Jet ID varibales for high p_T jets

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Data sample

- p13.04 and p13.05 data
- single jet triggers JT_25TT_NG, JT_45TT, JT_65TT, and JT_95TT
- selection of good runs, $\mathcal{L} = 37\,\text{pb}^{-1}$

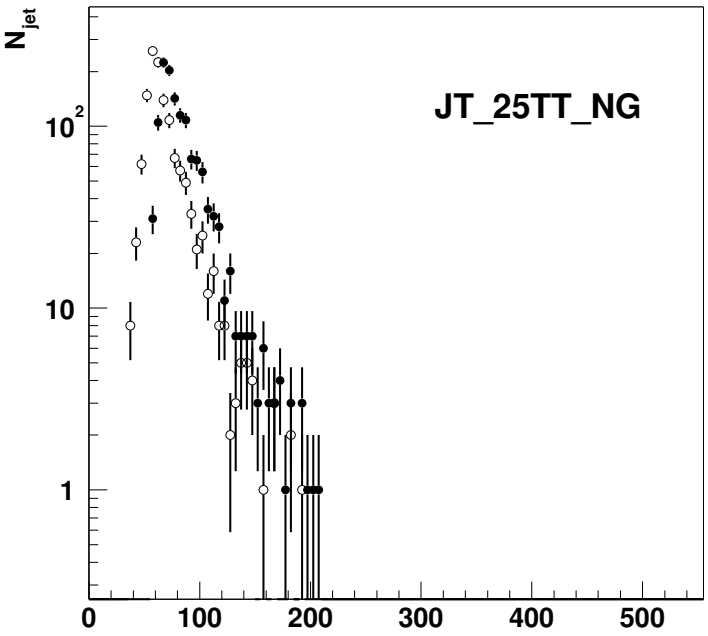
Event selection

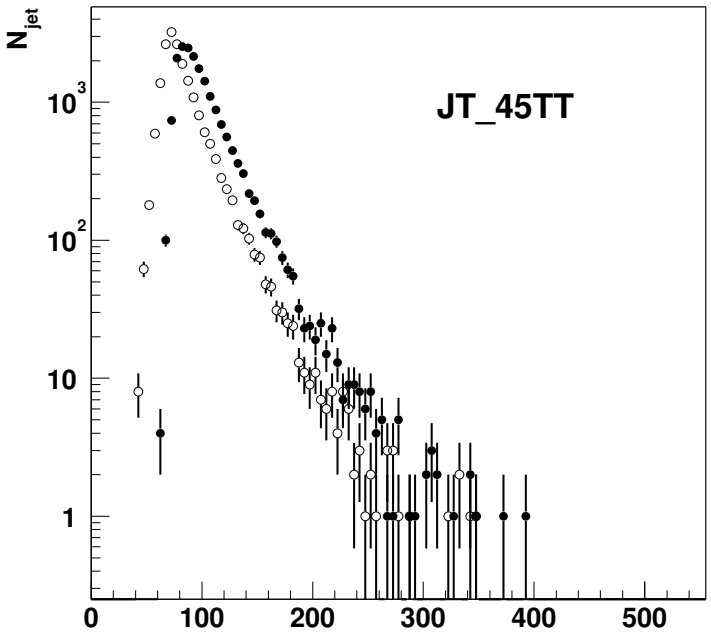
- at least two jets
- the two leading jets are in the central region of calorimeter, $|\eta| < 0.5$
- missing E_T is smaller than $0.7\,p_T$ of the leading jet
- z-position of the primary vertex : $|z_{vtx}| < 50\,\text{cm}$
- there are at least 5 tracks associated with the primary vertex
- cut on dijet mass applied in orded to stay above trigger turn-on
  - $150\,\text{GeV}$, $180\,\text{GeV}$, $300\,\text{GeV}$, and $390\,\text{GeV}$

