Inclusive Jet cross section in η bins

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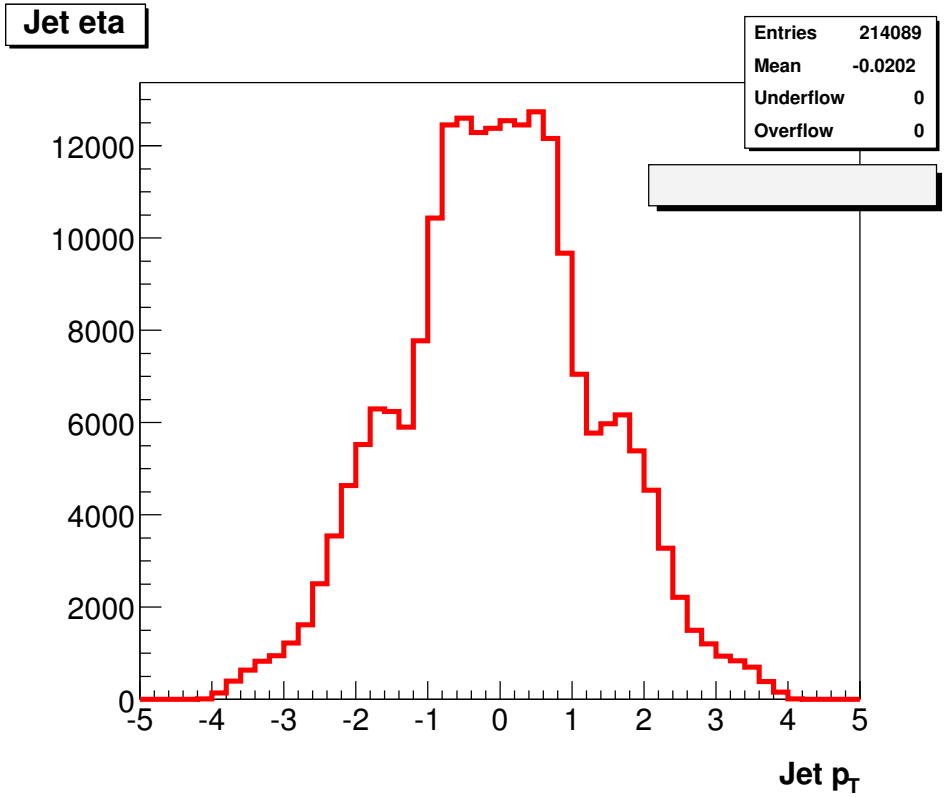
Outline

- η jet distribution
  - η bins
- Events selection
  - primary vertex, Missing E_T
- jet cut variables in η bins
  - EMF, CHF, HotF, n90, f90ch
- symetry in η
  - number of jets ,EMF, CHF, HotF, n90, f90ch
- Raw cross section
  - for the various triggers

Data sample

- Events sample:
  - p13.05 and p13.06, $37.9pb^{-1}$
  - jet triggers: `JT_25TT_NG, JT_45TT, JT_65TT, JT_95TT`
- Event selection:
  - at least 1 primary vertex (PV)
  - at least 5 tracks pointing to the primary vertex
  - $|Z_{\mathrm{PVtx}}| < 50$ cm
  - $ME_T < 0.7 \cdot p_T(\text{leading jet})$
- Jet selection:
  - $0.05 < \mathrm{EMF} < 0.95$
  - $\mathrm{CHF} < 0.4$
  - $\mathrm{HotF} < 10$
  - $\mathrm{n90} > 1$
  - $\mathrm{f90ch} < 0.8$ for $\mathrm{CHF} > 0.1$

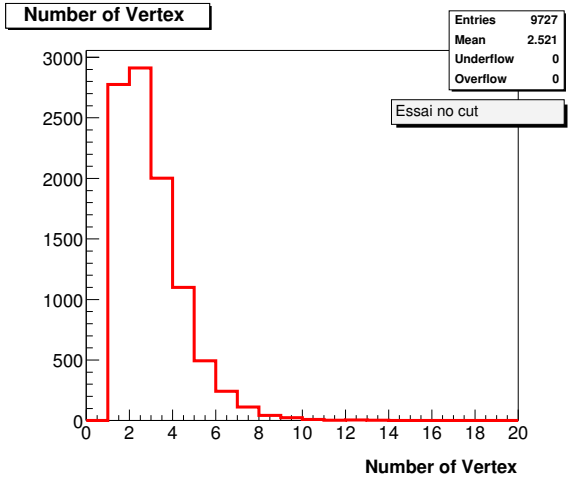
η jet distribution

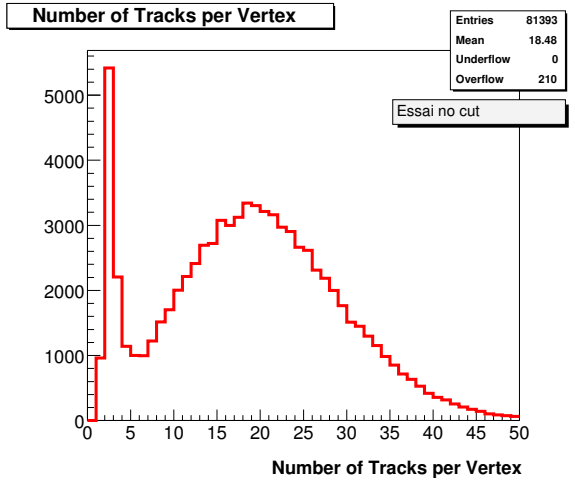


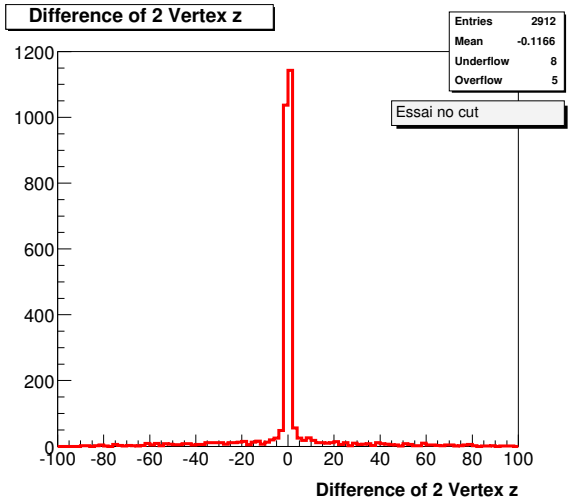
- Choose of 3 bins in η
  - $|\eta| < 0.5$ Central Calorimeter
  - $0.8 < |\eta| < 1.4$ Inter-Cryostat Detector (ICD)
  - $1.6 < |\eta| < 2.5$ Forward Calorimeter No trigger after 2.6

