Jets in the February and March data

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Stripped files

- *almost all data taken with global trigger version 4 available on SAM two weeks ago*
- *from February 7 (run 145684) till March 21 (run 149210)*
- *info available on*

  http://www-hep.fzu.cz/~kupco/phd/data/strip.html

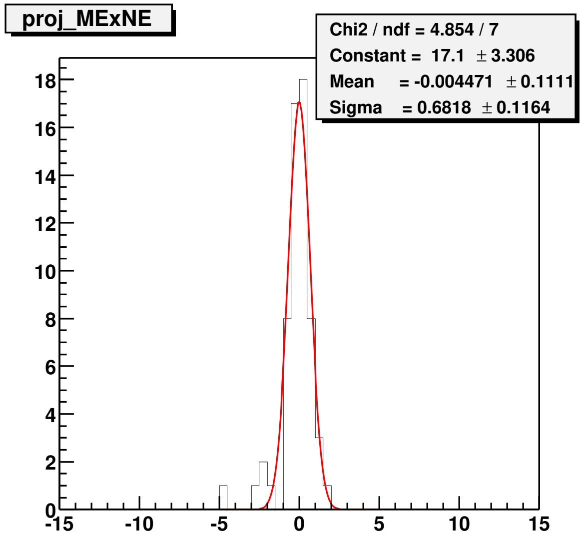
Trigger	D0Release	Files	Runs	Run range	Events	Size	L_L1 [pb^{-1}]	xsec$_{mbias}$	Location
3.%	p10.14.01	374	131	141737-145216	1546095	8.7GB			clued0:/work/kozel-clue
4.%	p10.14.01	245	12	145890-147355	772176	4.7GB			clued0:/work/kozel-clue
4.%	p10.15.00	583	54	146338-147995	2902718	19GB	0.96	37.7+-0.1 mb	clued0:/work/kozel-clue
4.%	p10.15.01	681	64	145684-149210	2174925	14GB	1.21	39.1+-0.1 mb	clued0:/work/kozel-clue

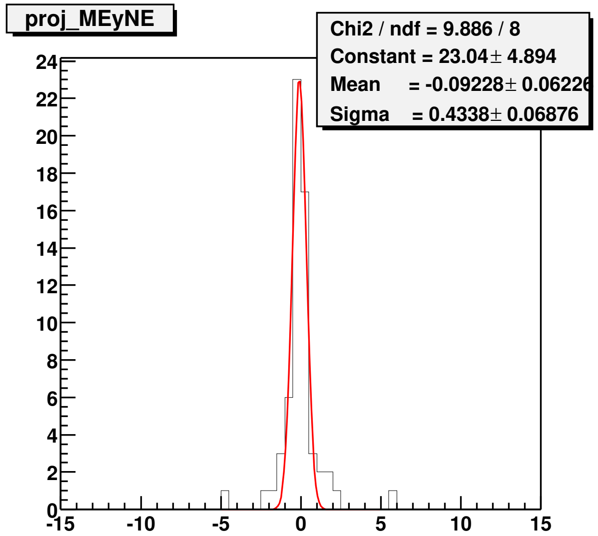
- *few runs reconstructed with* `p10.14.01` *and* `p10.15.00`
  - *files from version* `p10.15.00` *kept*
- *What is the difference between* `p10.15.00` *and* `p10.15.01` *?*

Run selection, part I

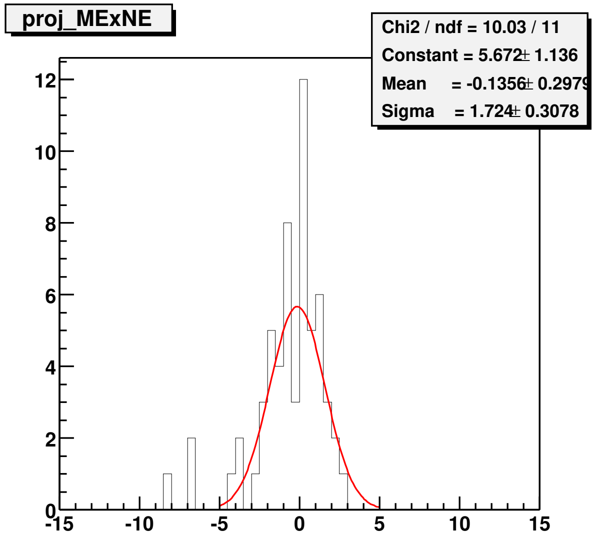
▷ based on monitoring `MExNE` and `MEyNE` variables in the two particular triggers

