Update on jets VIII

Combined trigger version 4 and 5 data

Jet energy scale v2.1

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Data sample and luminosity

Trigger v4 data

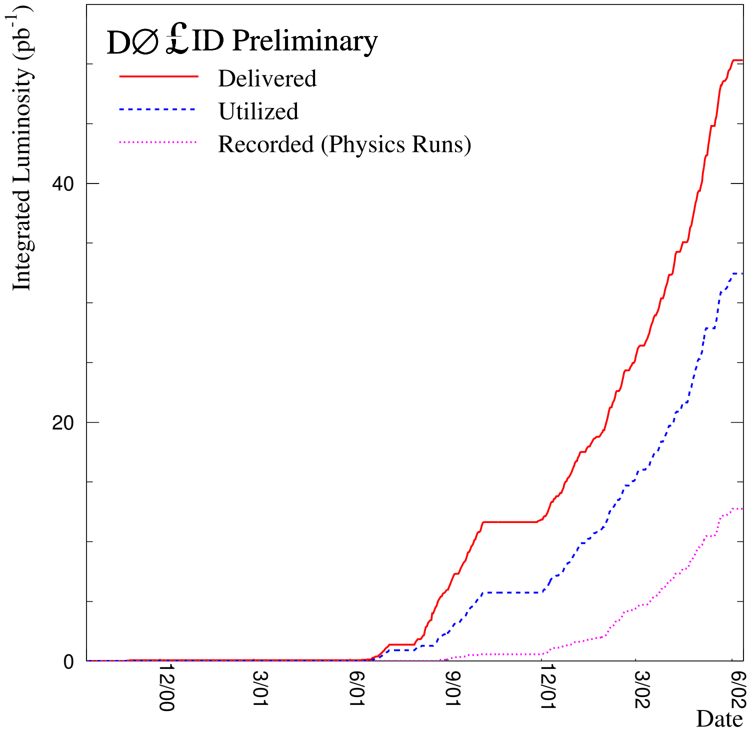
- runs 145684 - 149210

number of runs	107/130
number of files	1354/1509
number of events (small_strip)	5063308
number of events in good LBN	3576474
Reconstructed luminosity for trigger JT_HI_4CJT5	1.75 pb^{-1}

Trigger v5 data

- runs 149269 - 154492

number of runs	189/216
number of files	1984/2118
number of events (jet_strip)	1305540
number of events in good LBN	1066550
Reconstructed luminosity for trigger JT_65TT	3.96 pb^{-1}



- luminosity for data that can be normalised

$$\mathcal{L} = 5.8\,\mathrm{pb}^{-1}$$

- luminosity in stripped files in good runs

$$\mathcal{L}_{files} \sim 7\,\mathrm{pb}^{-1}$$

- almost all data

Selection cuts and corrections

Selection criteria

- event selection
  - at least one jet (for jet inclusive p_T spectrum analysis)
  - at least two jet (for dijet mass spectrum analysis)
  - cut on missing E_T, $\quad \not{E}_T < 0.7\, p_T^{jet1}$
  - cut on primary vertex position, $\quad |z_{vtx}| < 50\,\mathrm{cm}$
  - cut on total energy deposited in calorimeter, $\quad E_{cal} < 2\,\mathrm{TeV}$
- jet selection criteria – based on EMF, CHF, HotF, n90

Current corrections

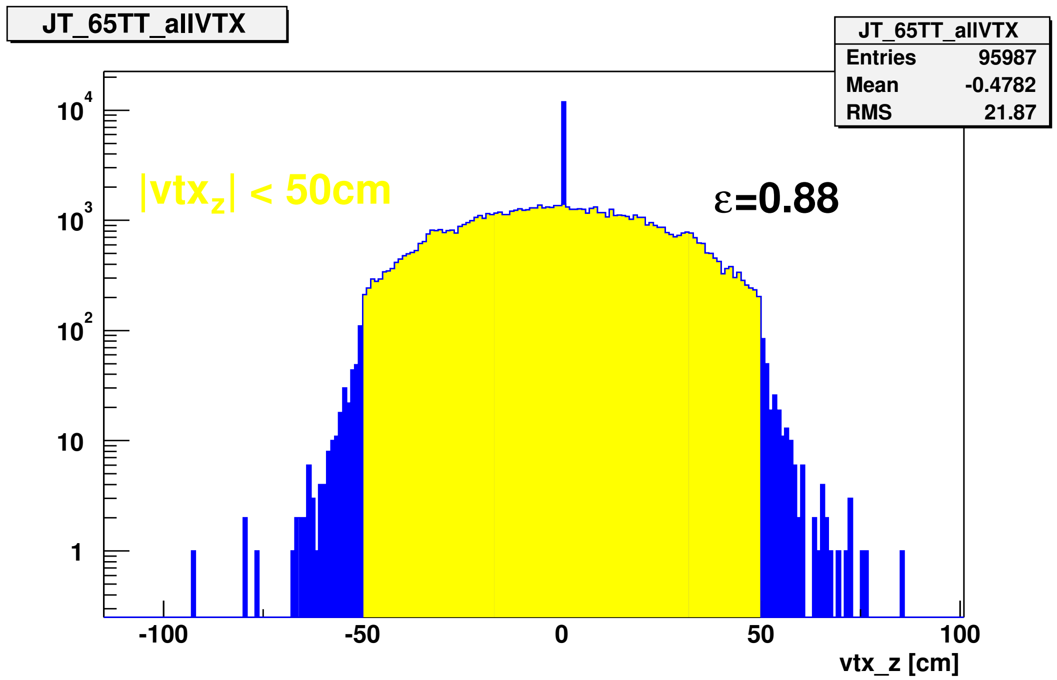
- jet energy scale correction (`jetcorr v2.1`)
- correction for vertex selection cut

Correction for cut on vertex

For inclusive p_T spectrum

trigger v4	f_{corr}
JT_L09	1.076
JT_L015	1.075
JT_L030	1.078
JT_MD_3CJT5	1.088
JT_HI_4CJT5	1.095