Events selection

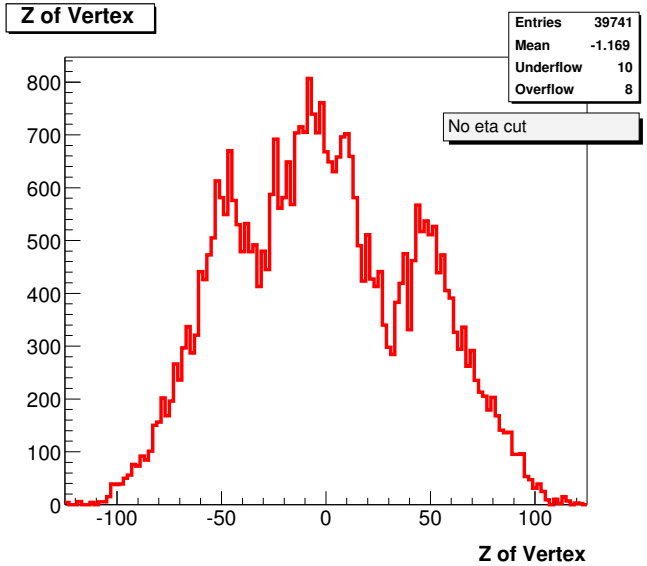
Primary vertex cut

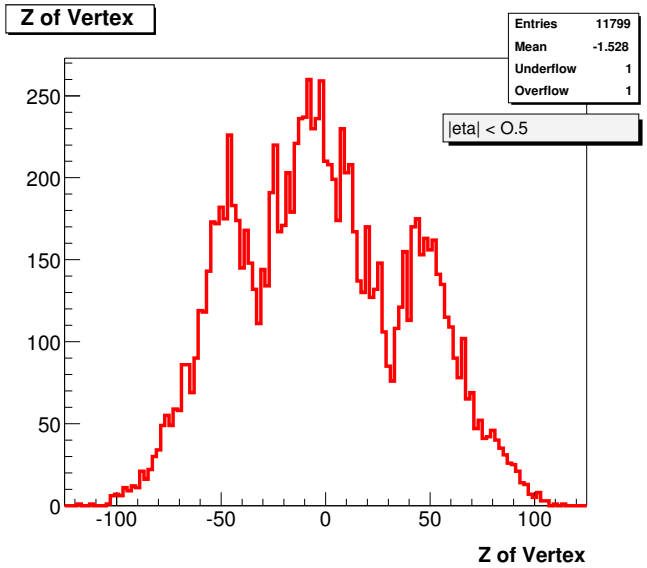


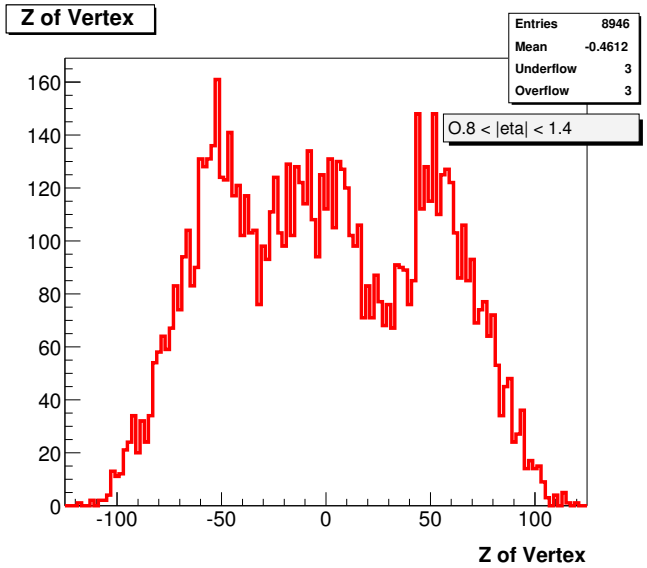


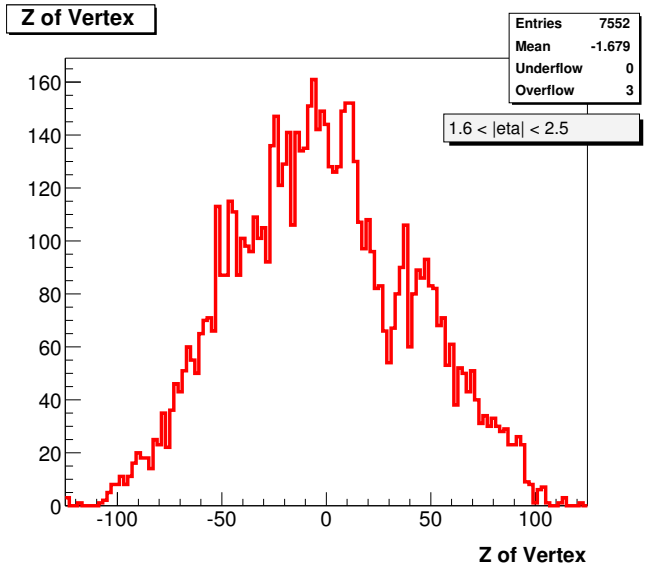


Primary vertex z distribution

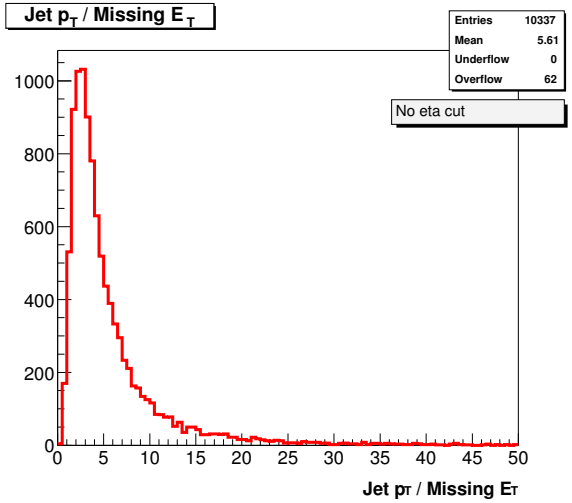


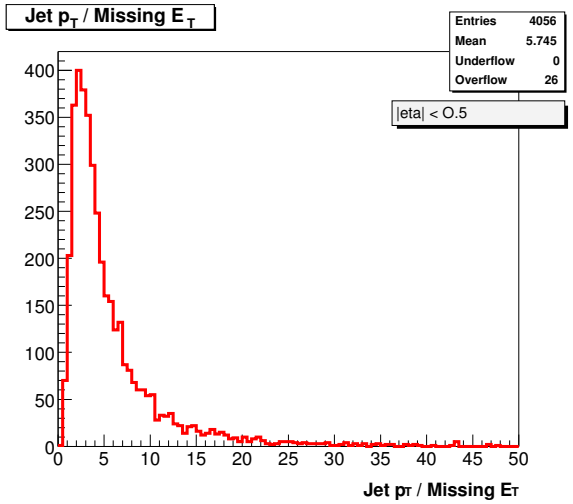


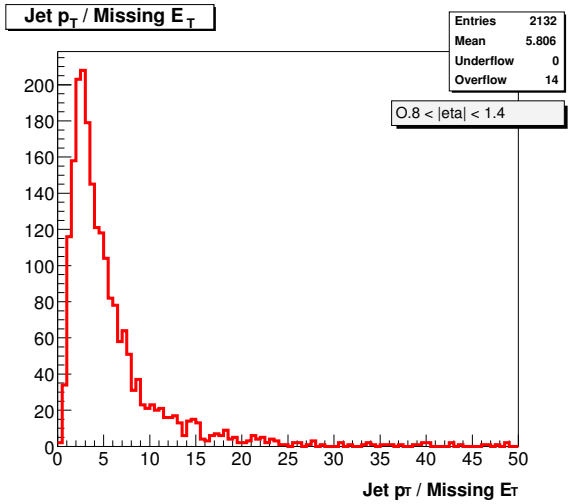


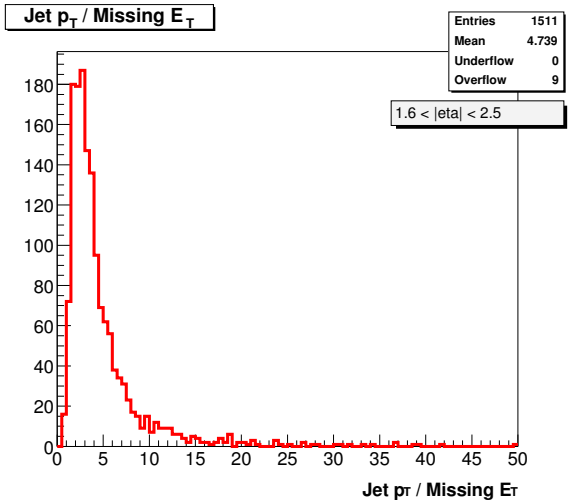


leading jet p_T / MET





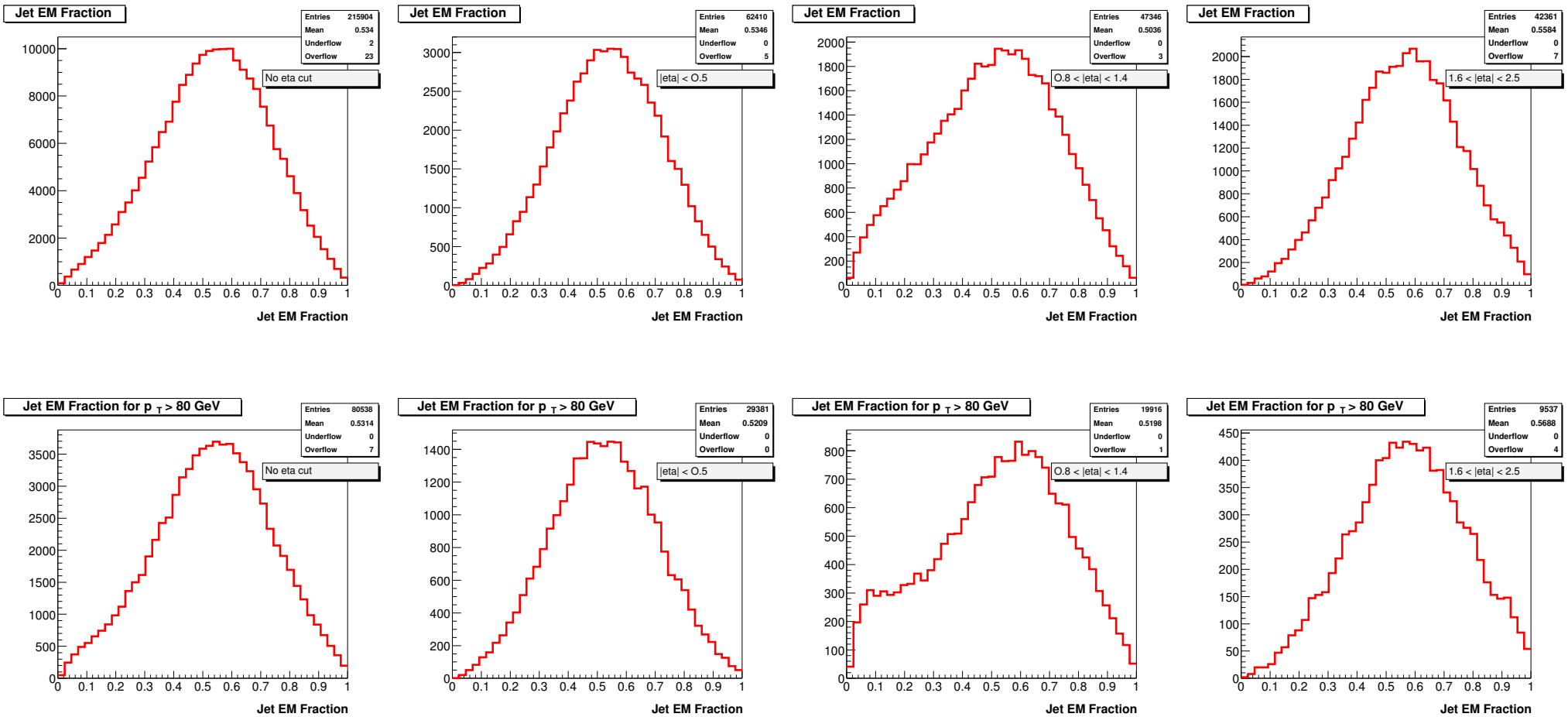