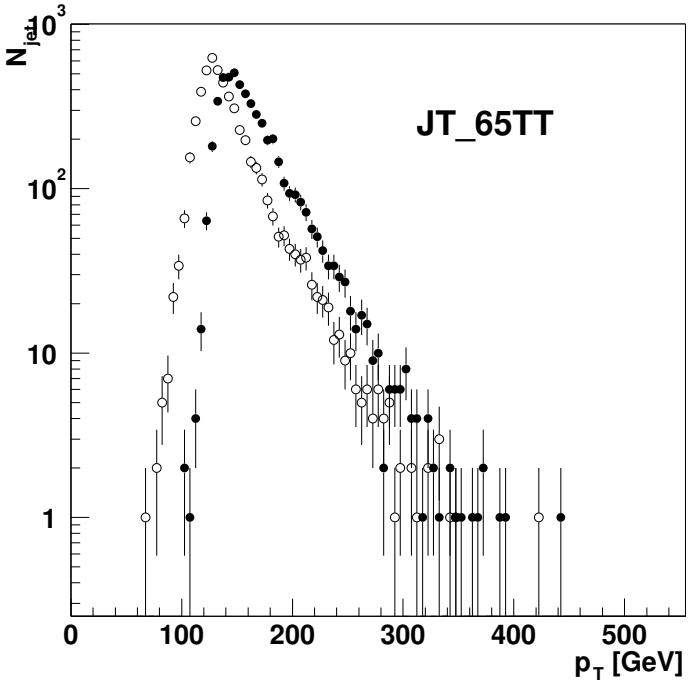
Jet ID variables plots

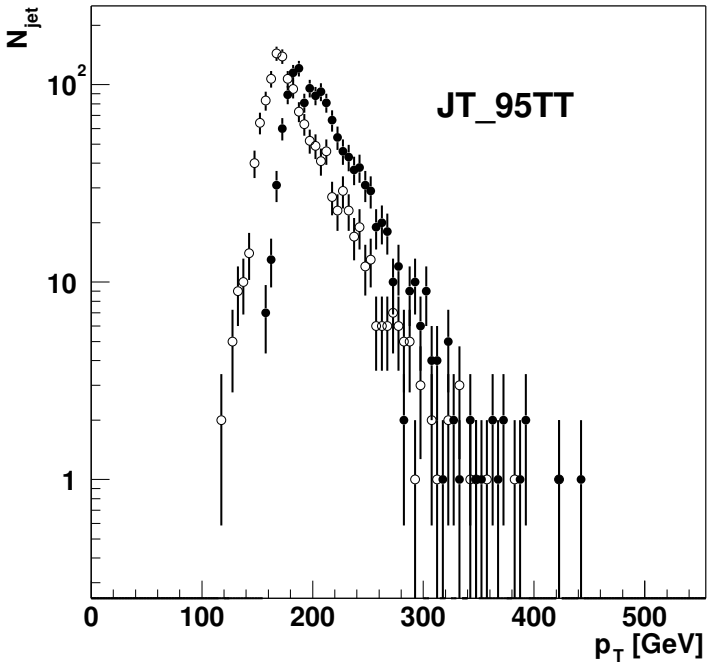
- all p13 jet ID cuts applied except the plotted one
- distributions of jetID variables for the first two leading jets

jet p_T

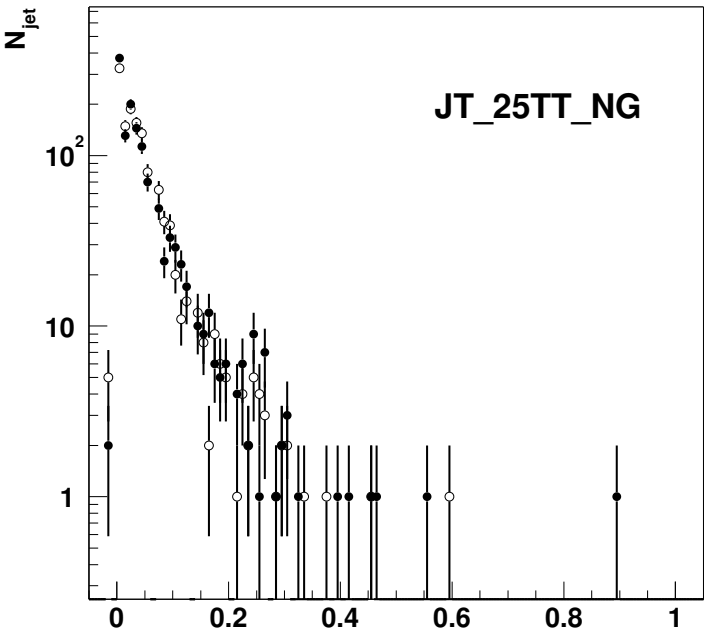

N_jet
JT_25TT_NG
10^2
10
1
0
100
200
300
400
500

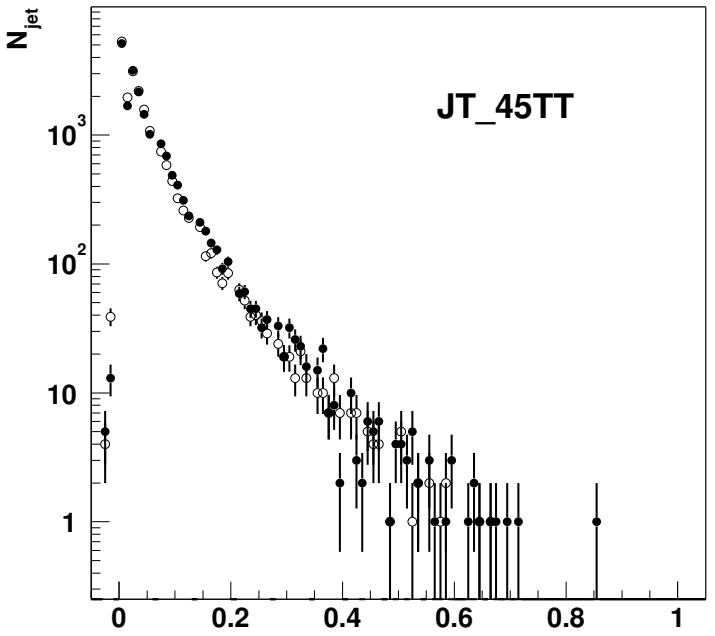

N_jet
JT_45TT
10^3
10^2
10
1
0
100
200
300
400
500

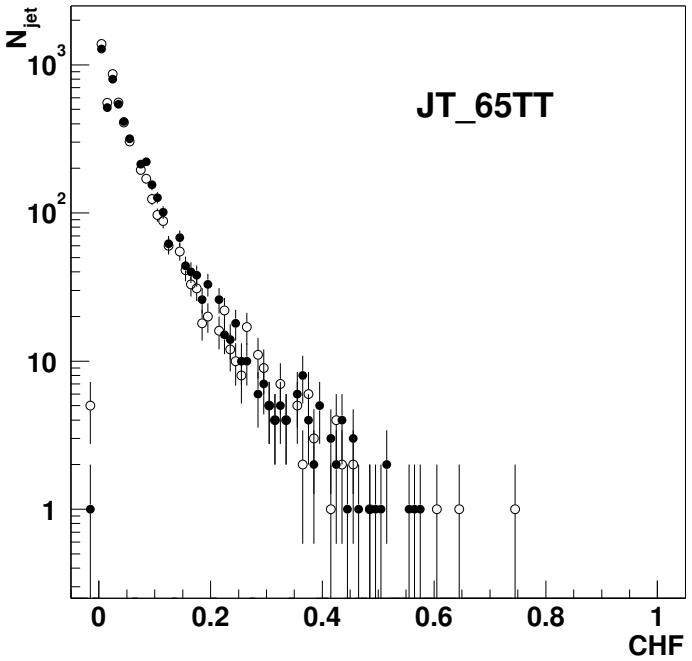

N_jet
JT_65TT
10^3
10^2
10
1
0
100
200
300
400
500
p_T [GeV]