trigger v5	f_{corr}
JT_25TT	1.106
JT_45TT	1.117
JT_65TT	1.130
JT_95TT	1.145



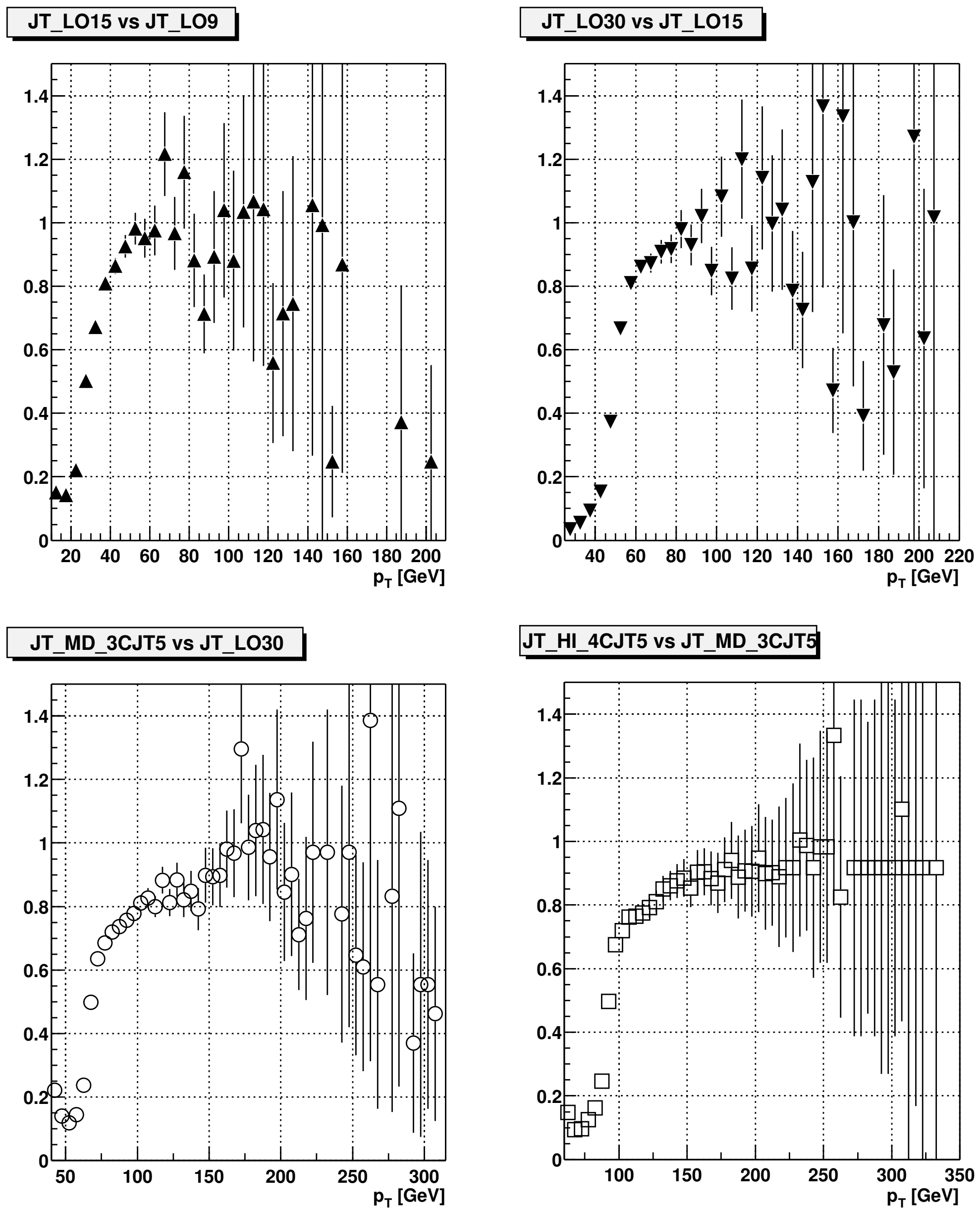
- events that passed event selection criteria (except cut on vertex)
- every good jet in a given η region is one entry in the histogram
- in future count only jets in the selected p_T region

▷ for dijet mass analysis similar values

Trigger thresholds for inclusive pT spectrum

Trigger version 4

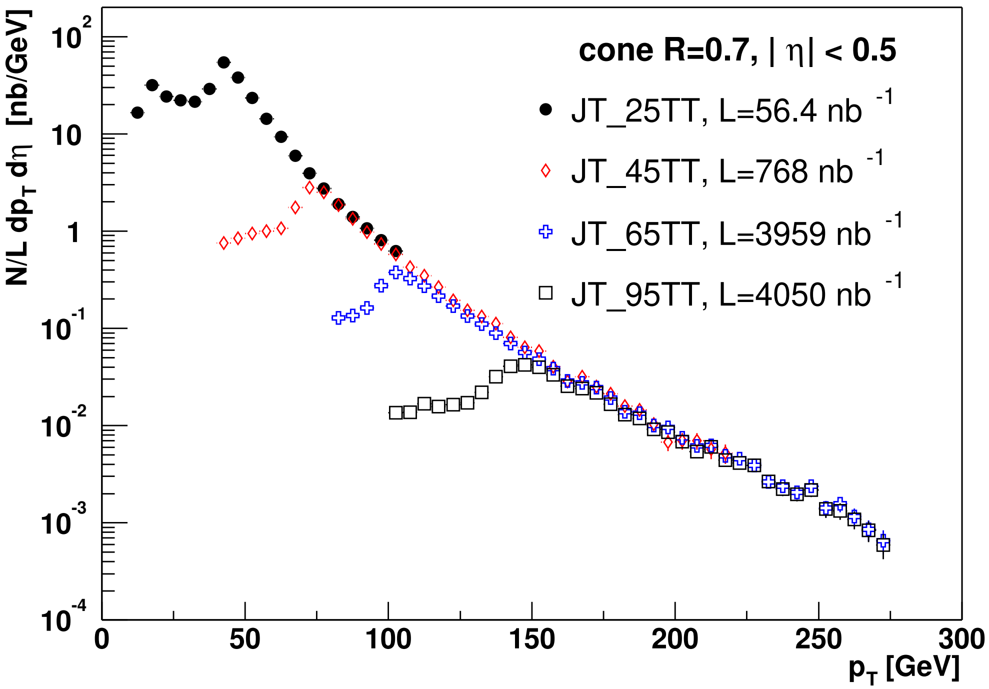
JT_LO9	60 — 70 GeV
JT_LO15	70 — 100 GeV
JT_LO30	100 — 180 GeV
JT_MD_3CJT5	180 — 310 GeV
JT_HI_4CJT5	> 310 GeV