$$p_T \ / \ \mathrm{MET} > 1.4$$

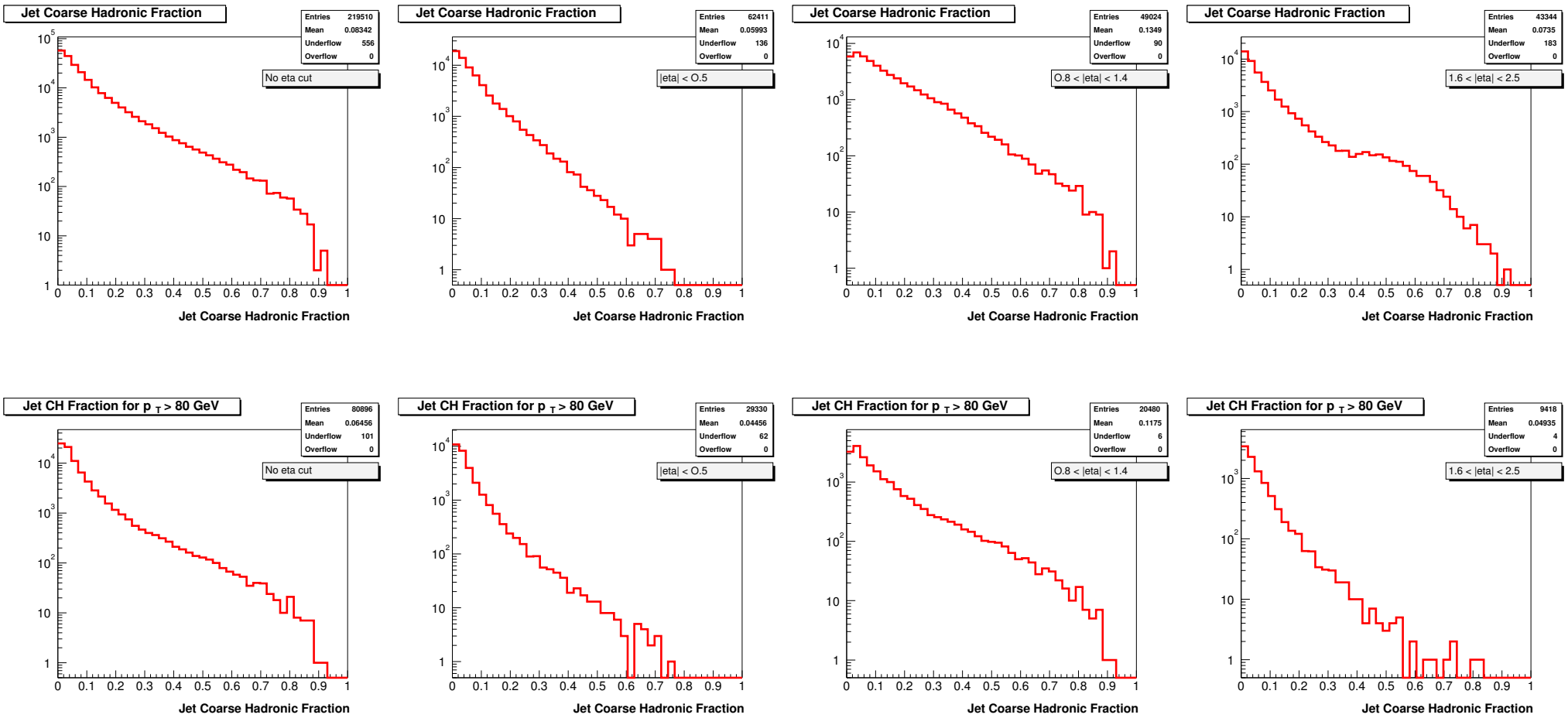
Jet cut variables in η bins

Jet EM fraction



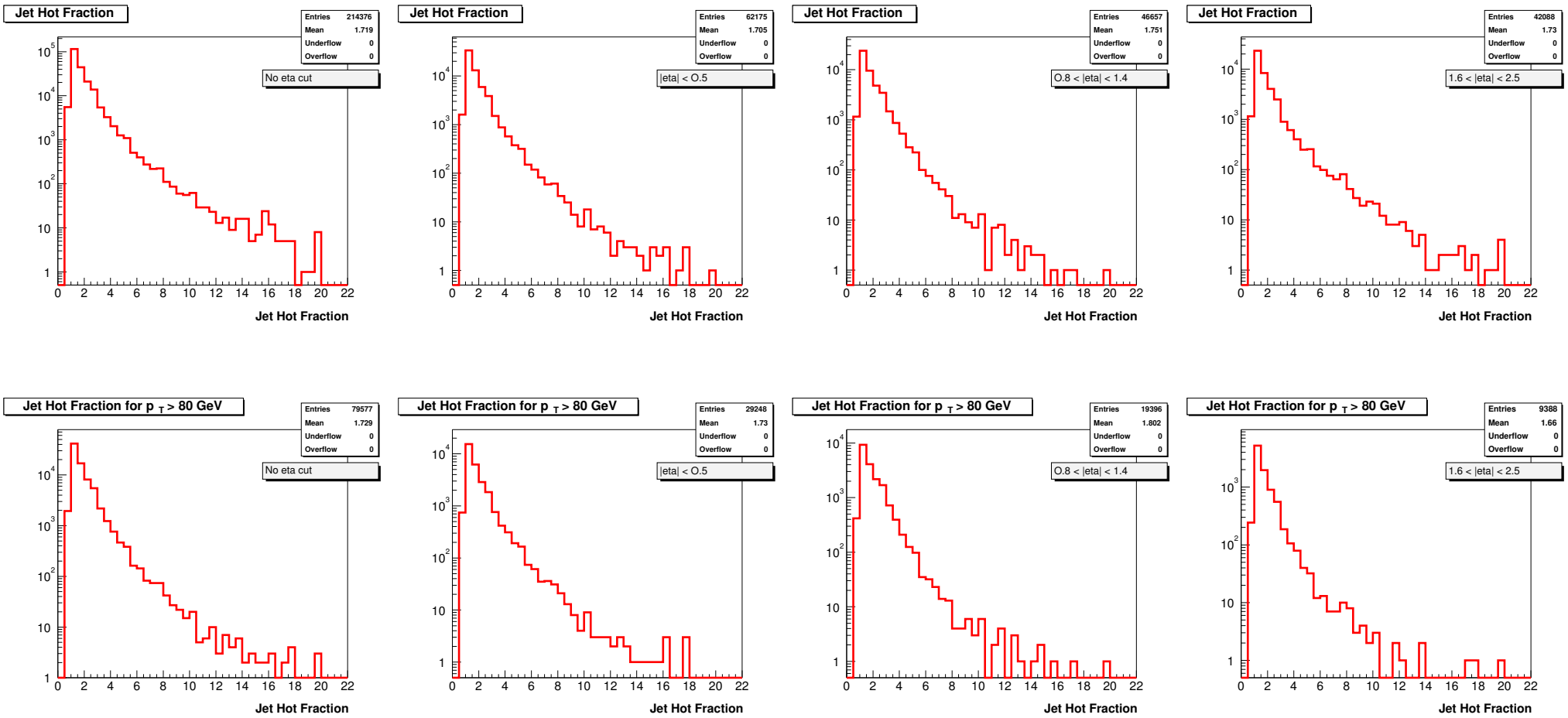
$$0.05 < \text{EMF} < 0.95$$

Jet CH fraction



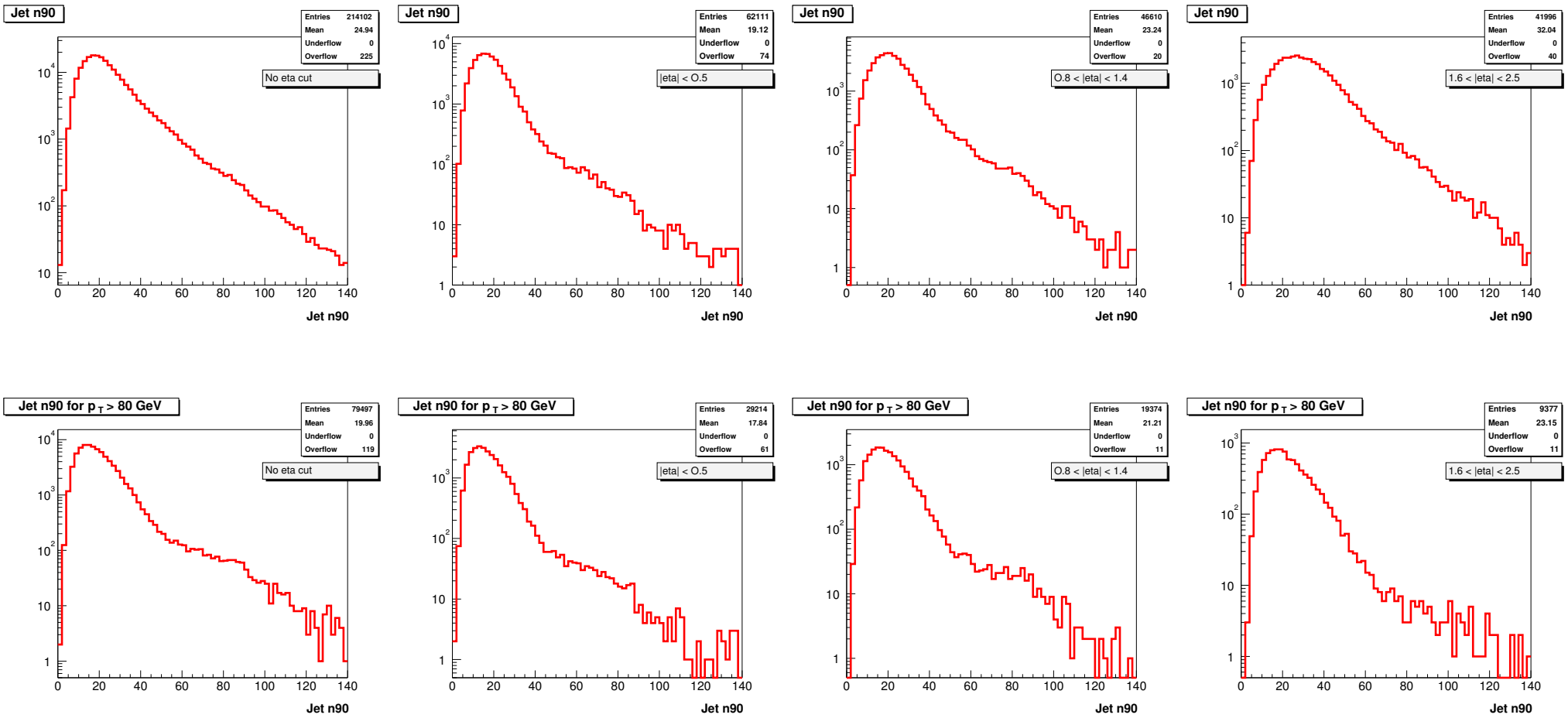
CHF < 0.4

Hot cell fraction



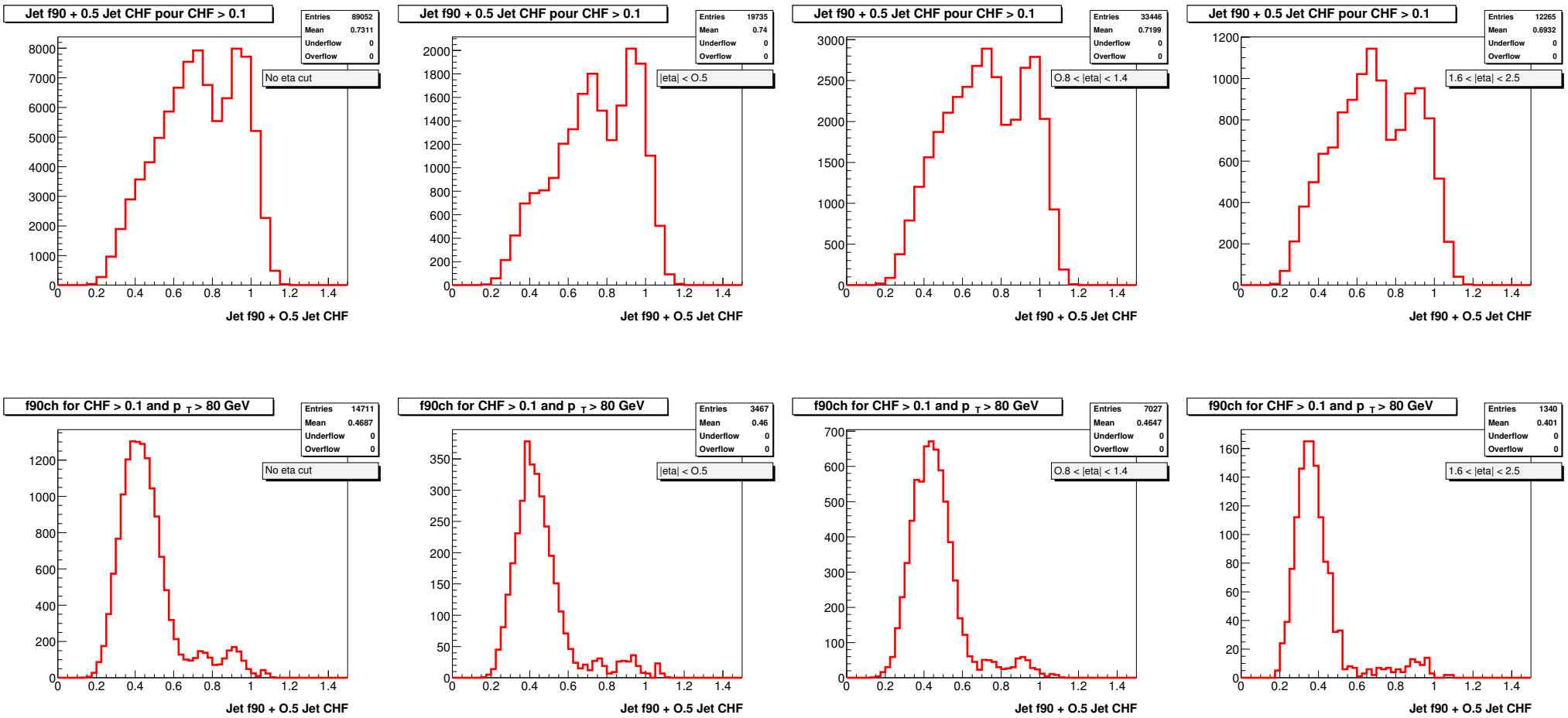
HotF < 10

Jet n90


Jet n90
Entries 214102
Mean 24.94
Underflow 0
Overflow 225
No eta cut
Jet n90
Entries 62111
Mean 19.12
Underflow 0
Overflow 74
|eta| < O.5
Jet n90
Entries 46610
Mean 23.24
Underflow 0
Overflow 20
O.8 < |eta| < 1.4
Jet n90
Entries 41996
Mean 32.04
Underflow 0
Overflow 40
1.6 < |eta| < 2.5
Jet n90 for p T > 80 GeV
Entries 79497
Mean 19.96
Underflow 0
Overflow 119
No eta cut
Jet n90 for p T > 80 GeV
Entries 29214
Mean 17.84
Underflow 0
Overflow 61
|eta| < O.5
Jet n90 for p T > 80 GeV
Entries 19374
Mean 21.21
Underflow 0
Overflow 11
O.8 < |eta| < 1.4
Jet n90 for p T > 80 GeV
Entries 9377
Mean 23.15
Underflow 0
Overflow 11
1.6 < |eta| < 2.5
Jet n90