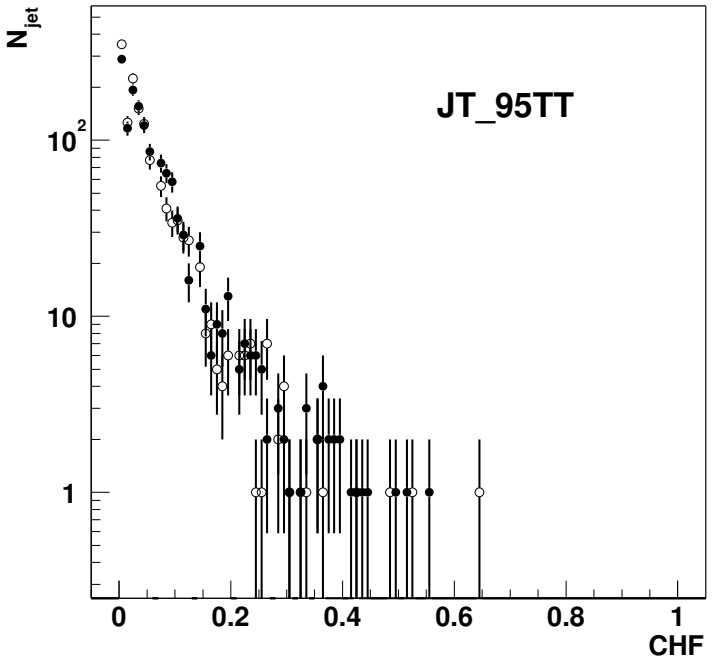

N_jet
JT_95TT
10^2
10
1
0
100
200
300
400
500
p_T [GeV]