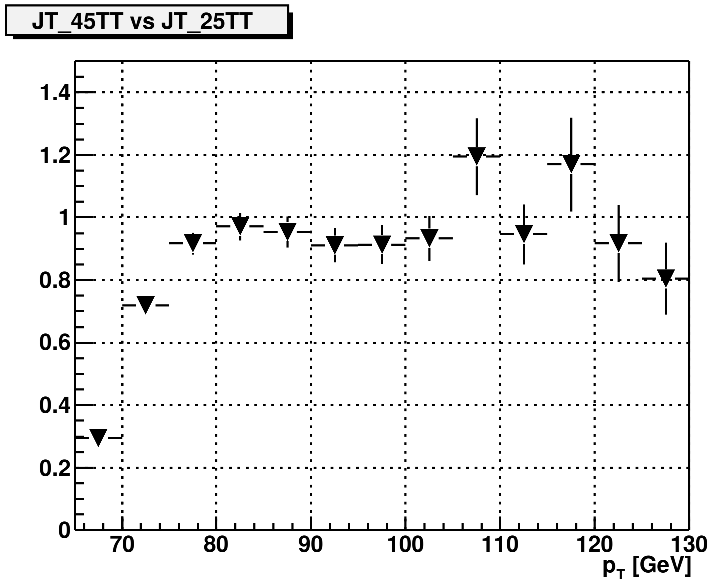


Trigger thresholds for inclusive pT spectrum

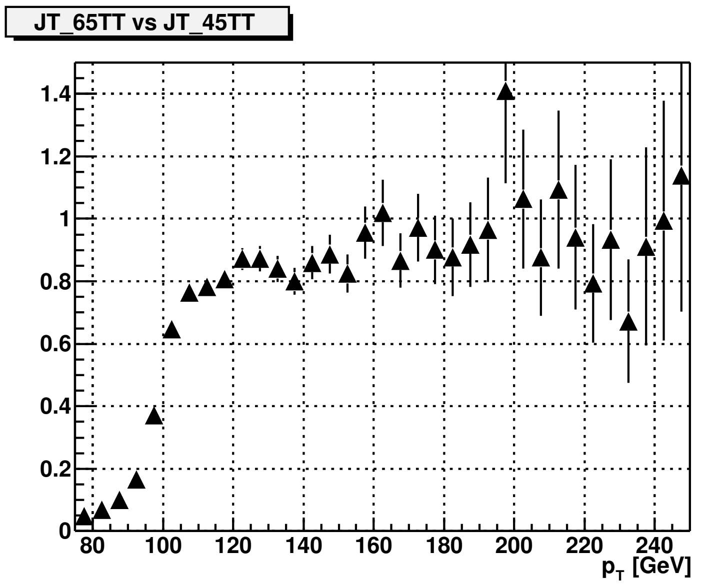
Trigger version 5

$|\eta| < 0.5$



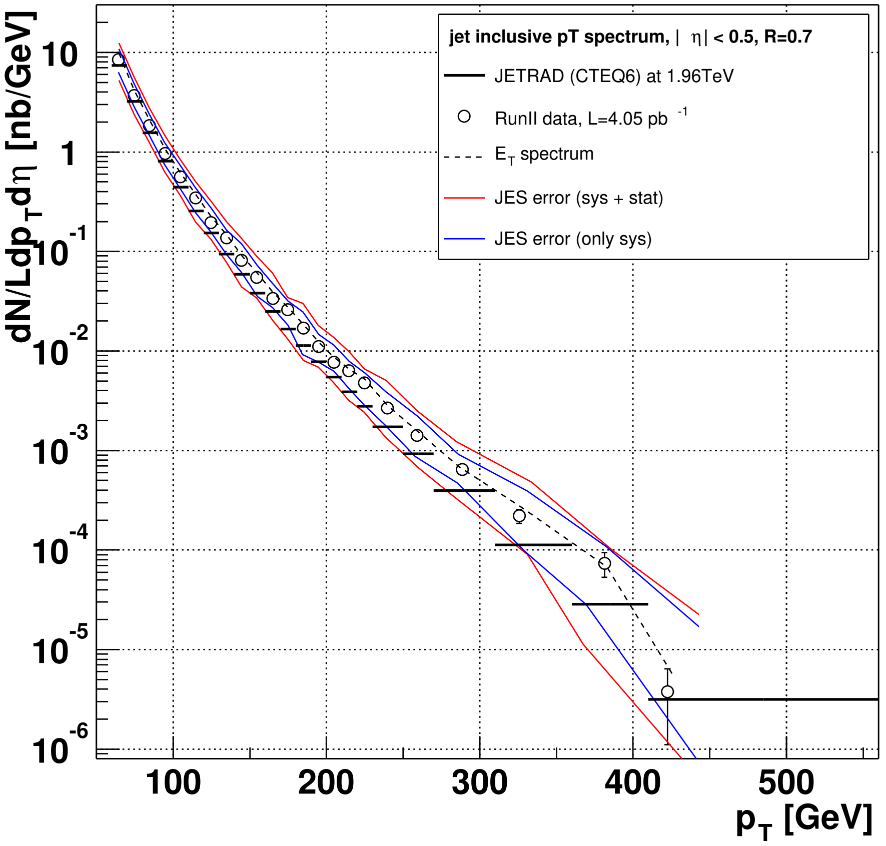


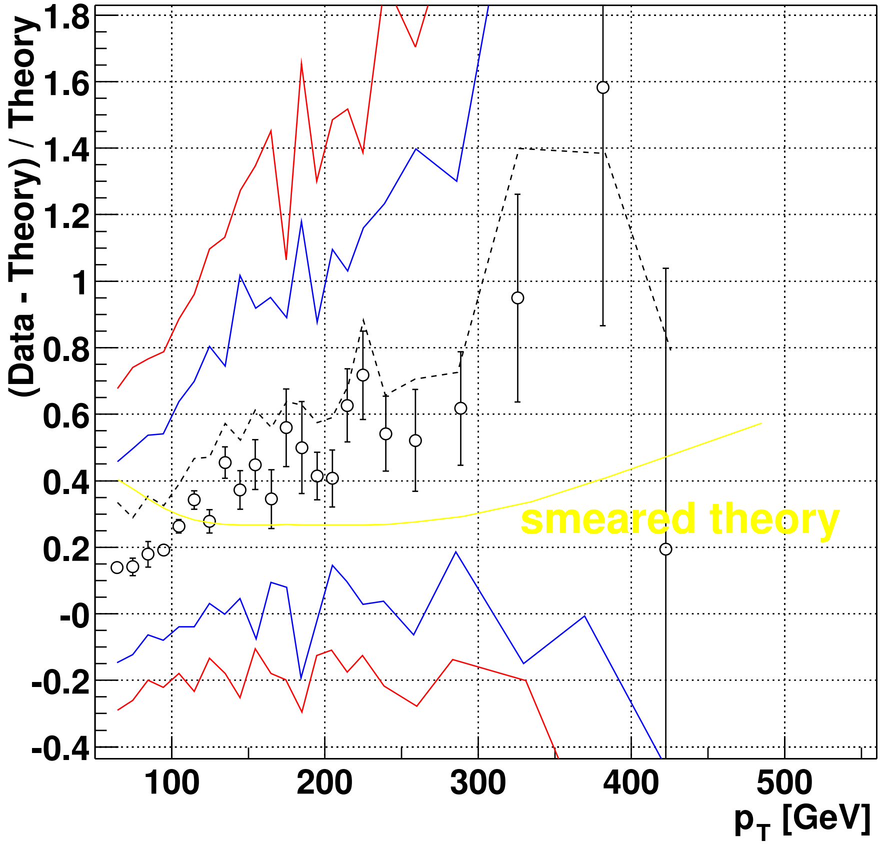
JT_25TT	$60 - 90$ GeV
JT_45TT	$90 - 200$ GeV
JT_65TT	$200 - 310$ GeV
JT_95TT	$>$ 310 GeV