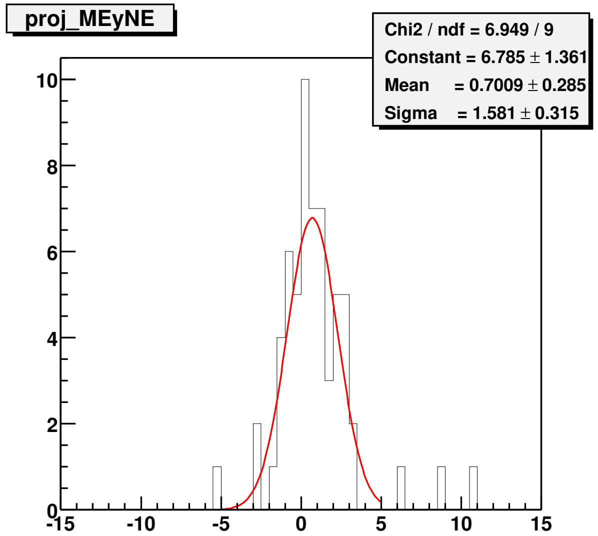
min_bias





JT_HI_4CJT5





Run selection, part II

- selection criterium

$$|MExNE| < (3\sigma_{fit} + err_{MExNE}) \text{ and } |MEyNE| < (3\sigma_{fit} + err_{MEyNE})$$