CHF

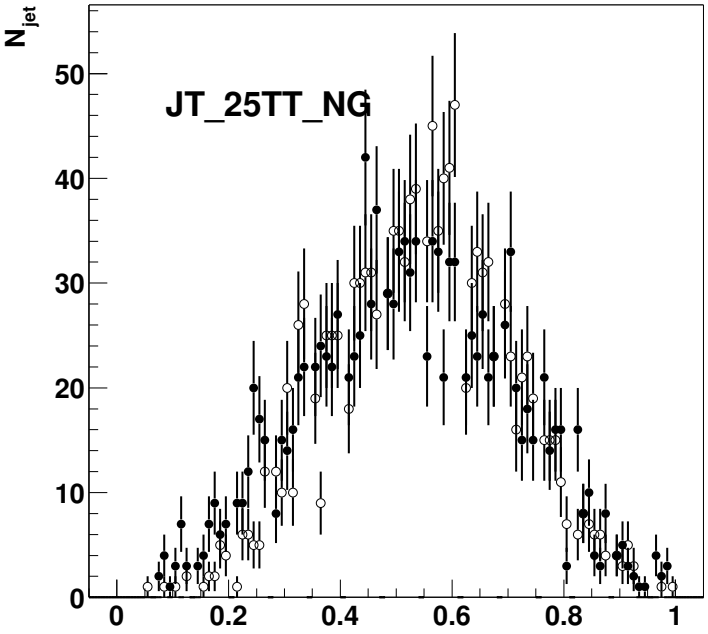

JT_25TT_NG
N_jet
10^2
10
1
0
0.2
0.4
0.6
0.8
1

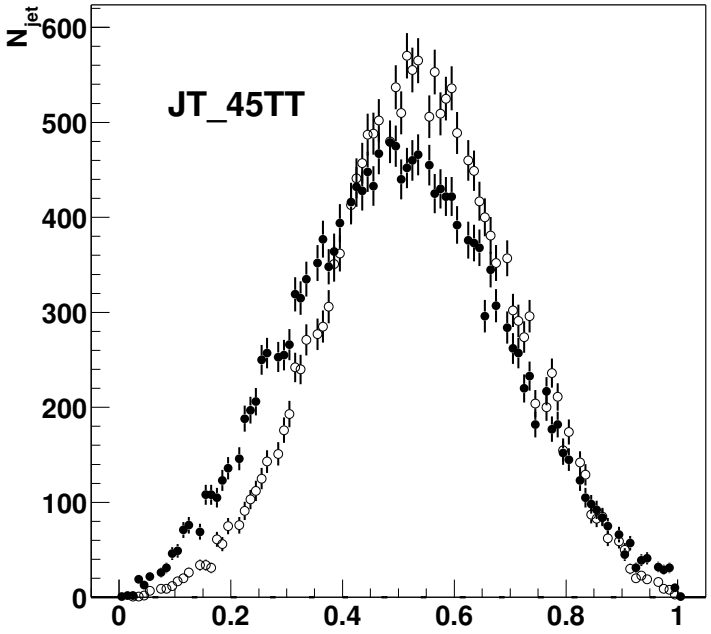

JT_45TT
N_jet
10^3
10^2
10
1
0
0.2
0.4
0.6
0.8
1

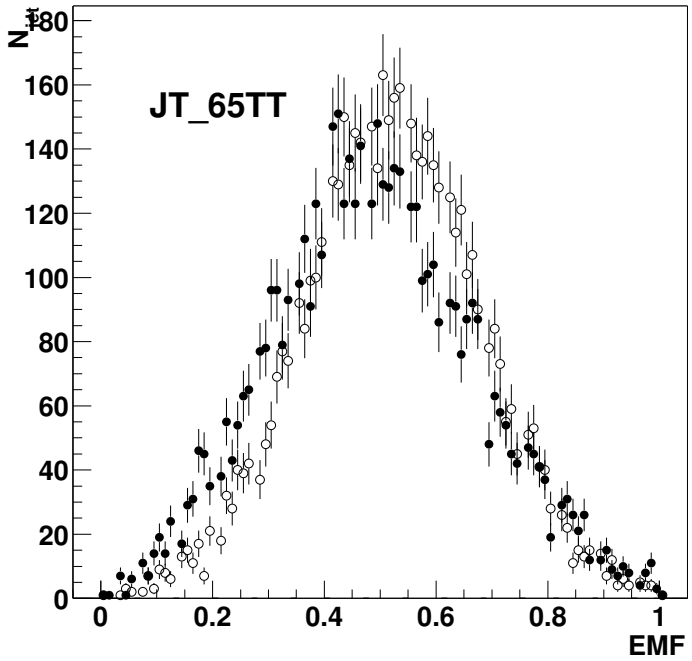

JT_65TT
N_jet
10^3
10^2
10
1
0
0.2
0.4
0.6
0.8
1
CHF

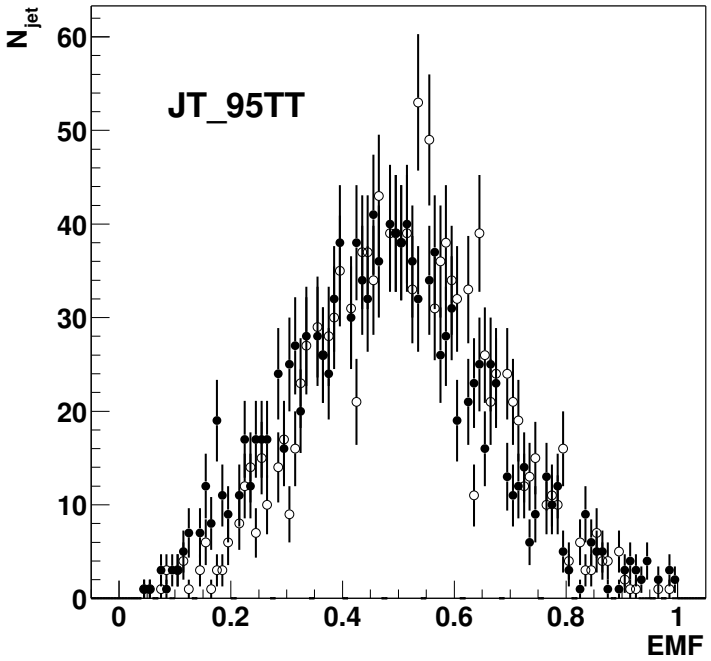

JT_95TT
N_jet
10^2
10
1
0
0.2
0.4
0.6
0.8
1
CHF

EMF

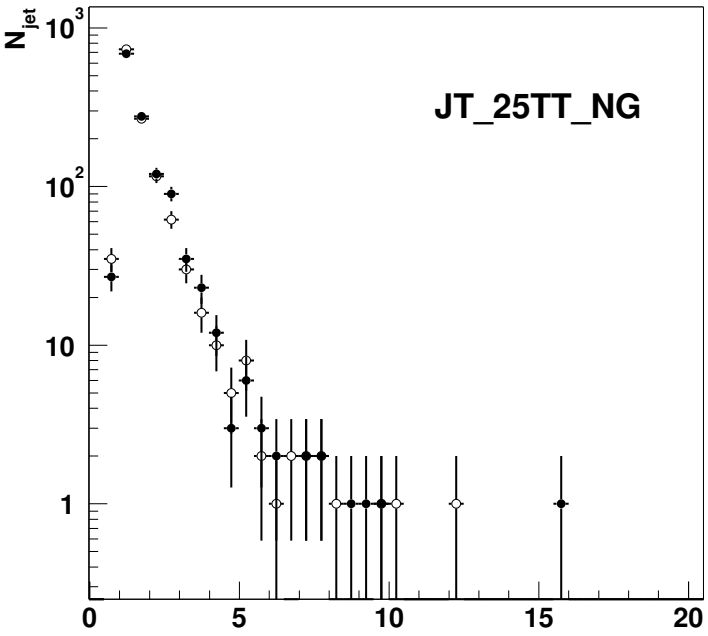

JT_25TT_NG
N_jet
0
10
20
30
40
50
0
0.2
0.4
0.6
0.8
1

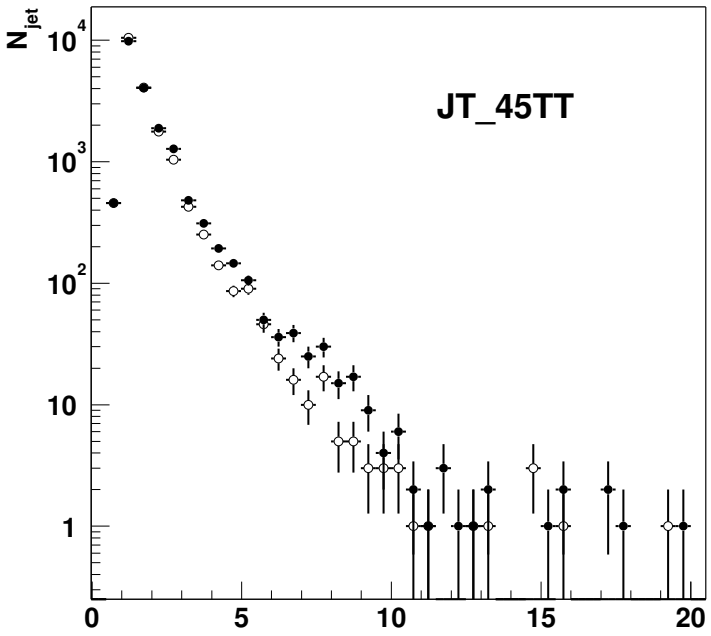