Inclusive p_T spectrum - comparison with theory

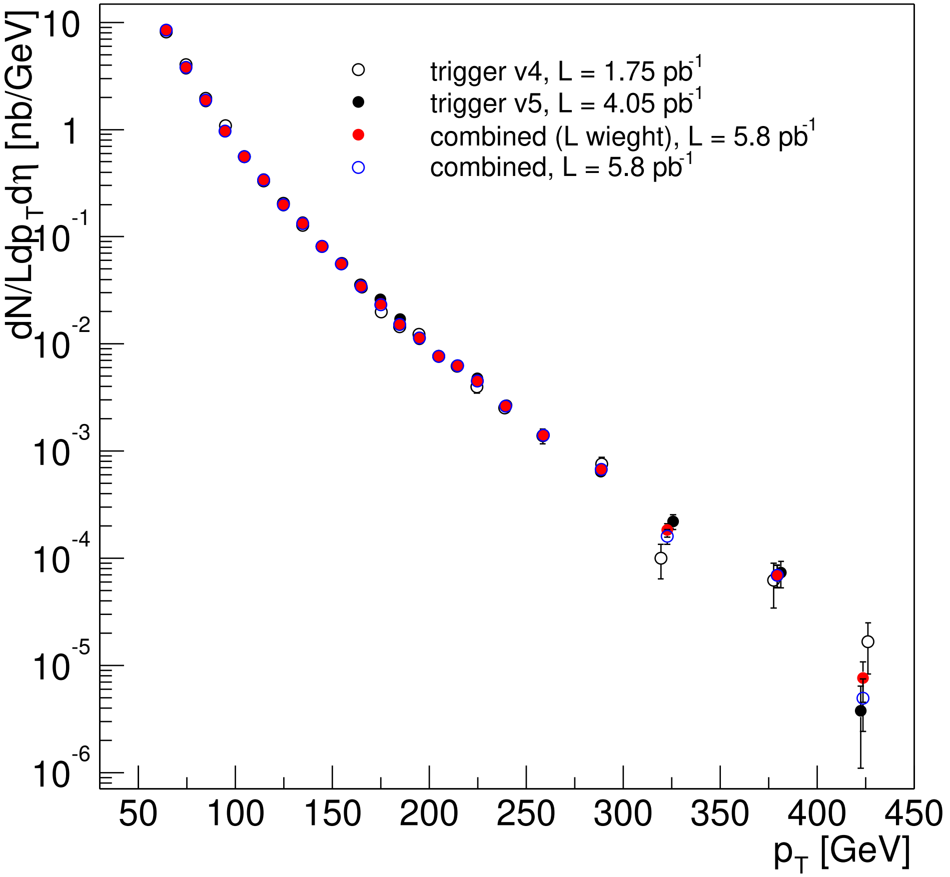
Only trigger v5 data

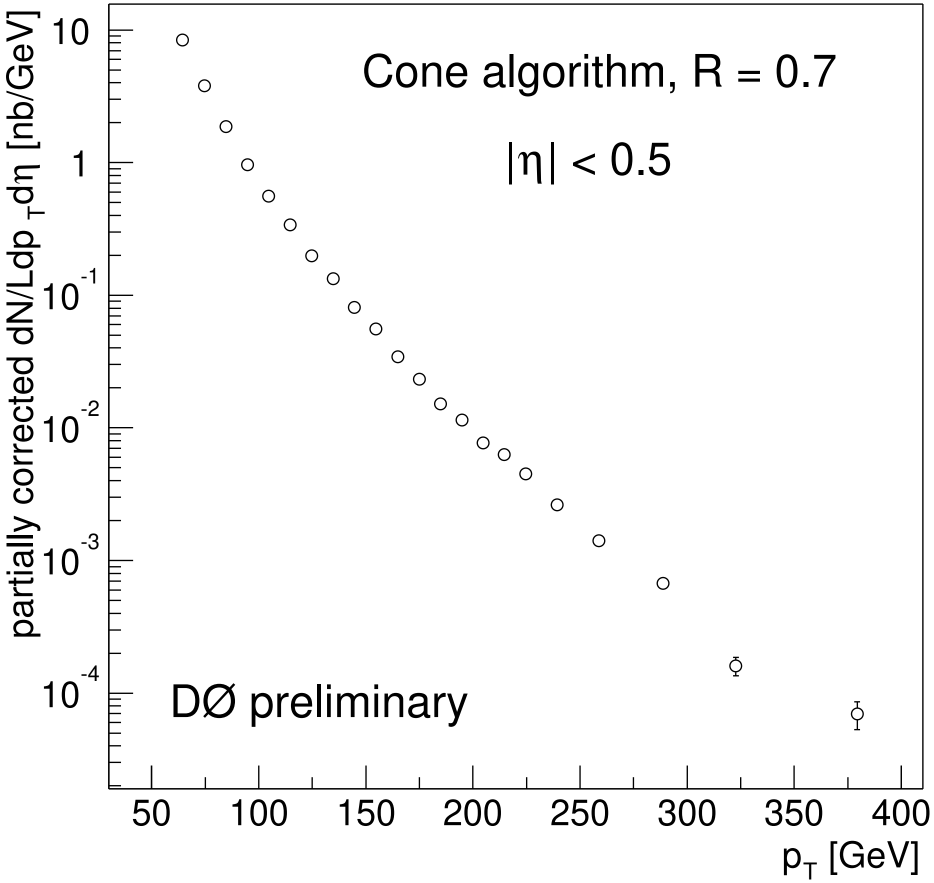


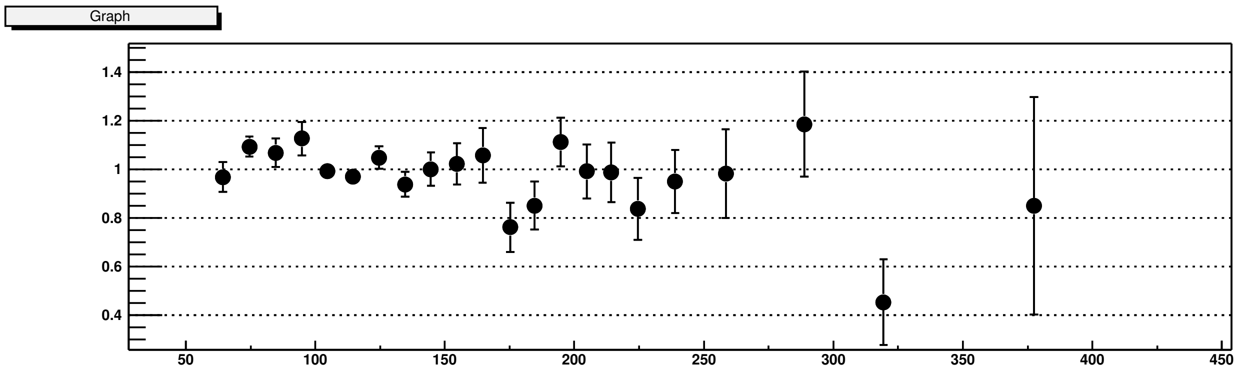


- smeared theory using unofficial jet energy resolution
- just a hint how large the unsmearing corrections could be