n90> 1

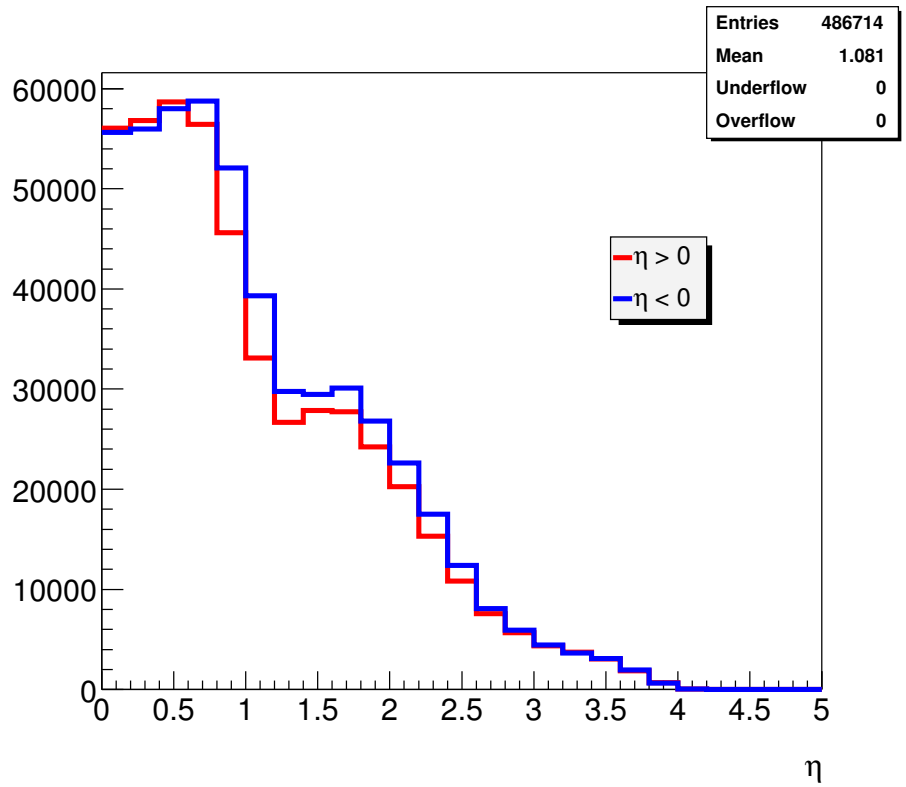
f90ch

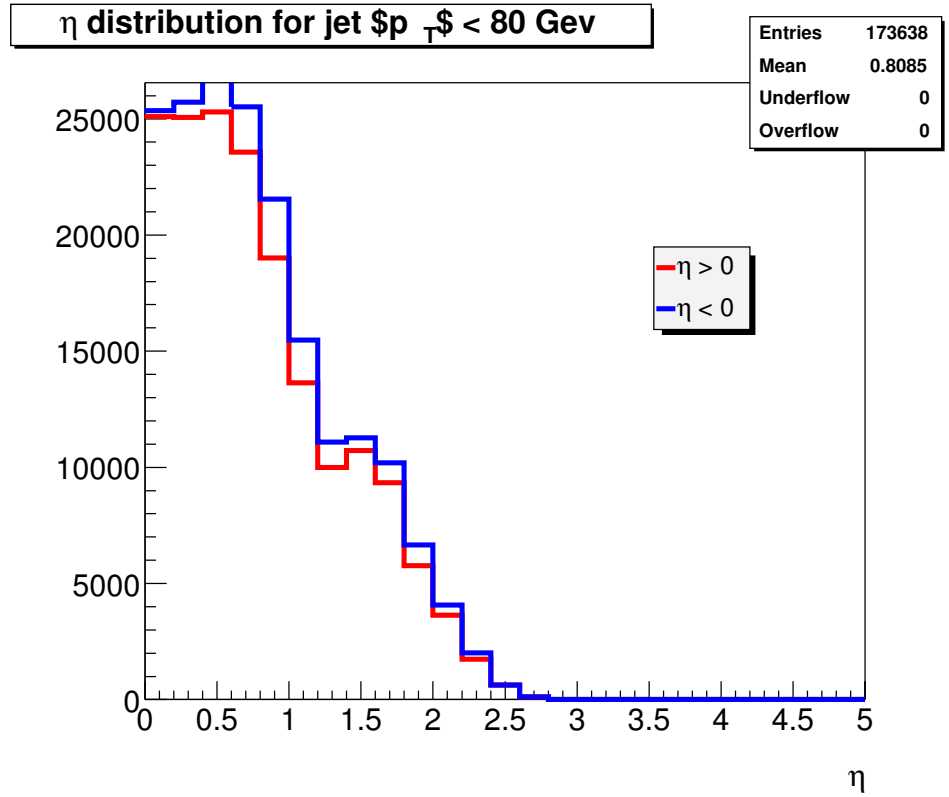


$$(\text{f90} + 0.5\ \text{CHF}) < 0.8 \text{ for CHF} > 0.1$$

Symetry in η

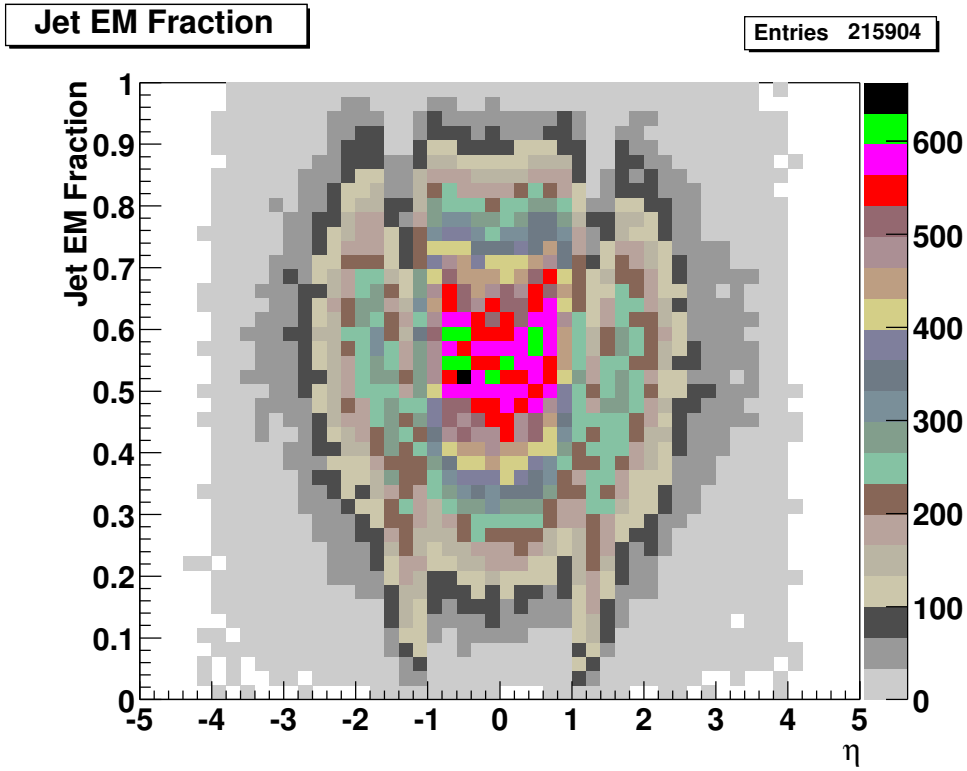
η jet distribution

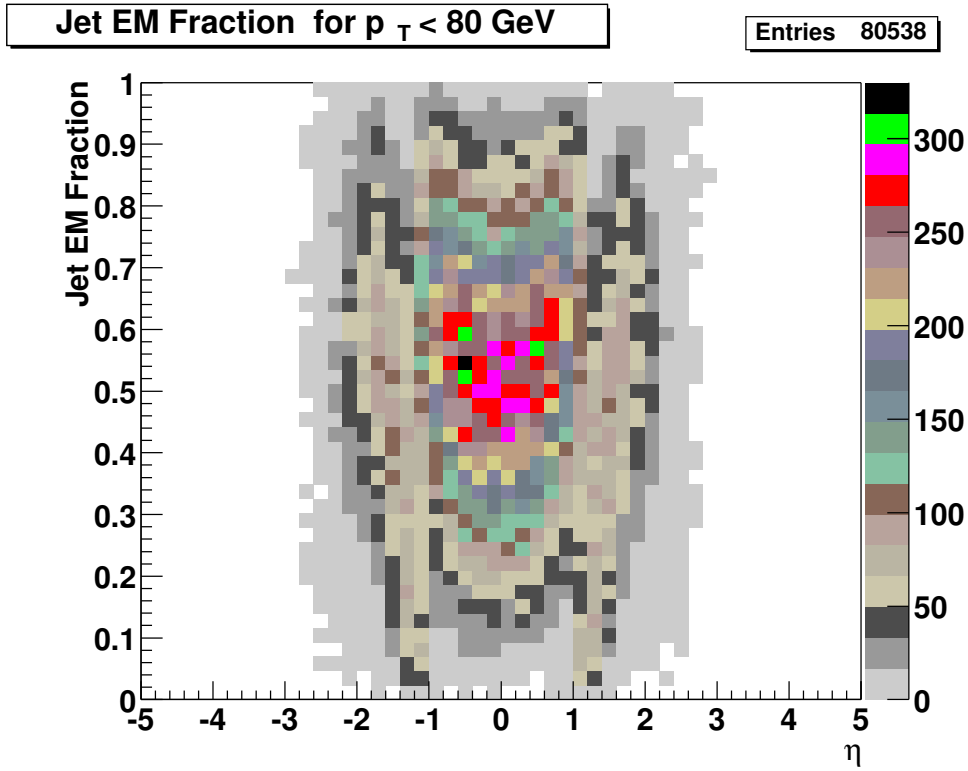




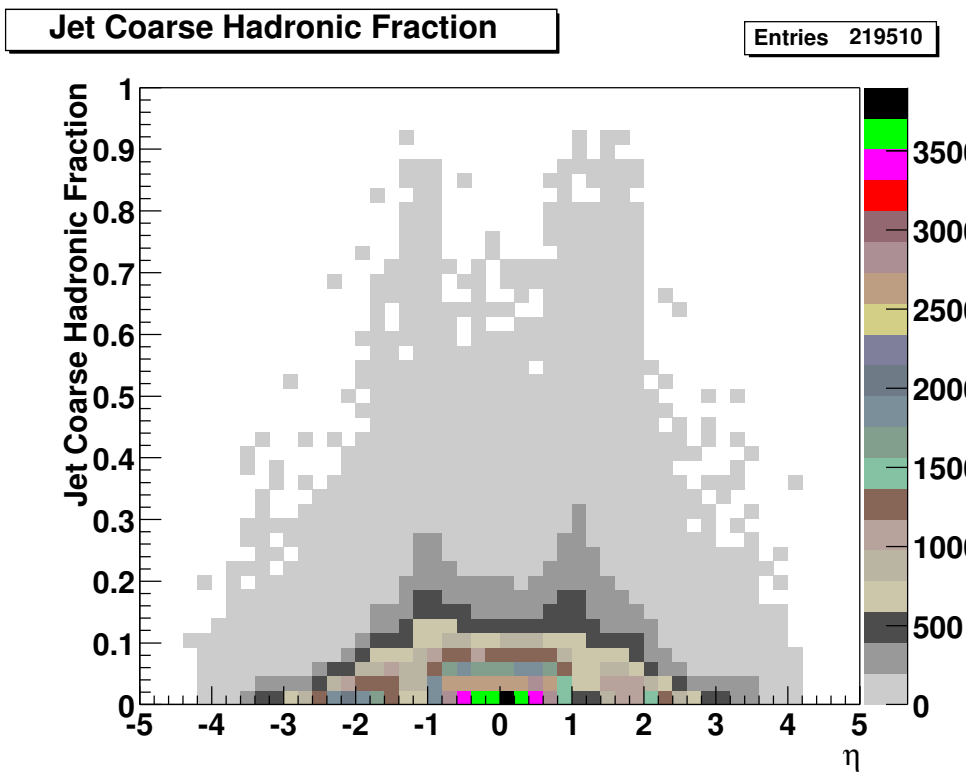
i

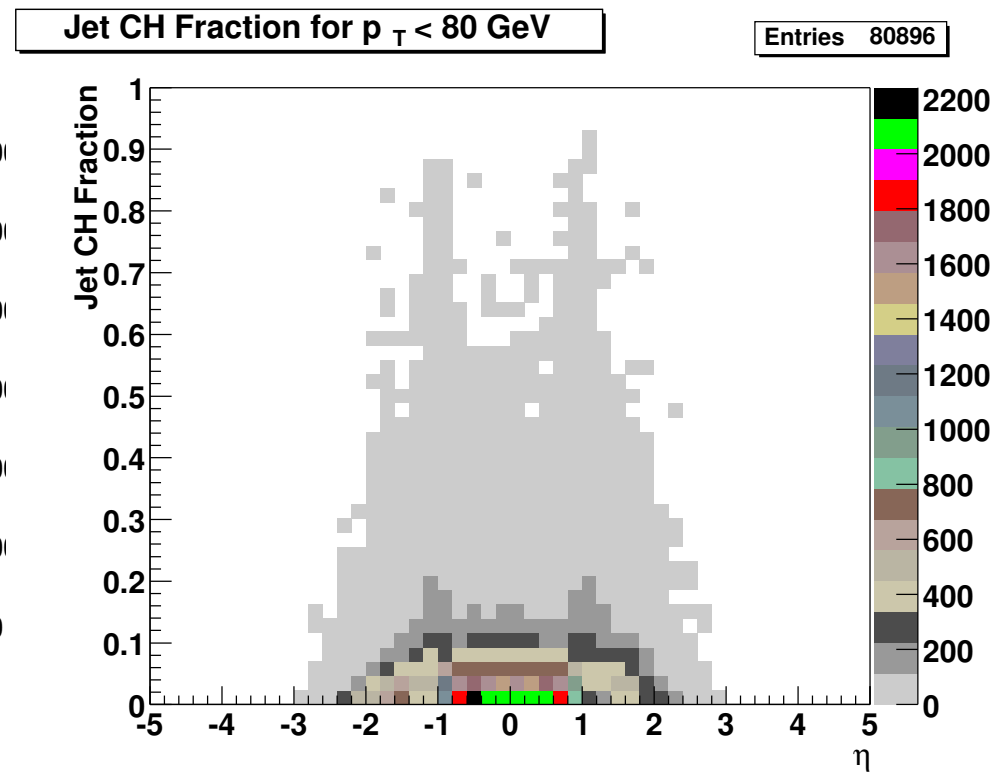
EM fraction


Jet EM Fraction
