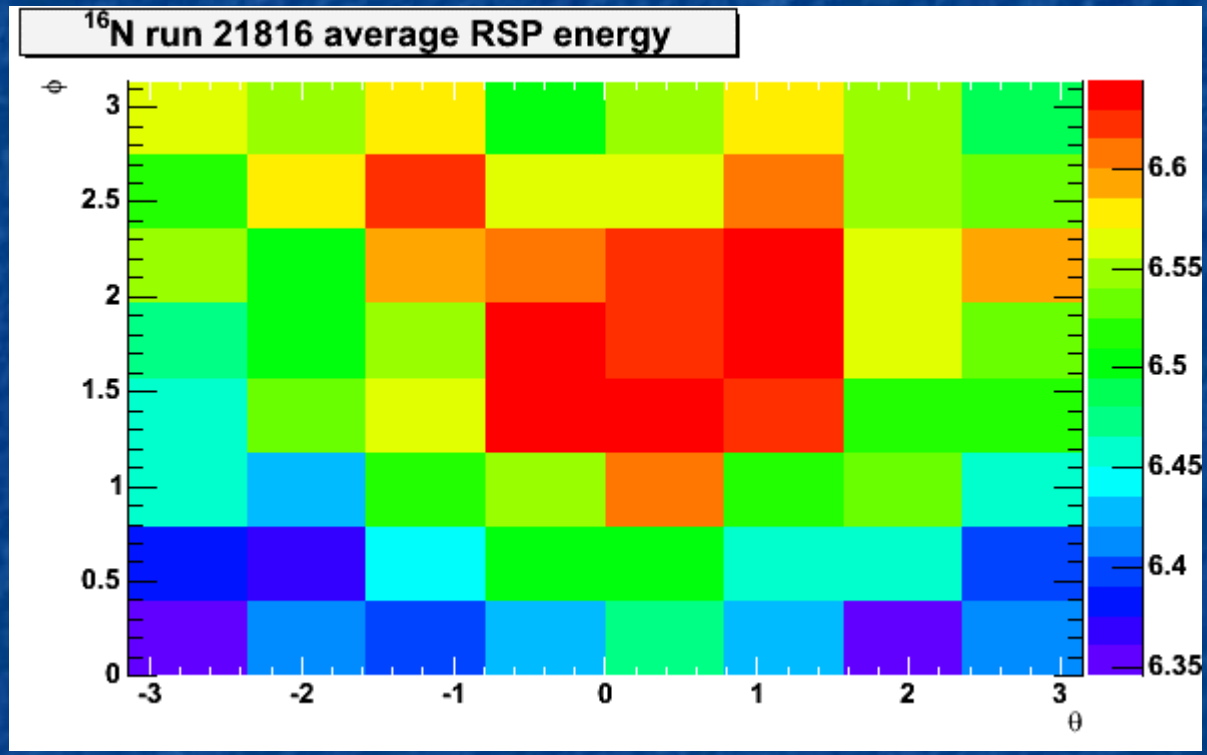


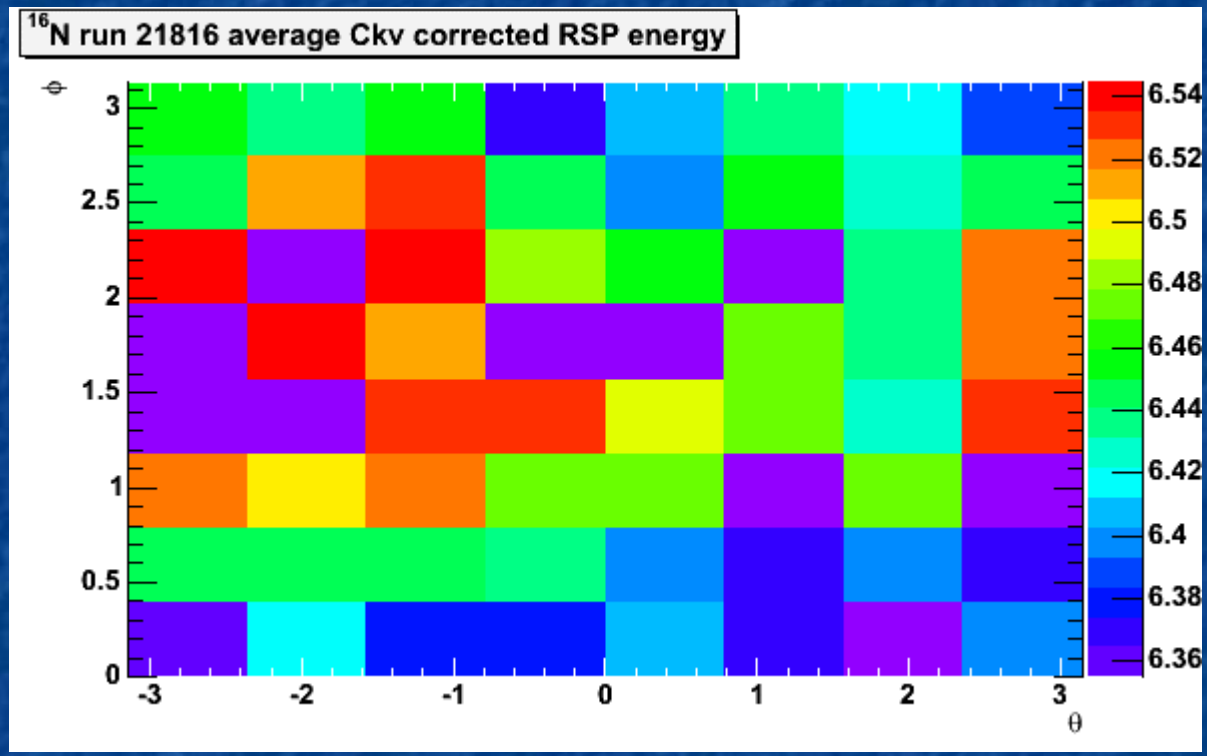
All of the following plots are for Nhits > 40