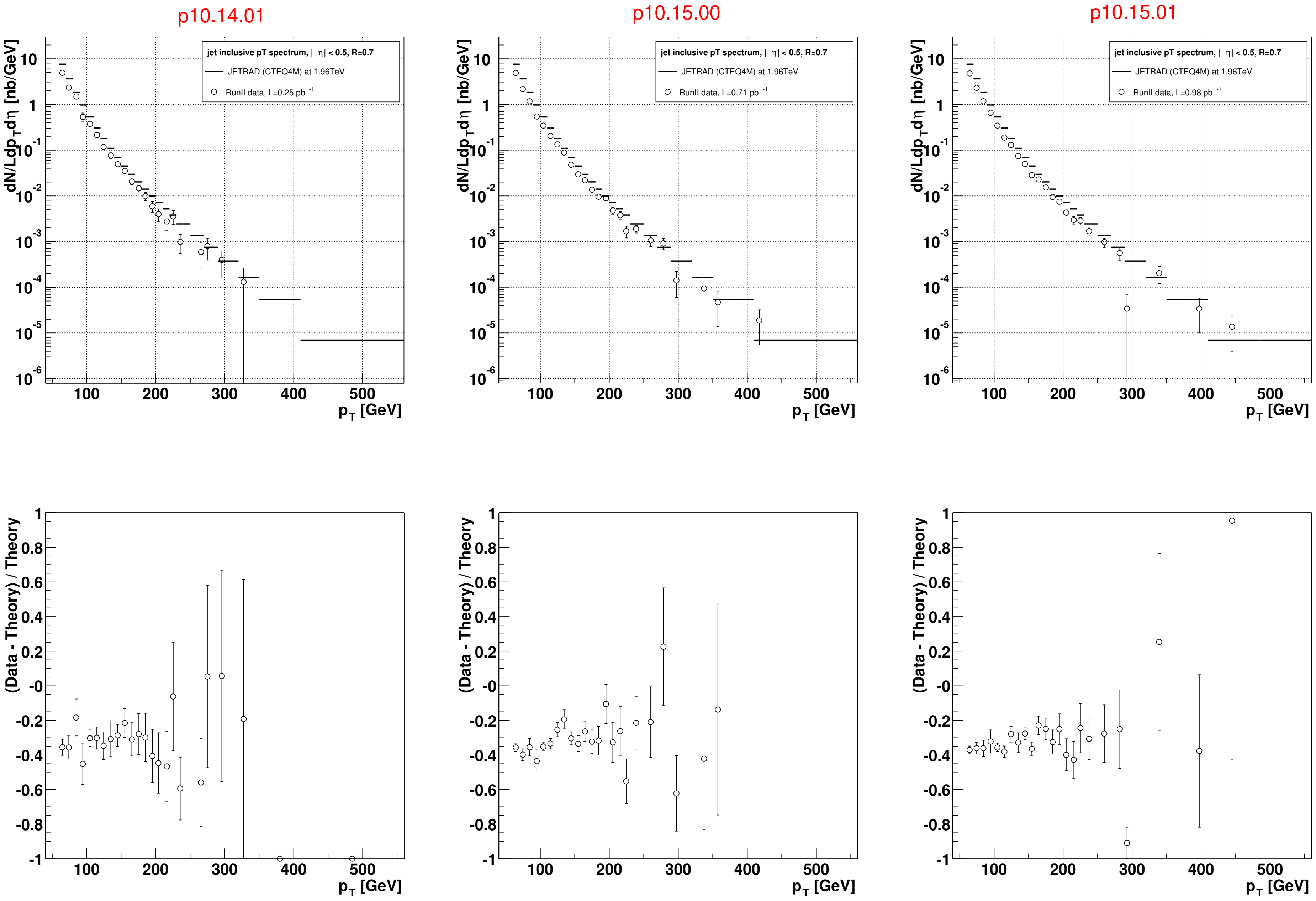
- info available on

http://www-hep.fzu.cz/~kupco/phd/data/data_sample.html

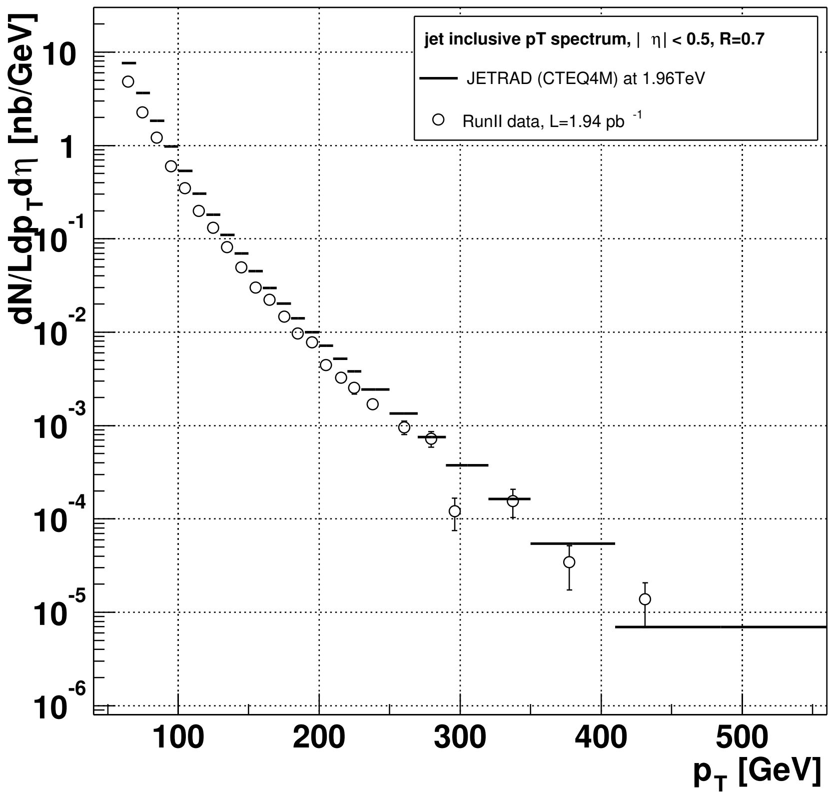
				minimum bias		JT_HI_4CJT5			
version	N_{run}	N_{evt}	N_{evt}^{LBN}	N_{evt}	σ_{L3}	N_{evt}	$\mathcal{L}_{L1}$	$\mathcal{L}_{L3}$	σ_{L3}
p10.14.01	9	772081	607811	74028	38.8 mb	11614	0.28 pb^{-1}	0.25 pb^{-1}	46.0 nb
p10.15.00	44	2465061	1966099	115405	37.5 mb	28433	0.83 pb^{-1}	0.71 pb^{-1}	40.3 nb
p10.15.01	53	1821646	1639670	141599	39.1 mb	25807	1.09 pb^{-1}	0.98 pb^{-1}	26.2 nb
total	106	4958788	4213580	331032	38.4 mb	65854	2.20 pb^{-1}	1.94 pb^{-1}	33.9 nb