JT_45TT
N_jet
0
100
200
300
400
500
600
0
0.2
0.4
0.6
0.8
1

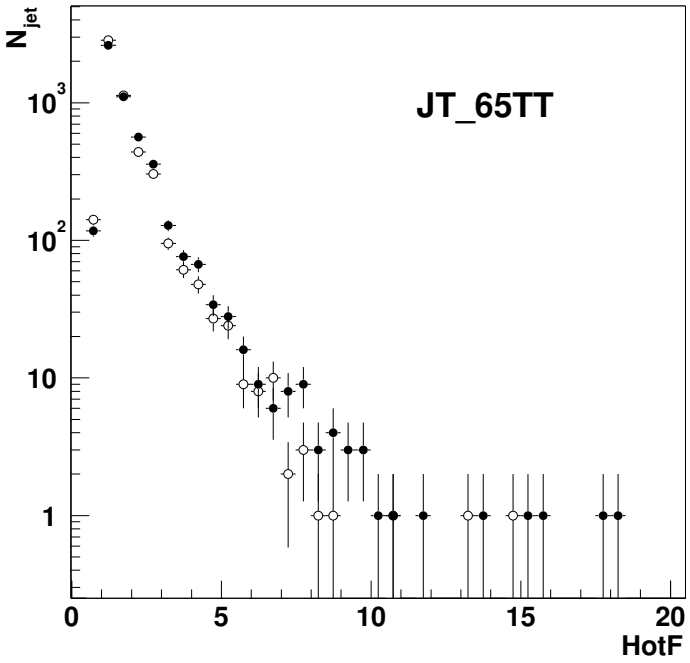

JT_65TT
N_jet
0
20
40
60
80
100
120
140
160
180
0
0.2
0.4
0.6
0.8
1
EMF

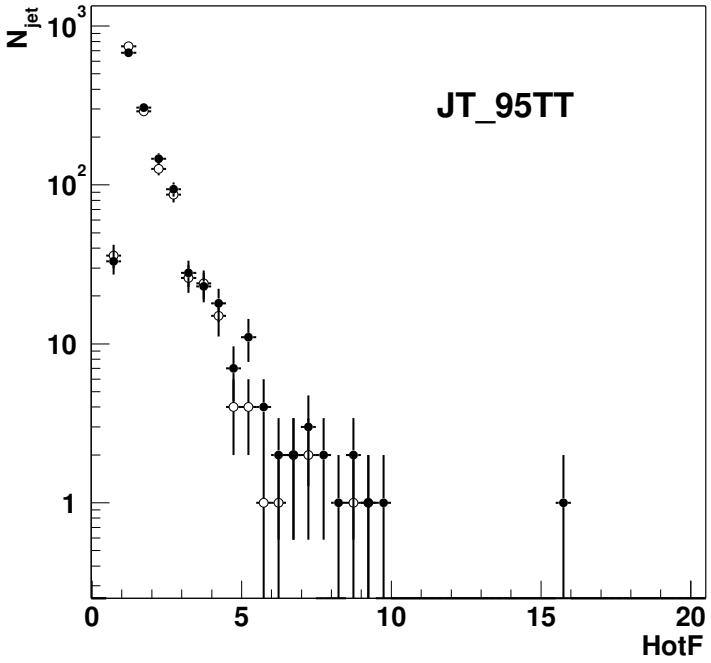

JT_95TT
N_jet
0
10
20
30
40
50
60
0
0.2
0.4
0.6
0.8
1
EMF

HotF

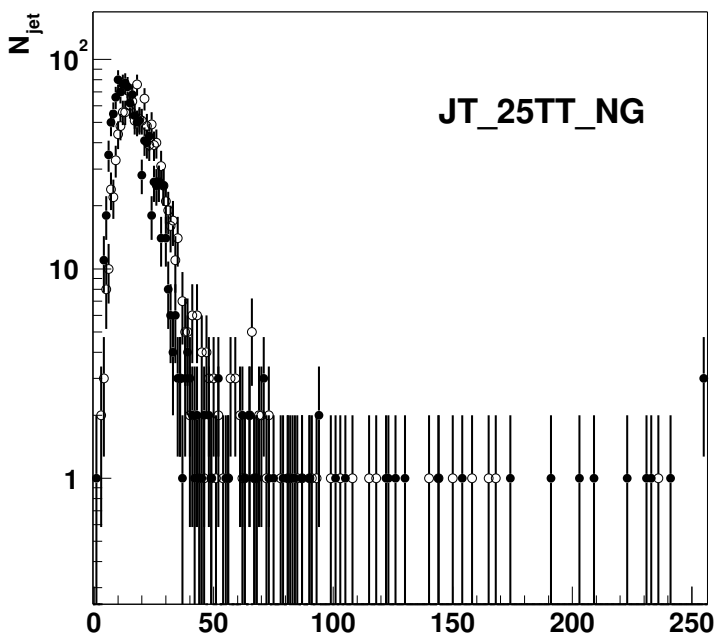

N_jet
JT_25TT_NG
HotF

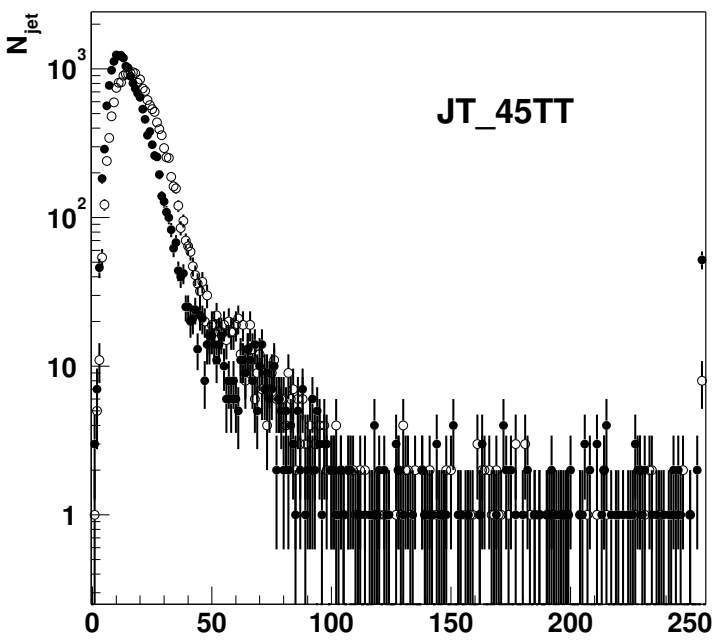

N_jet
JT_45TT
HotF

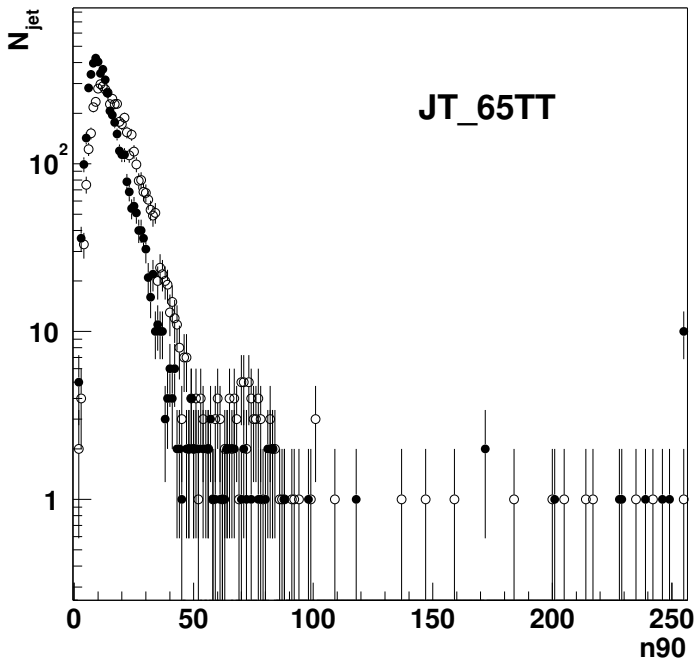

N_jet
JT_65TT
HotF

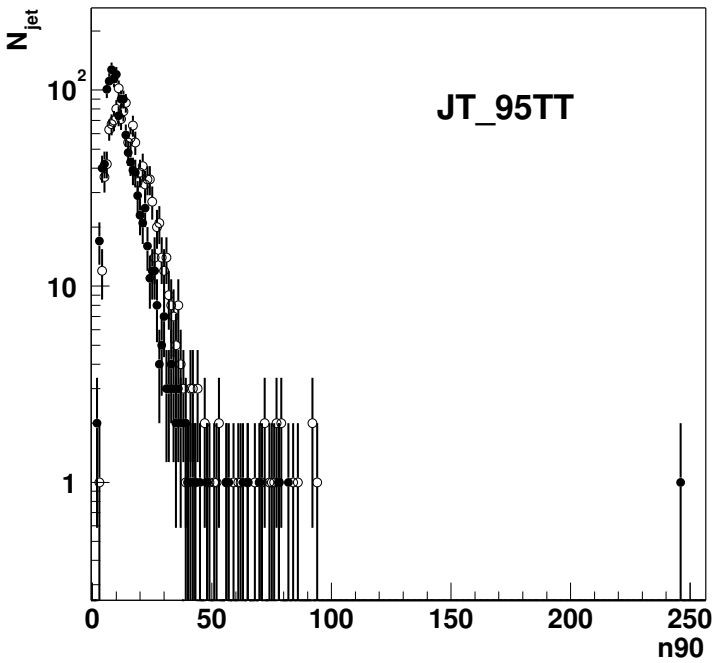