Inclusive PT spectrum - combined result

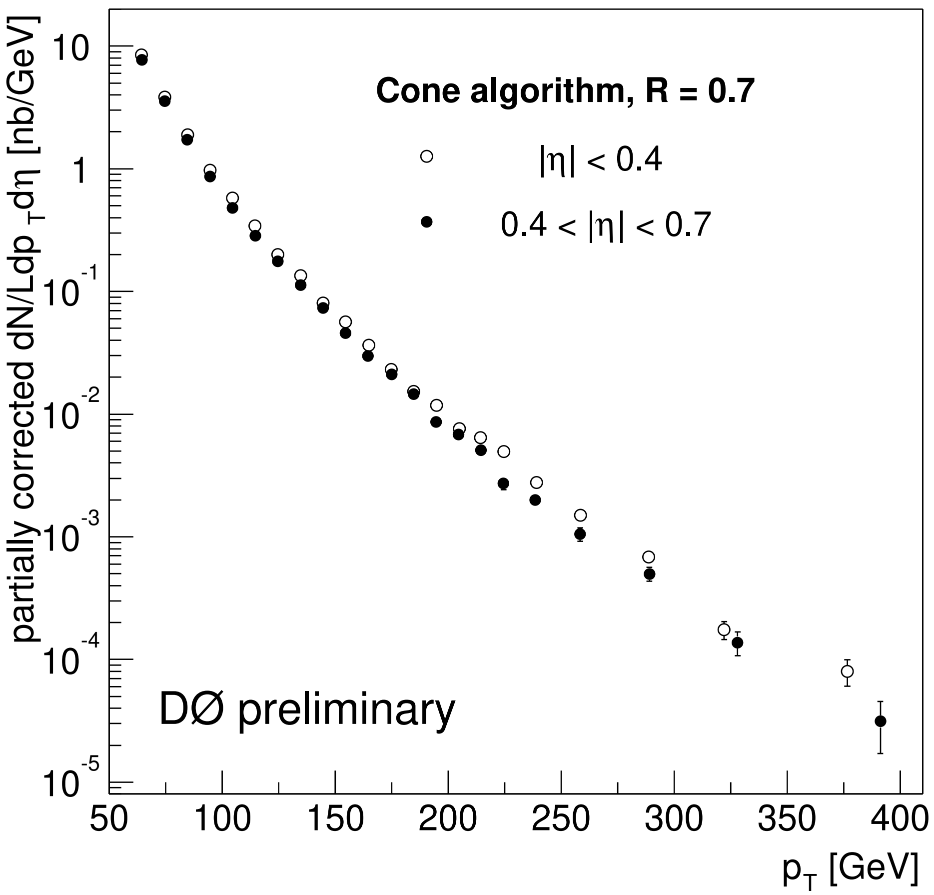


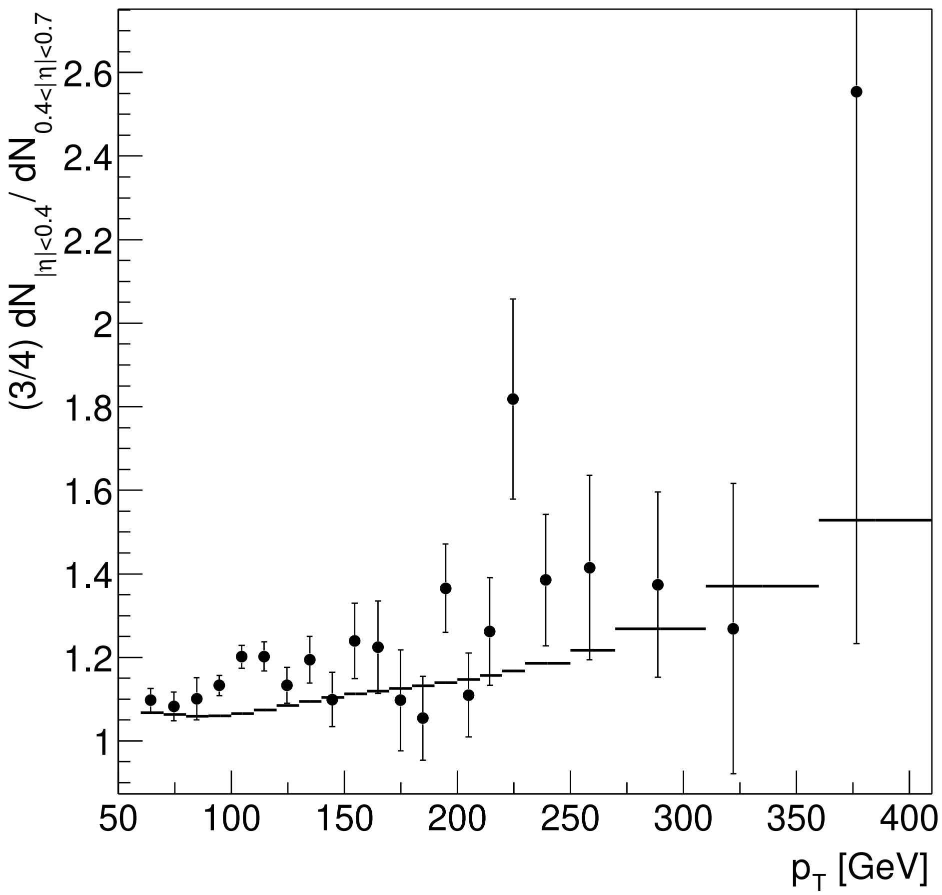




Inclusive PT spectrum in two η bins

Combined trigger version 4 and 5 data

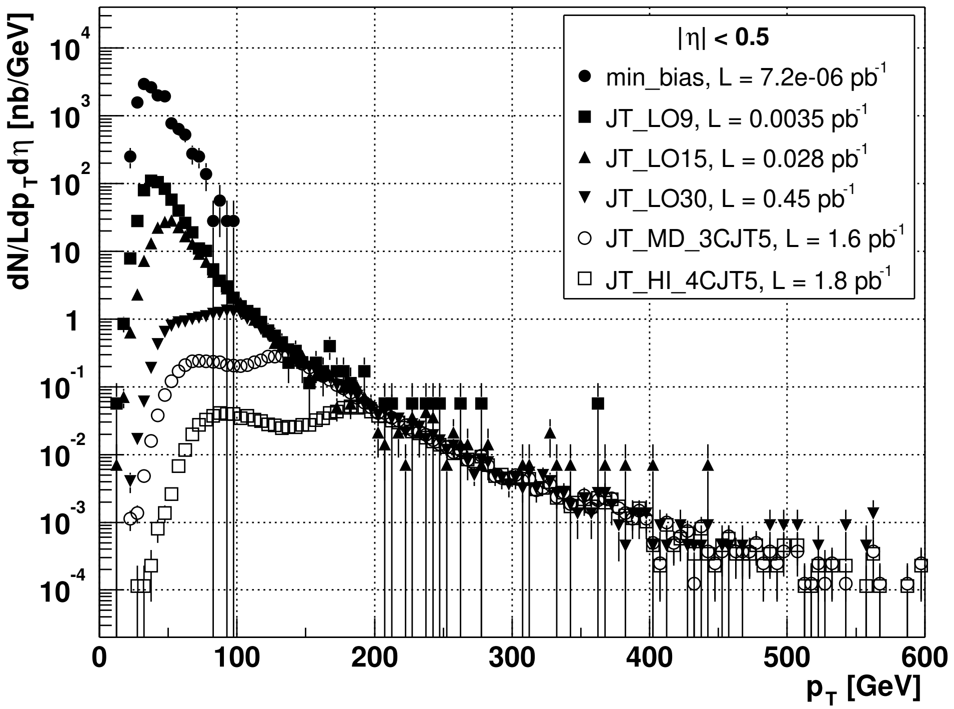


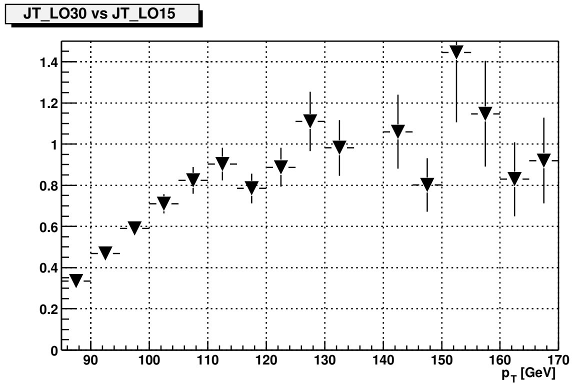