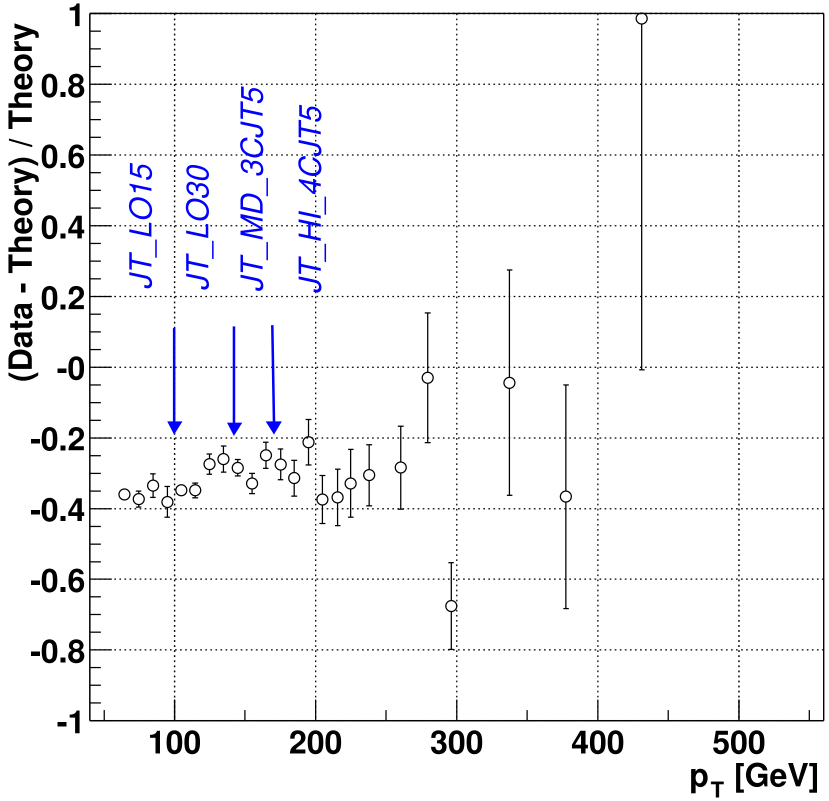
- two kinds of runs: quiet ($\sigma_{L3}^{JT\_HI} \sim 25\,\text{nb}$) and busy ($\sigma_{L3}^{JT\_HI} \sim 46\,\text{nb}$)
- for run 146530 discrepancy with Luminosity ID numbers
- run 148947 was running without calorimeter crates but there are 19 events passing JT_HI_4CJT5 trigger