N_jet
JT_95TT
HotF

n90

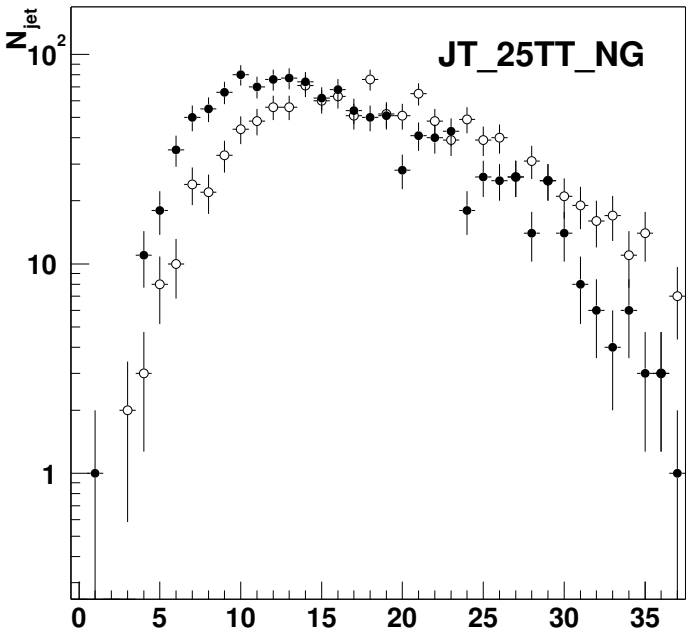

N_jet
JT_25TT_NG
10^2
10
1
0
50
100
150
200
250

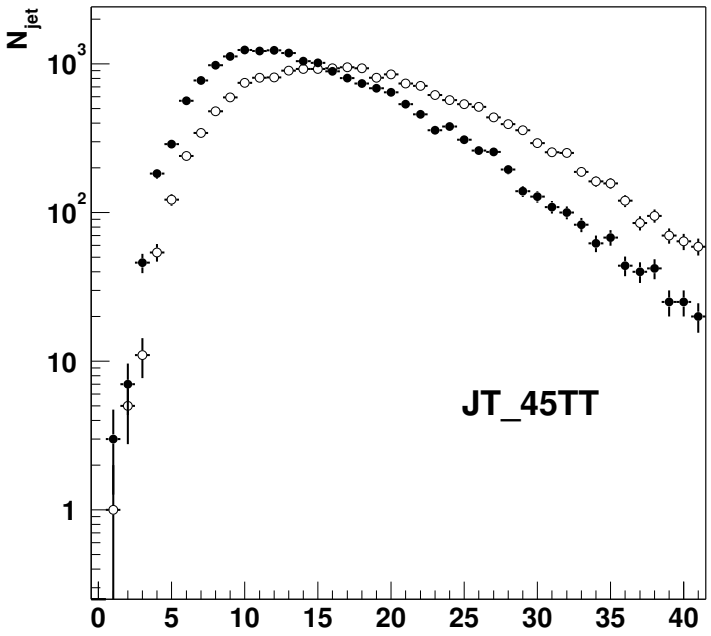

N_jet
JT_45TT
10^3
10^2
10
1
0
50
100
150
200
250

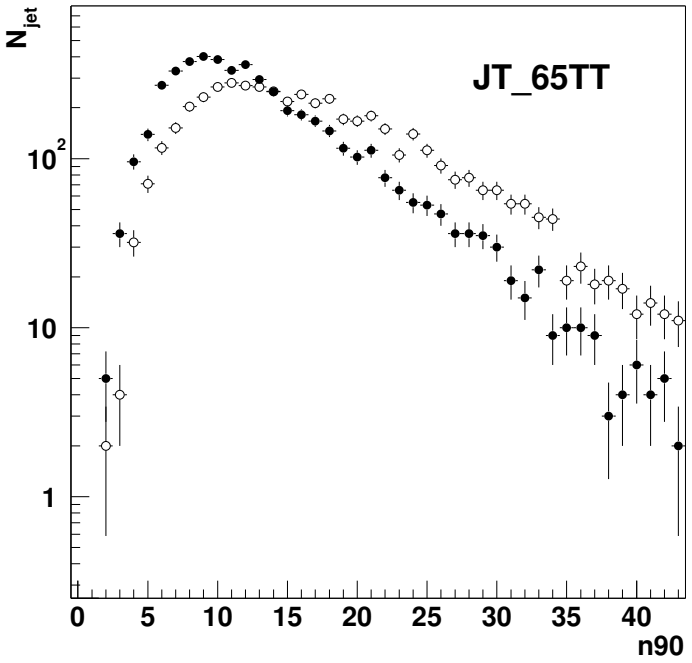

N_jet
JT_65TT
10^2
10
1
0
50
100
150
200
250
n90

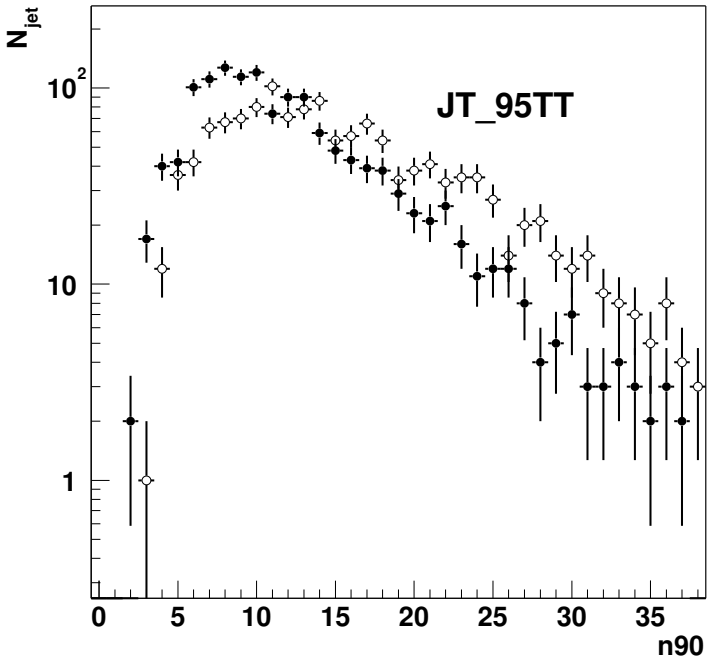

N_jet
JT_95TT
10^2
10
1
0
50
100
150
200
250
n90

n90 at low end

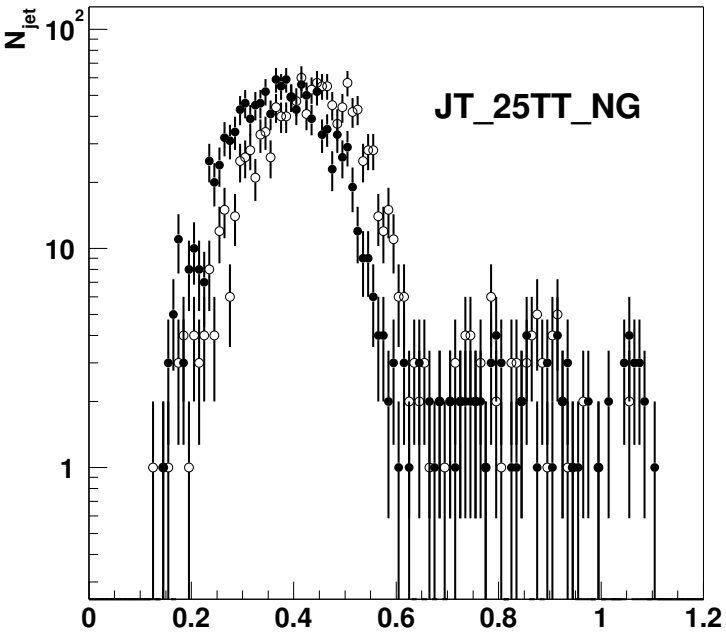


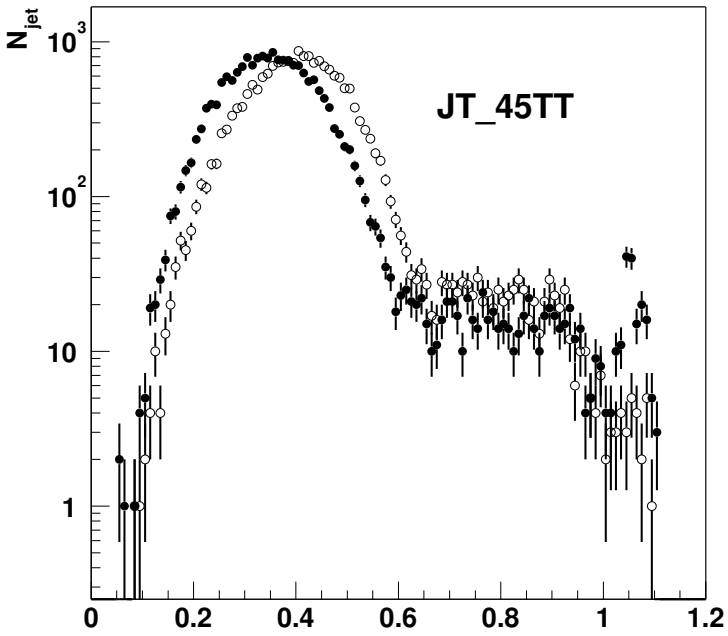