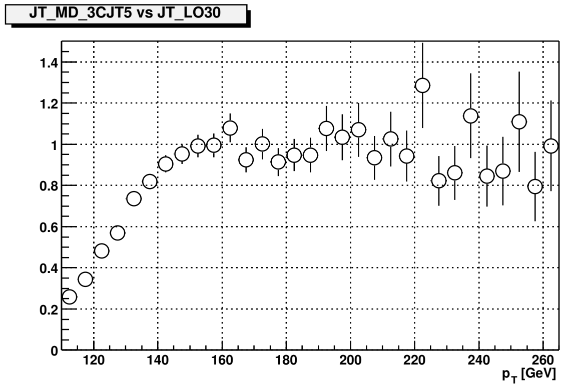
Trigger thresholds for dijet mass spectrum

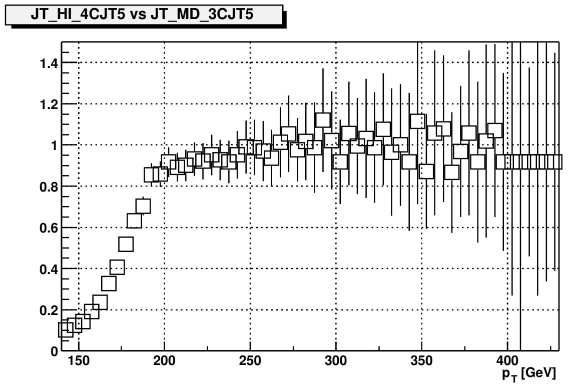
Trigger version 4

$|\eta| < 0.5$







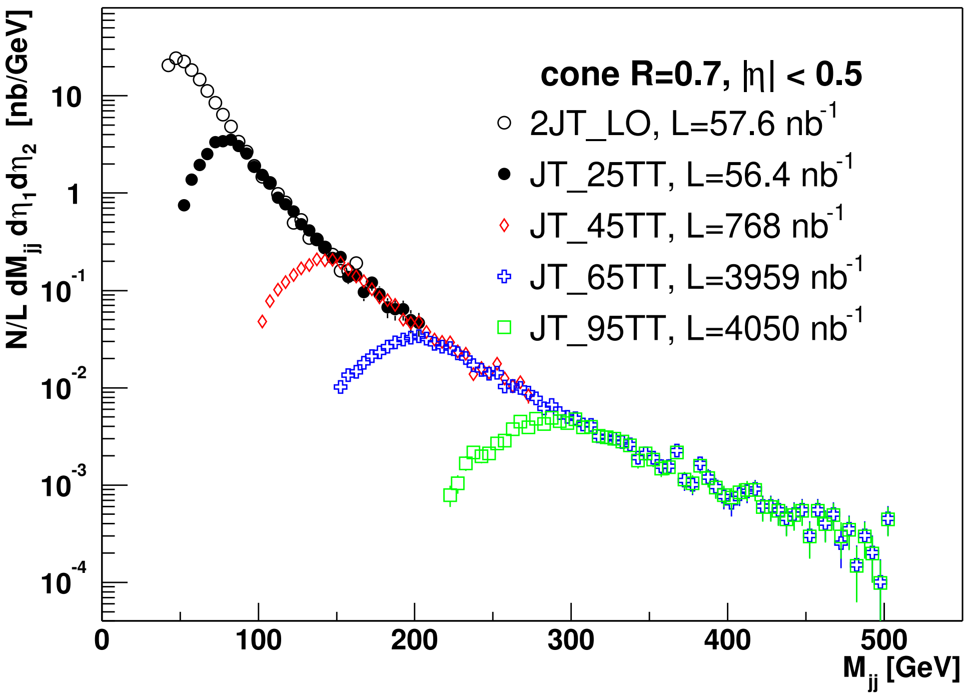


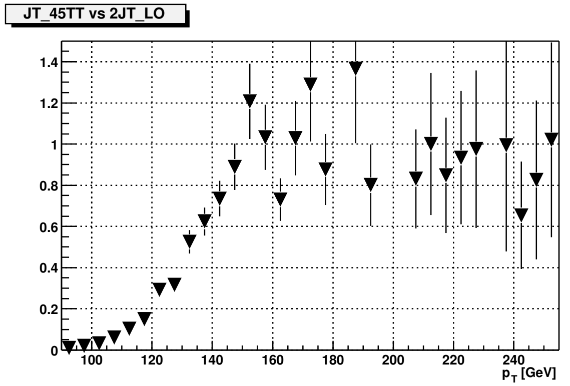
JT_LO30	150 – 160 GeV
JT_MD_3CJT5	160 – 390 GeV
JT_HI_4CJT5	> 390 GeV