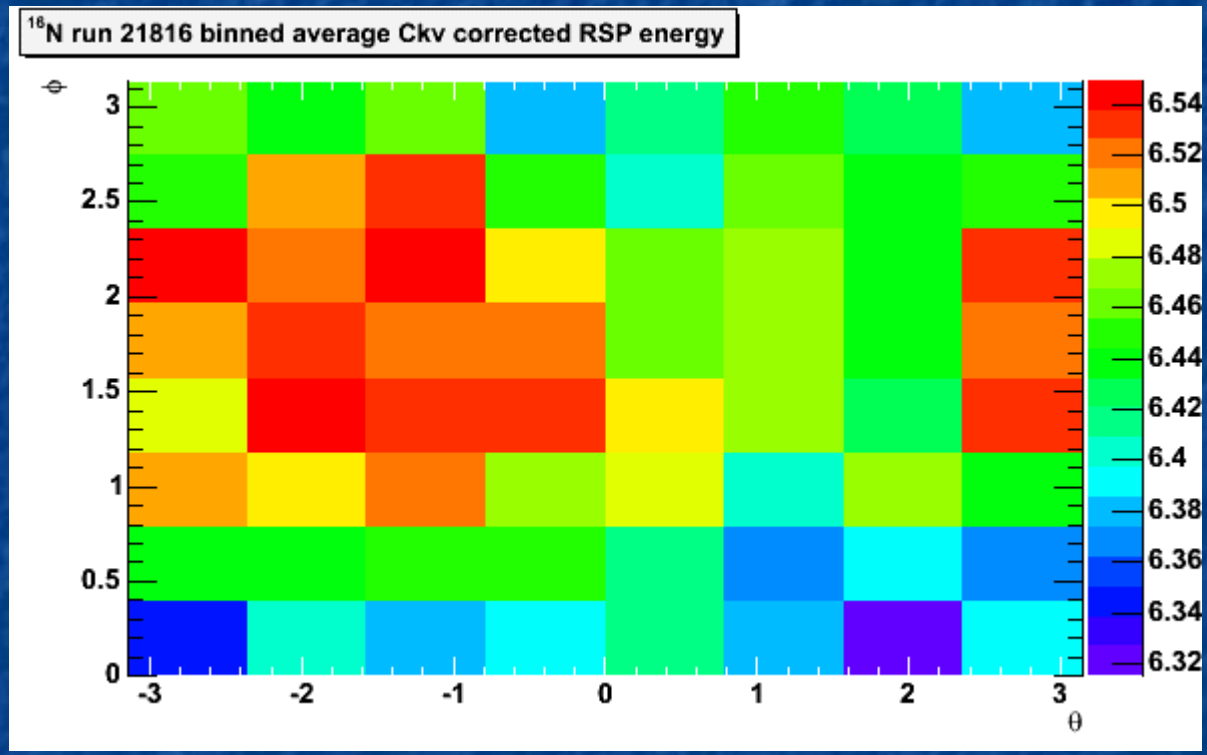

^{16}N run 21816 average Nhit
φ
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
49.8
49.6
49.4
49.2
49
48.8
48.6