Entries 215904
Jet EM Fraction
η

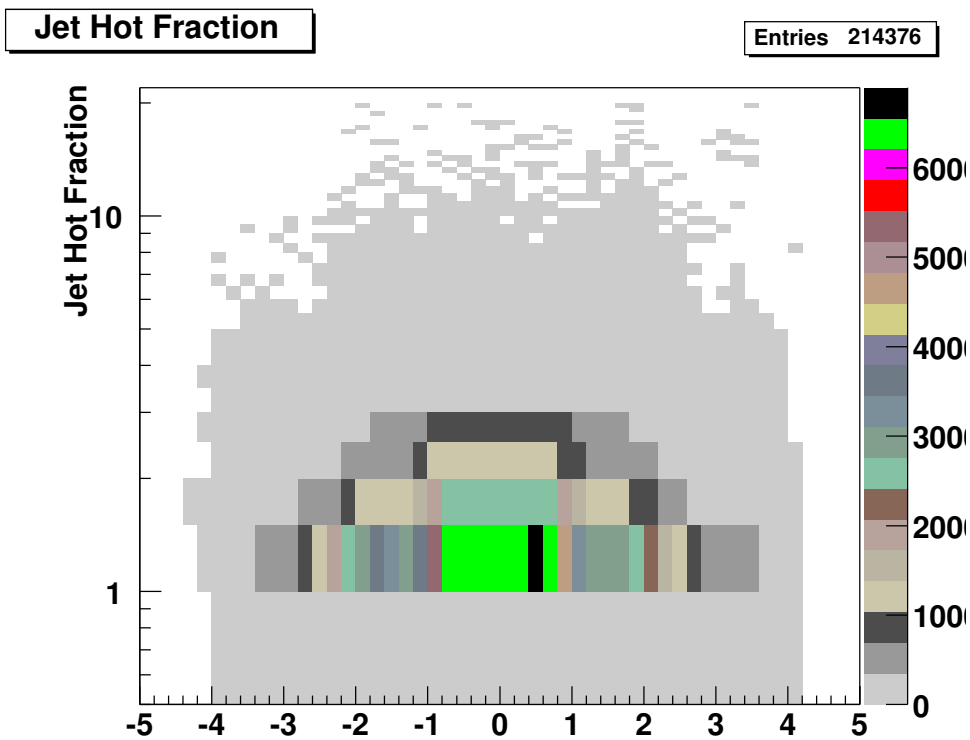

Jet EM Fraction for p T < 80 GeV
Entries 80538
Jet EM Fraction
η

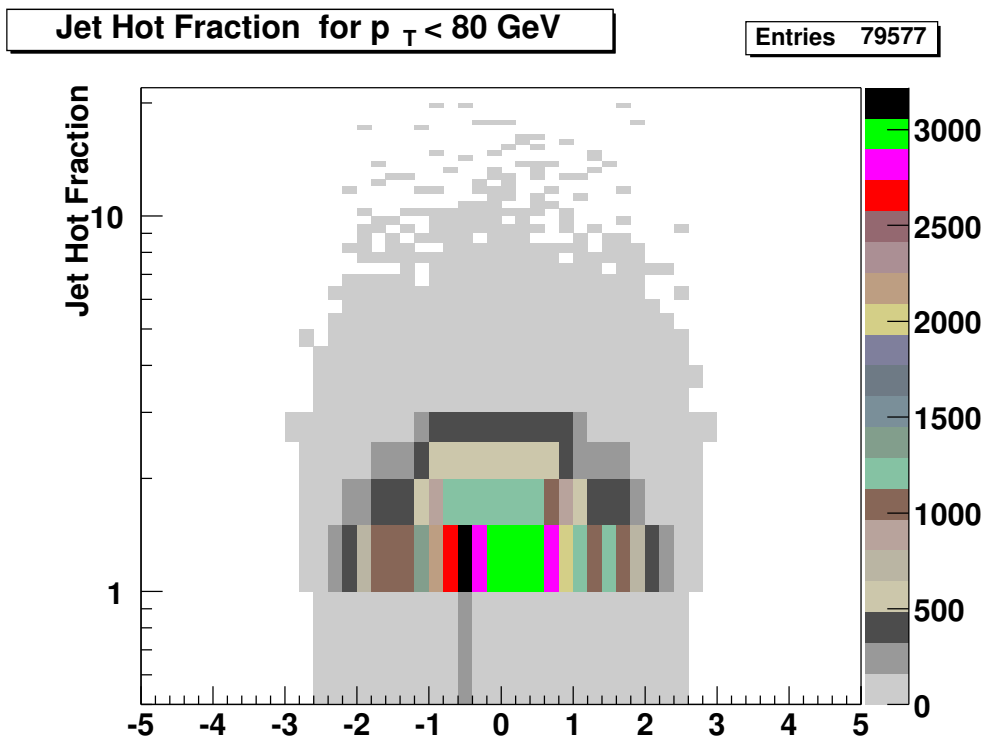
CH fraction


Jet Coarse Hadronic Fraction
Entries 219510
Jet Coarse Hadronic Fraction
η

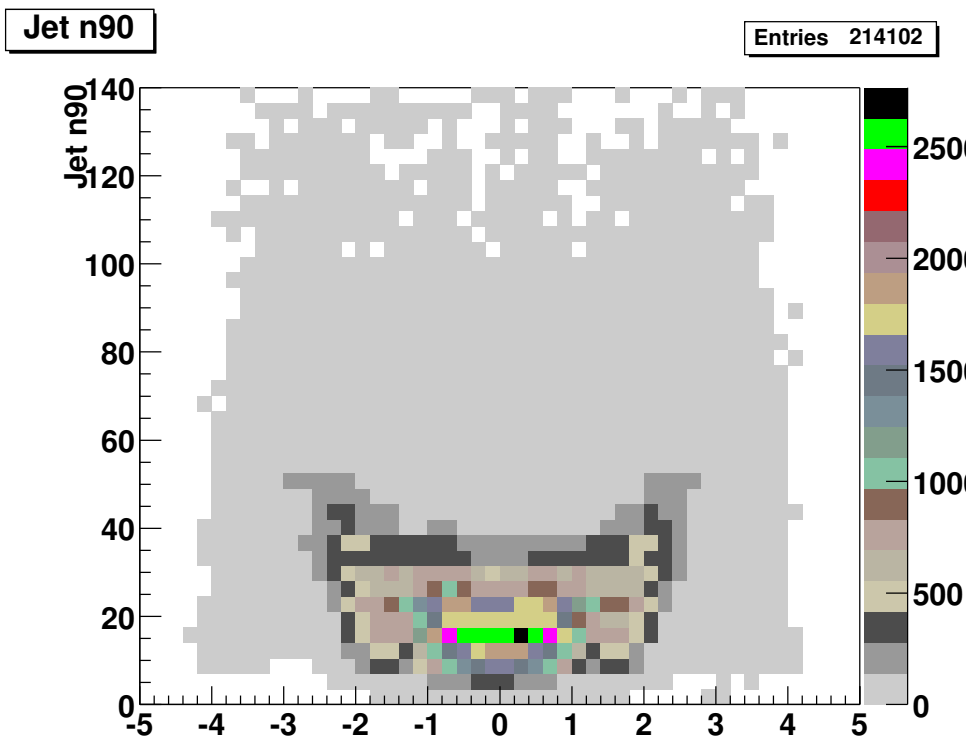

Jet CH Fraction for p T < 80 GeV
Entries 80896
Jet CH Fraction
η

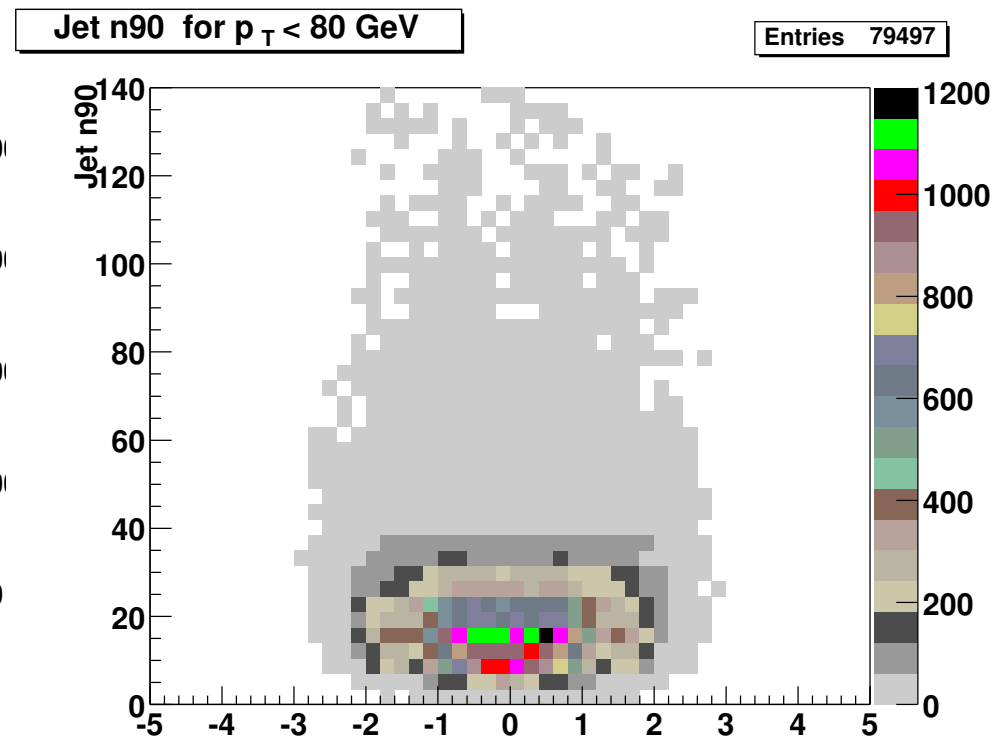