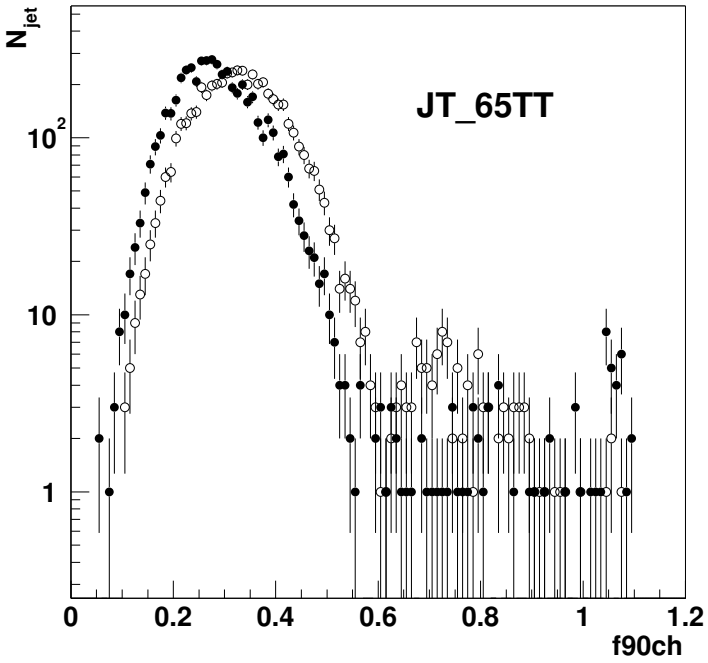


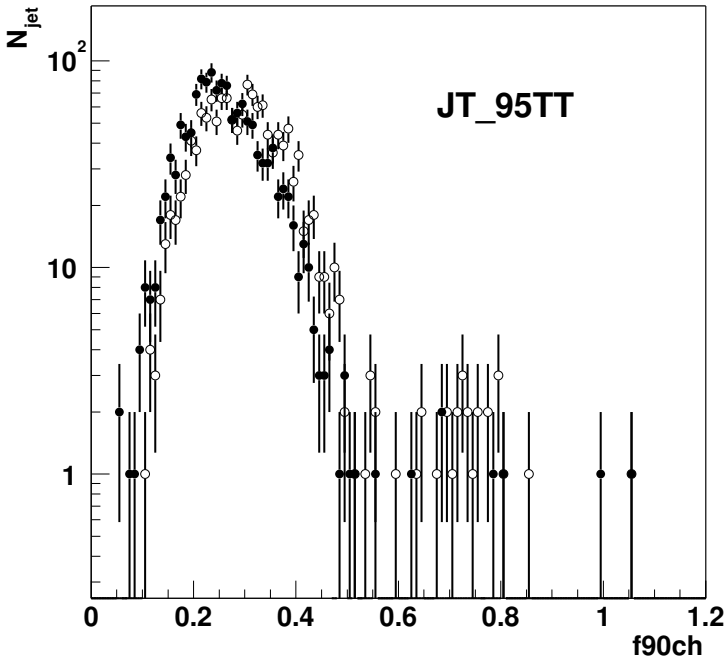


f90ch


N_{jet}
10^2
10
1
JT_25TT_NG
0
0.2
0.4
0.6
0.8
1
1.2


N_{jet}
10^3
10^2
10
1
JT_45TT
0
0.2
0.4
0.6
0.8
1
1.2


N_{jet}
10^2
10
1
JT_65TT
0
0.2
0.4
0.6
0.8
1
1.2
f90ch


N_{jet}
10^2
10
1
JT_95TT
0
0.2
0.4
0.6
0.8
1
1.2
f90ch

limits on efficiencies

- no fit on signal and background performed
- limits on efficiencies made by counting the jets that satisfy jetID cut

$$\varepsilon = \frac{N_{good}}{N_{all}}, \qquad \Delta\varepsilon = \sqrt{\frac{\varepsilon\,(1-\varepsilon)}{N_{all}}}$$

- calculated only for the leading jet

	JT_25TT_NG	JT_45TT	JT_65TT	JT_95TT
M_{JJ}	> 150 GeV	> 180 GeV	> 300 GeV	> 390 GeV
CHF	$99.6 \pm 0.2\%$	$99.64 \pm 0.04\%$	$99.6 \pm 0.1\%$	$99.5 \pm 0.2\%$
EMF	$99.3 \pm 0.2\%$	$99.27 \pm 0.06\%$	$99.3 \pm 0.1\%$	$99.4 \pm 0.2\%$
HotF	$99.97 \pm 0.03\%$	$99.88 \pm 0.03\%$	$99.85 \pm 0.05\%$	$99.93 \pm 0.07\%$
n90	1	1	1	1
f90ch	$96.4 \pm 0.5\%$	$97.7 \pm 0.1\%$	$99.1 \pm 0.1\%$	$99.8 \pm 0.1\%$