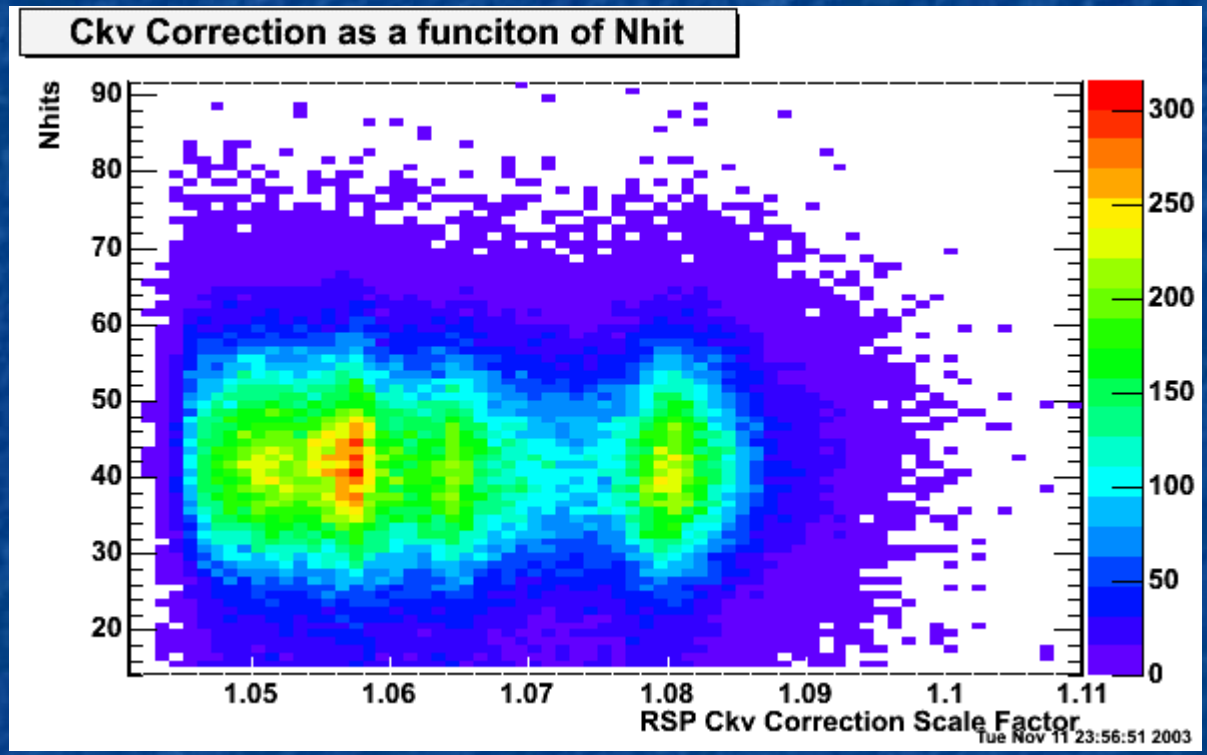

Neff correction for events at (0, 0, 0)
φ
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
1.09
1.085
1.08
1.075
1.07
1.065
1.06
1.055
1.05


^{16}N run 21816 average Nwin
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
40.2
40
39.8
39.6
39.4
39.2
39
38.8
38.6
38.4
38.2


^{16}N run 21816 average RSP energy
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
6.6
6.55
6.5
6.45
6.4
6.35


^{16}N run 21816 average Ckv corrected RSP energy
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
6.54
6.52
6.5
6.48
6.46
6.44
6.42
6.4
6.38
6.36


^{16}N run 21816 binned average Ckv corrected RSP energy
3
2.5
2
1.5
1
0.5
0
-3
-2
-1
0
1
2
3
θ
6.54
6.52
6.5
6.48
6.46
6.44
6.42
6.4
6.38
6.36
6.34
6.32


Ckv Correction as a funciton of Nhit
Nhits
90
80
70
60
50
40
30
20
1.05
1.06
1.07
1.08
1.09
1.1
1.11
RSP Ckv Correction Scale Factor
300
250
200
150
100
50
0
Tue Nov 11 23:56:51 2003