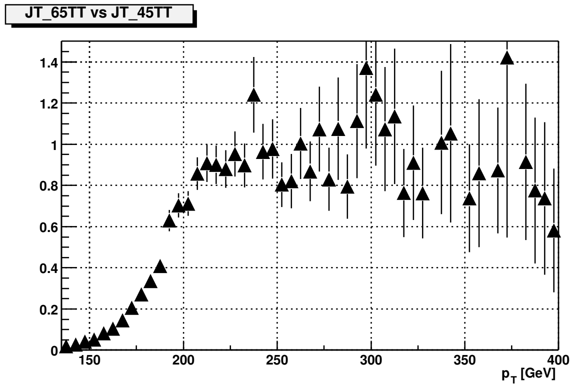
Trigger thresholds for dijet mass spectrum

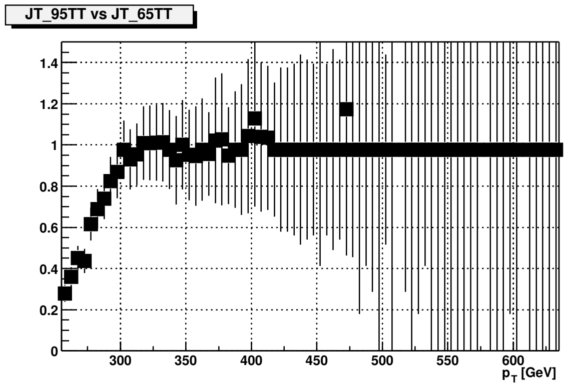
Trigger version 5

$|\eta| < 0.5$





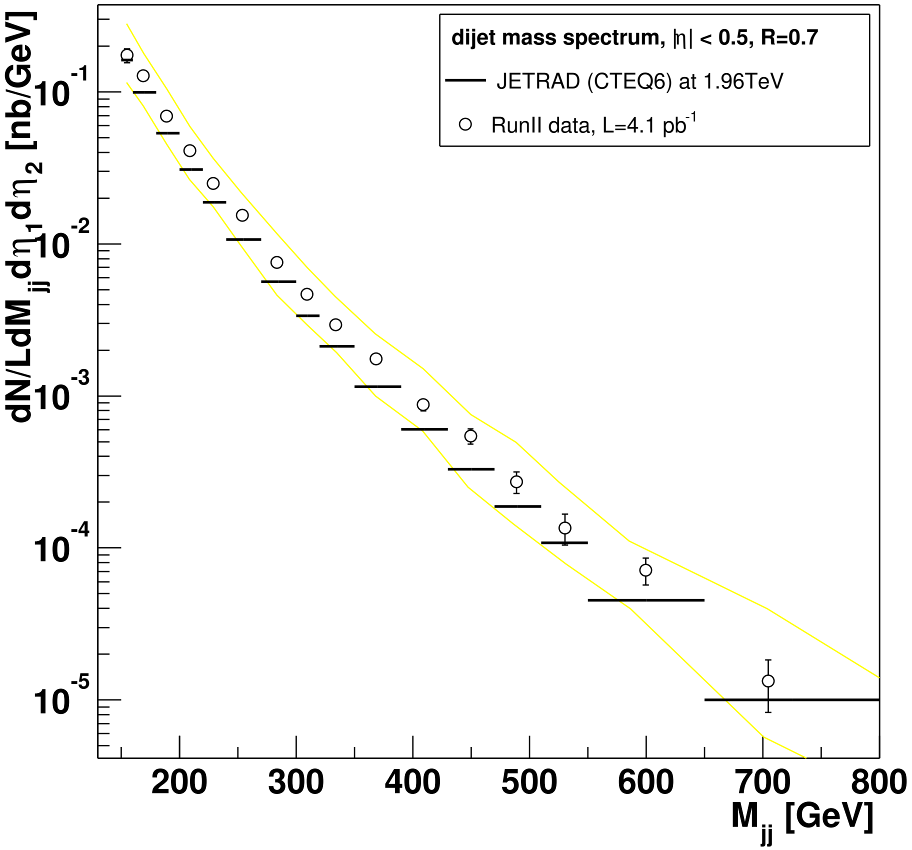


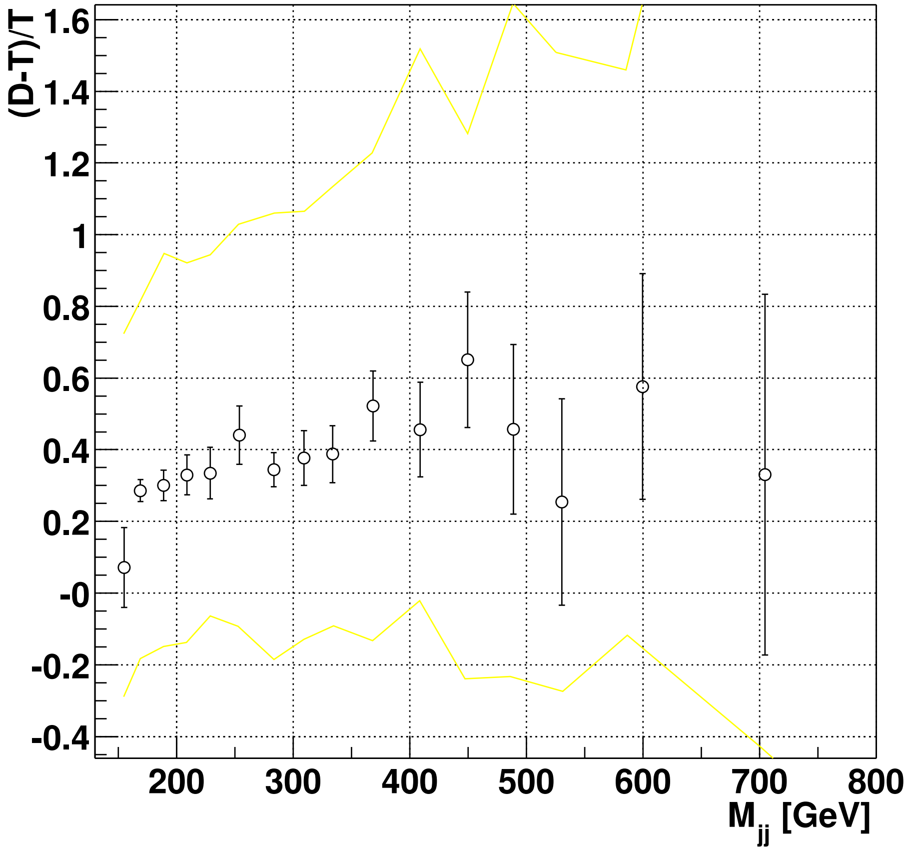


2JT_LO	150 – 160 GeV
JT_45TT	160 – 270 GeV
JT_65TT	270 – 510 GeV