inclusive pT spectra



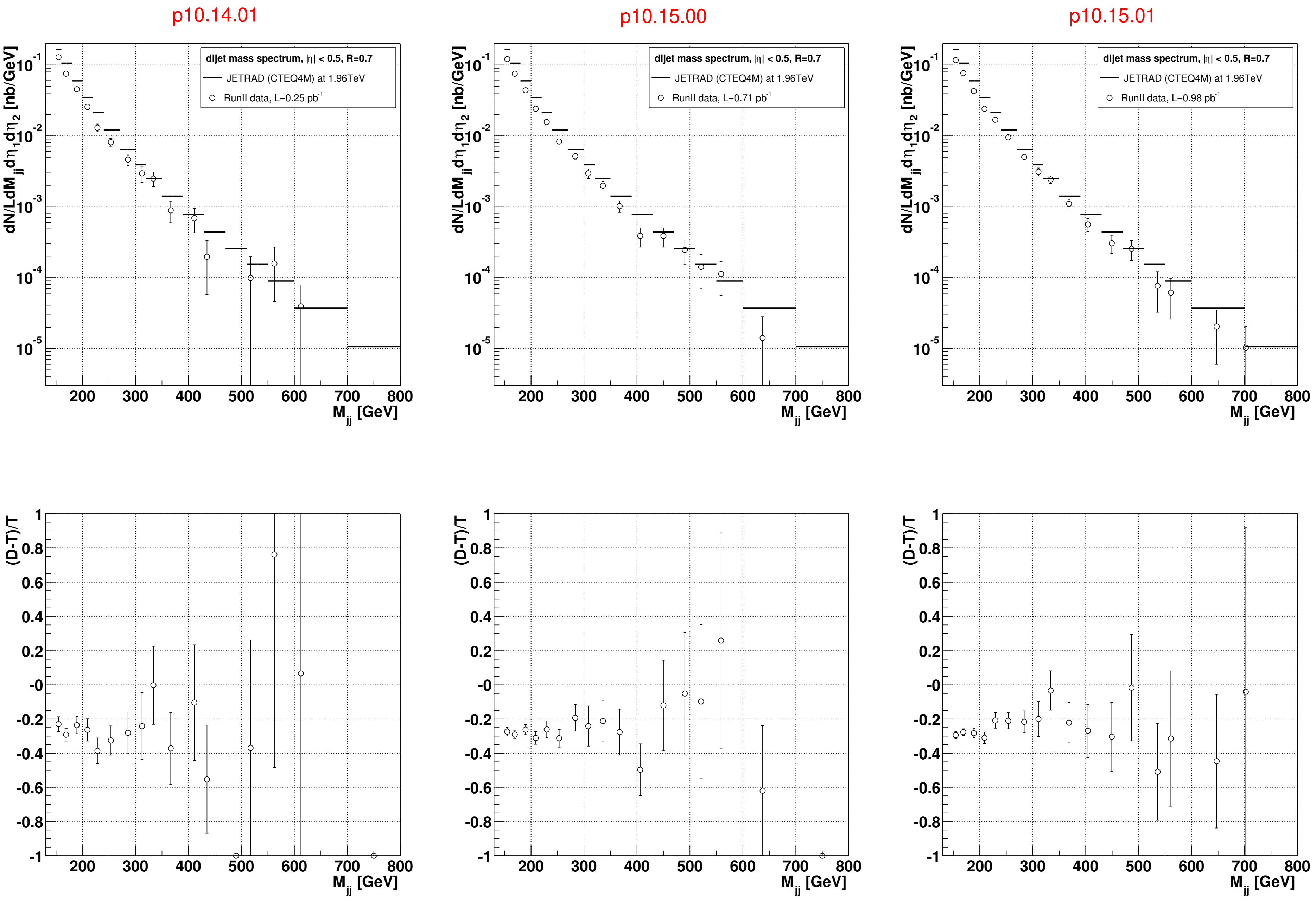
Combined inclusive pT spectrum



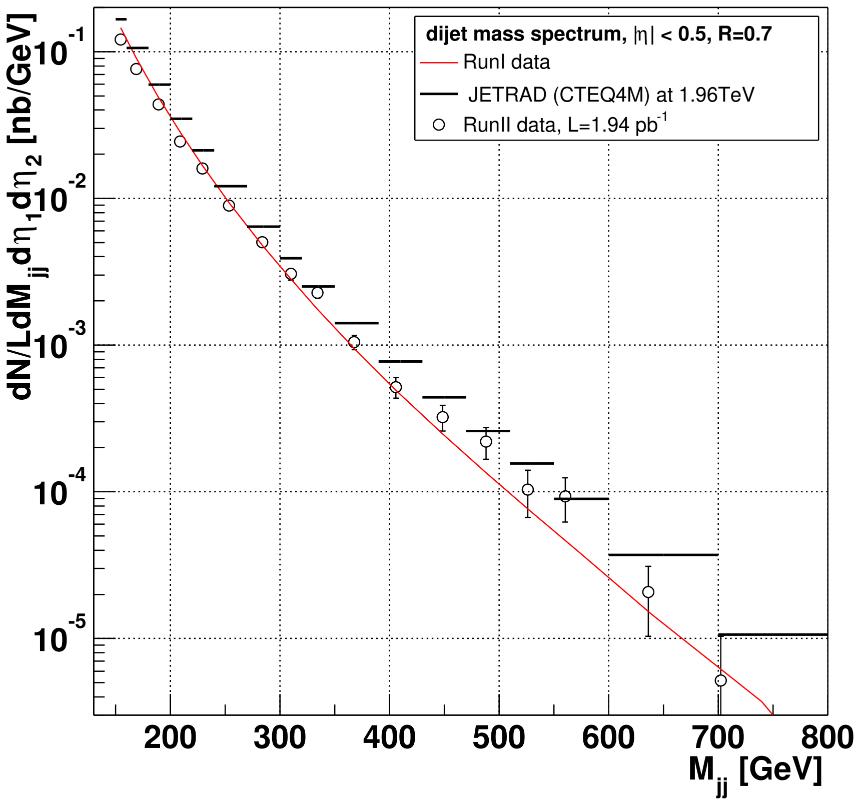


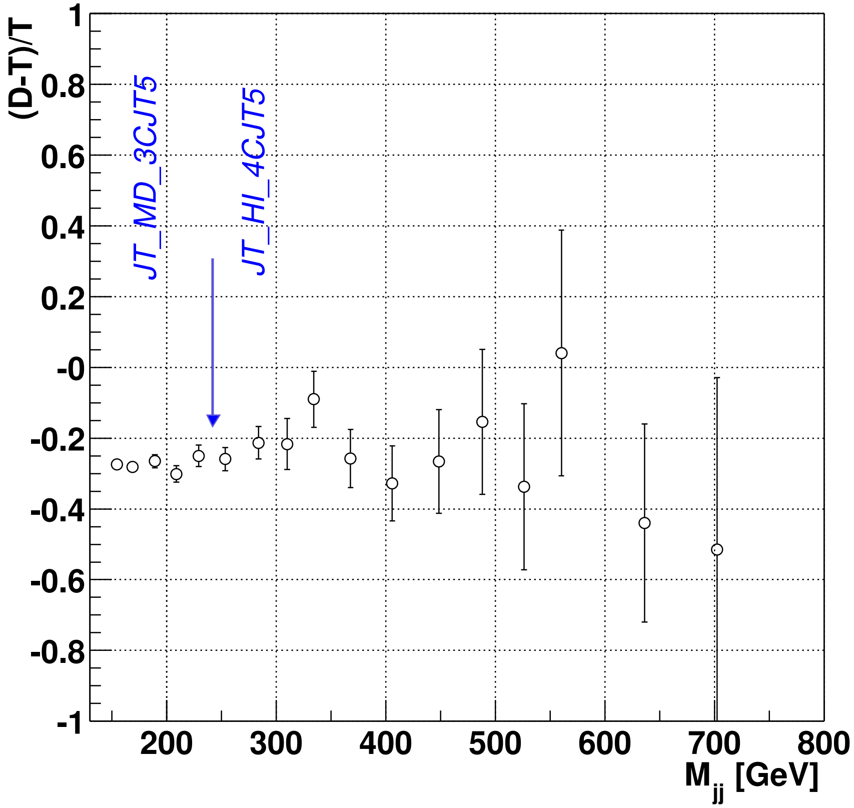
- ▷ JES correction applied (v1.1) + correction for vertex cut
- ▷ the same bins as in RunI analysis
- ▷ weighted x-position of the data points
- ▷ proper comparison between the data and theory