Hot cell fraction



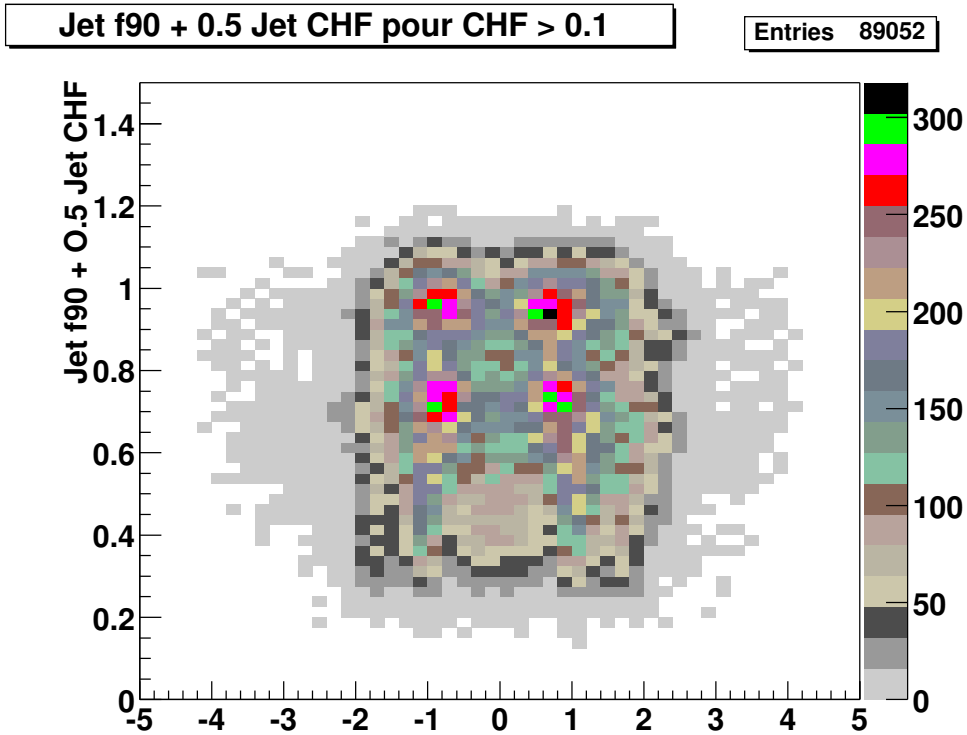


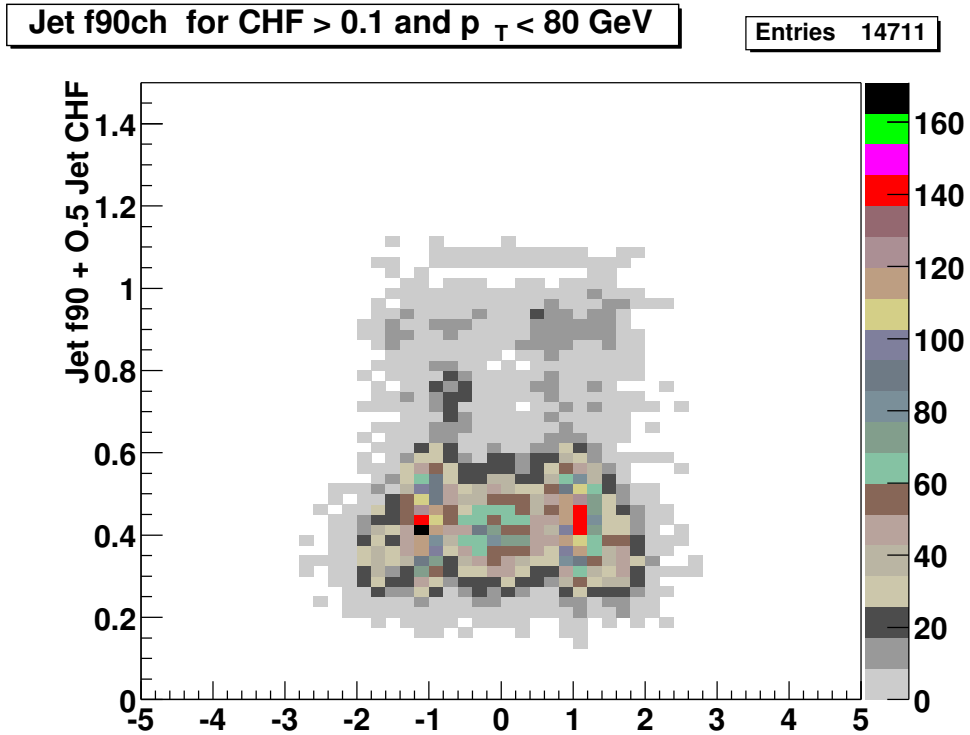
n90


Jet n90
Entries 214102
Jet n90
140
120
100
80
60
40
20
0
-5
-4
-3
-2
-1
0
1
2
3
4
5
250
200
150
100
500
0

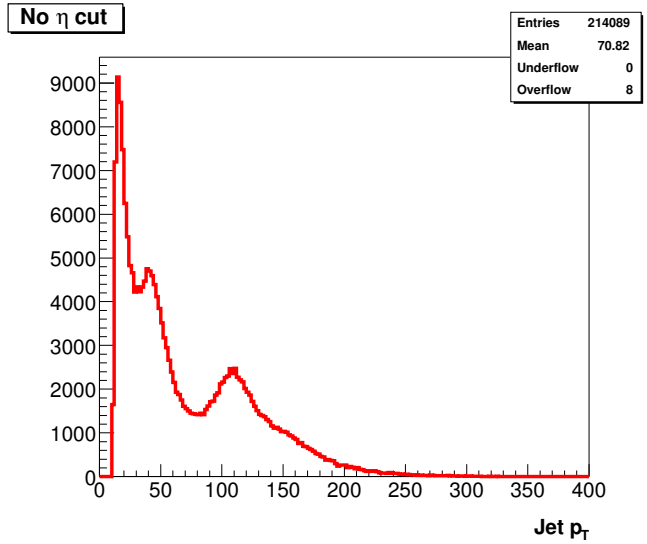

Jet n90 for p T < 80 GeV
Entries 79497
Jet n90
140
120
100
80
60
40
20
0
-5
-4
-3
-2
-1
0
1
2
3
4
5
1200
1000
800
600
400
200
0