JT_95TT	> 510 GeV

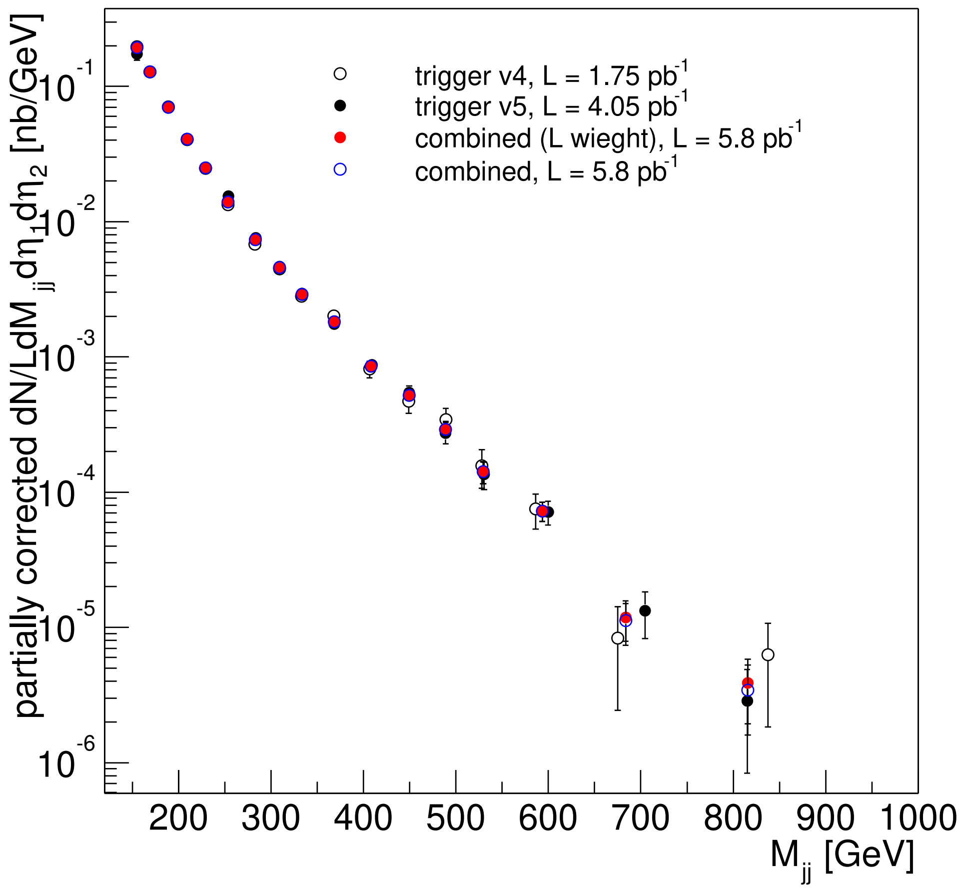
Dijet mass spectrum - comparison with theory

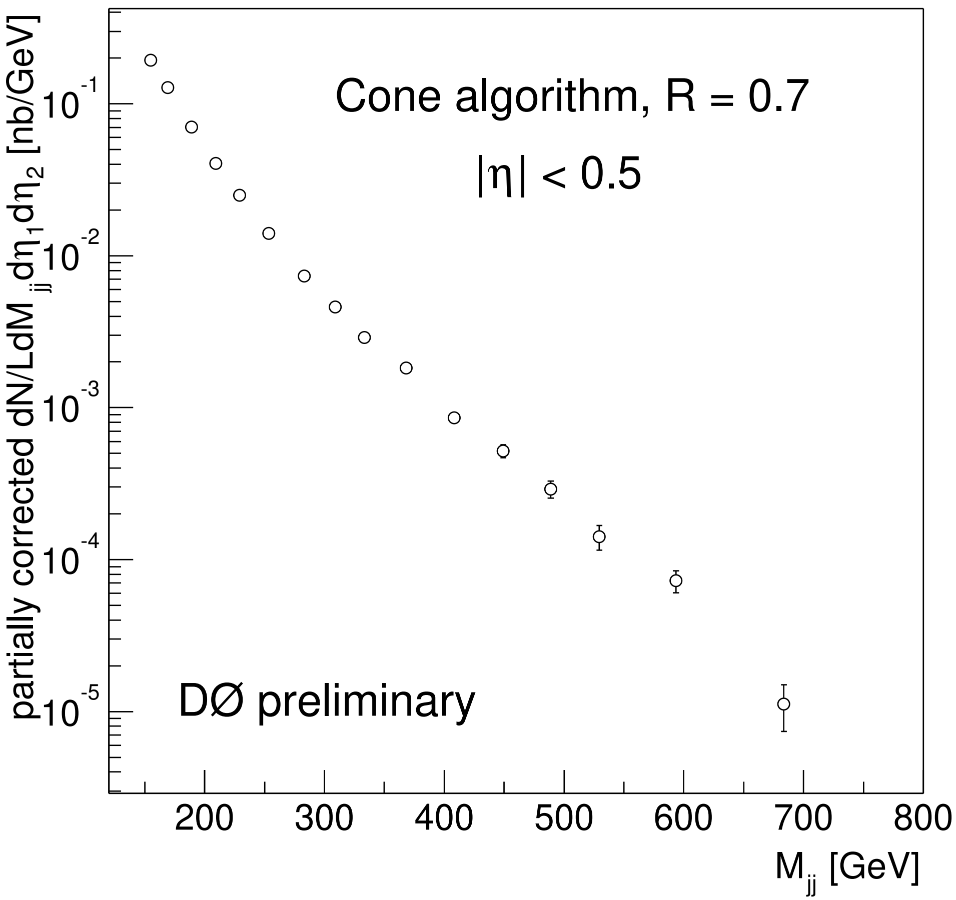
Only trigger v5 data

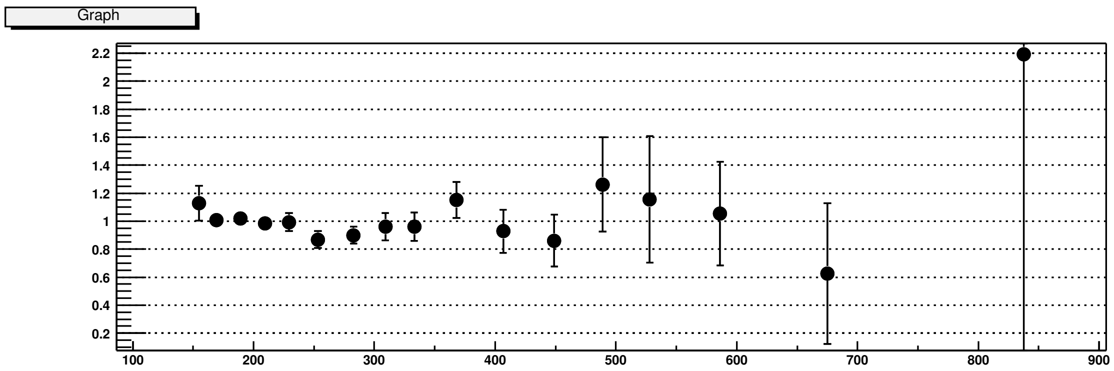




Dijet mass spectrum - combined result







Dijet mass spectrum in two η bins

Combined trigger version 4 and 5 data