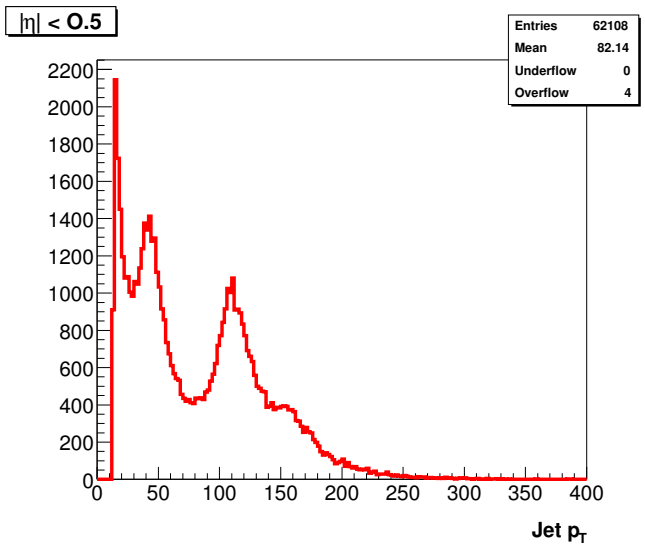
f90ch

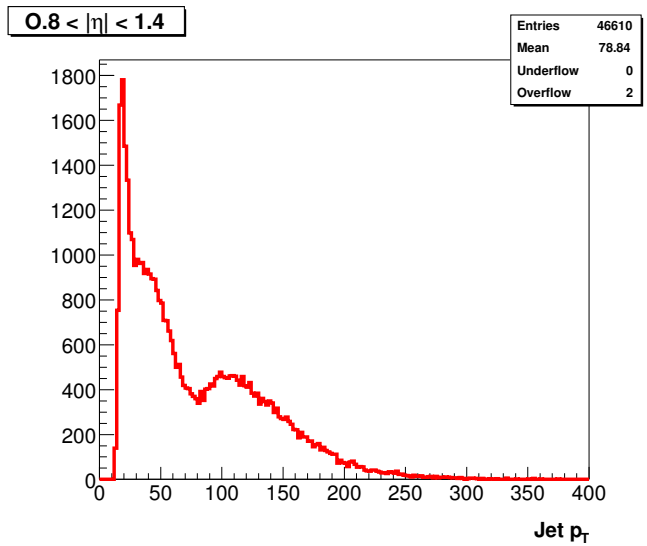

Jet f90 + 0.5 Jet CHF pour CHF > 0.1
Entries 89052
Jet f90 + O.5 Jet CHF
0
0.2
0.4
0.6
0.8
1
1.2
1.4
-5
-4
-3
-2
-1
0
1
2
3
4
5
300
250
200
150
100
50
0

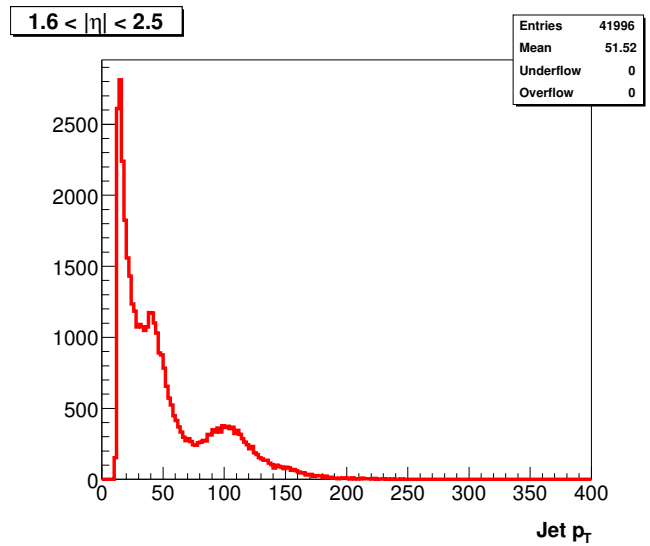
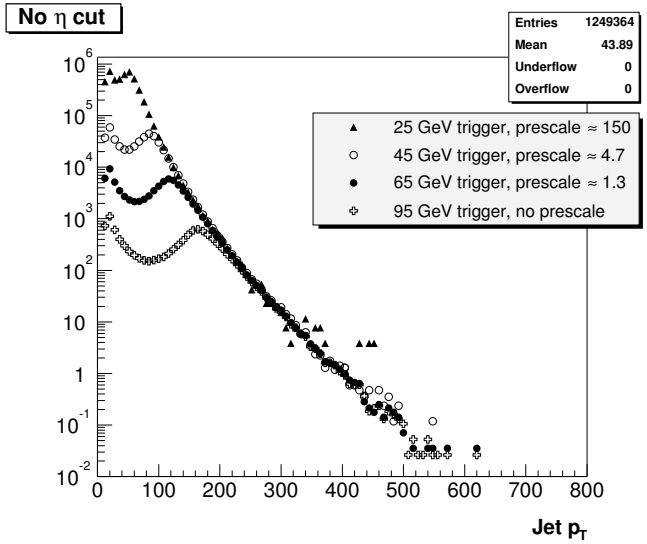
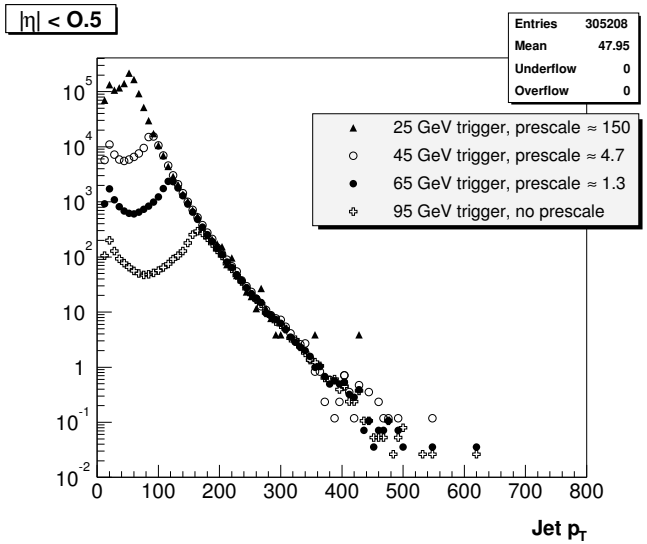
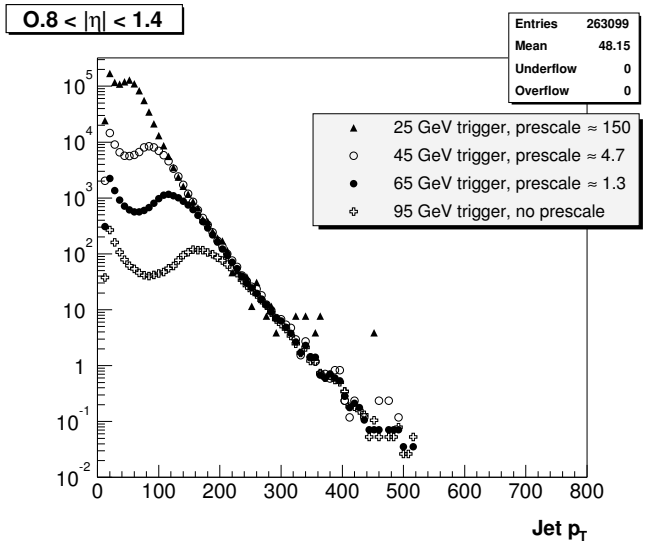
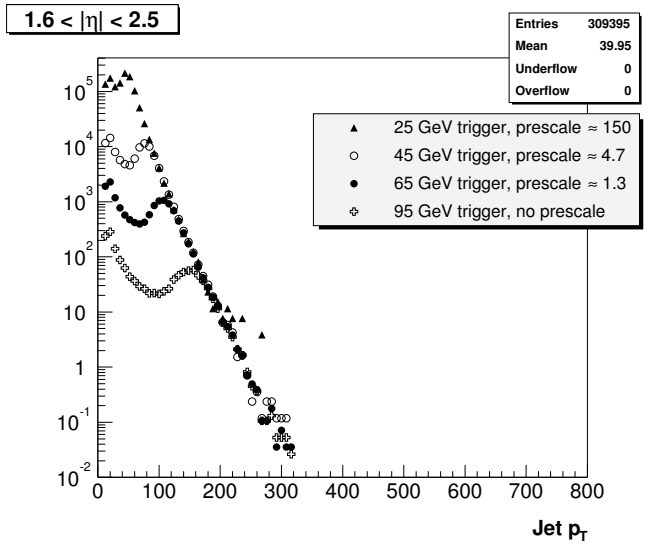

Jet f90ch for CHF > 0.1 and p T < 80 GeV
Entries 14711
Jet f90 + O.5 Jet CHF
0
0.2
0.4
0.6
0.8
1
1.2
1.4
-5
-4
-3
-2
-1
0
1
2
3
4
5
160
140
120
100
80
60
40
20
0

Number of Jets for all triggers









Raw Cross Section