dijet mass spectra



Combined dijet mass spectrum

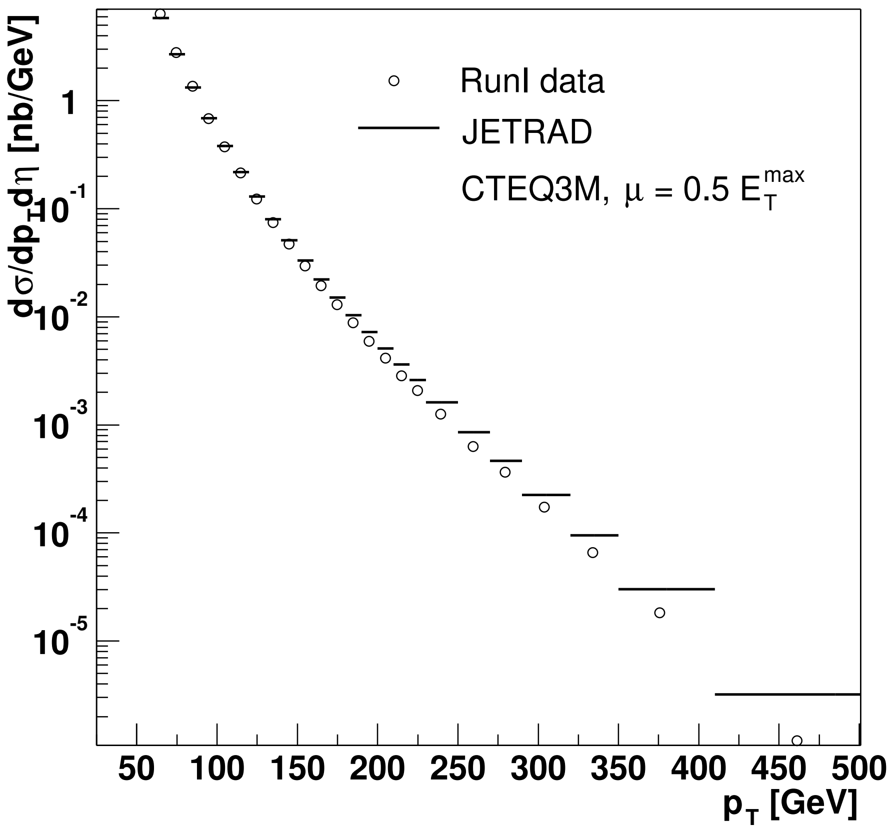


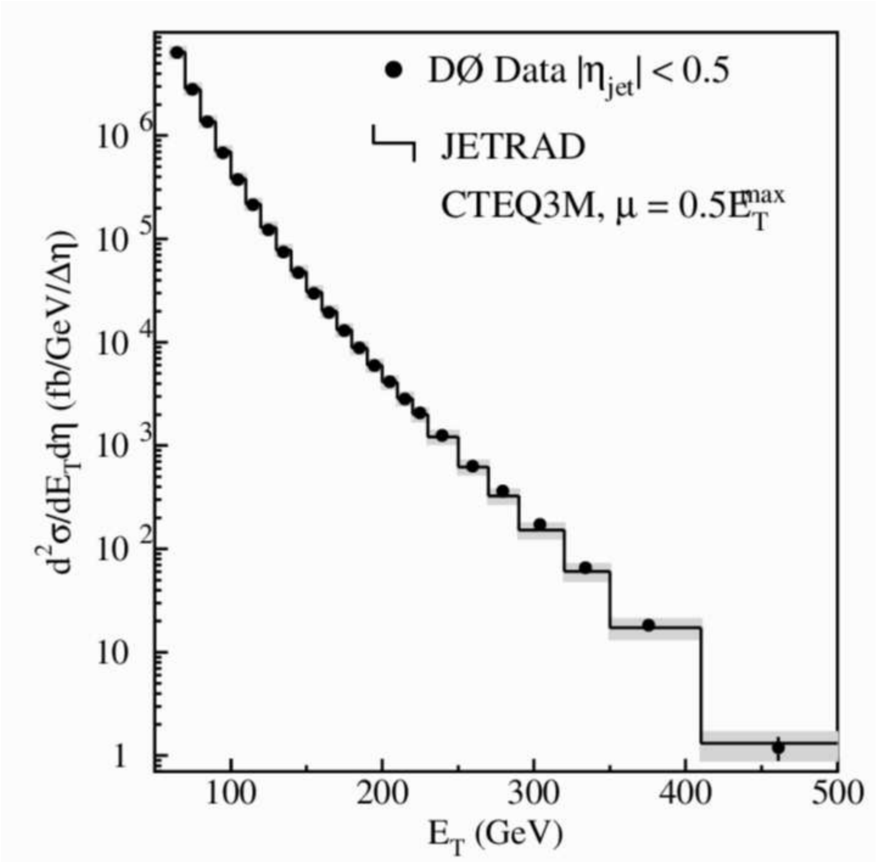


- ▷ JES correction applied (v1.1) + correction for vertex cut
- ▷ the same bins as in RunI analysis
- ▷ weighted x-position of the data points
- ▷ proper comparison between the data and theory

What is the right theory?

- attempt to reproduce RunI theory
- JETRAD *with* CTEQ3M, $\mu_R = \mu_F = 0.5E_T^{max}$





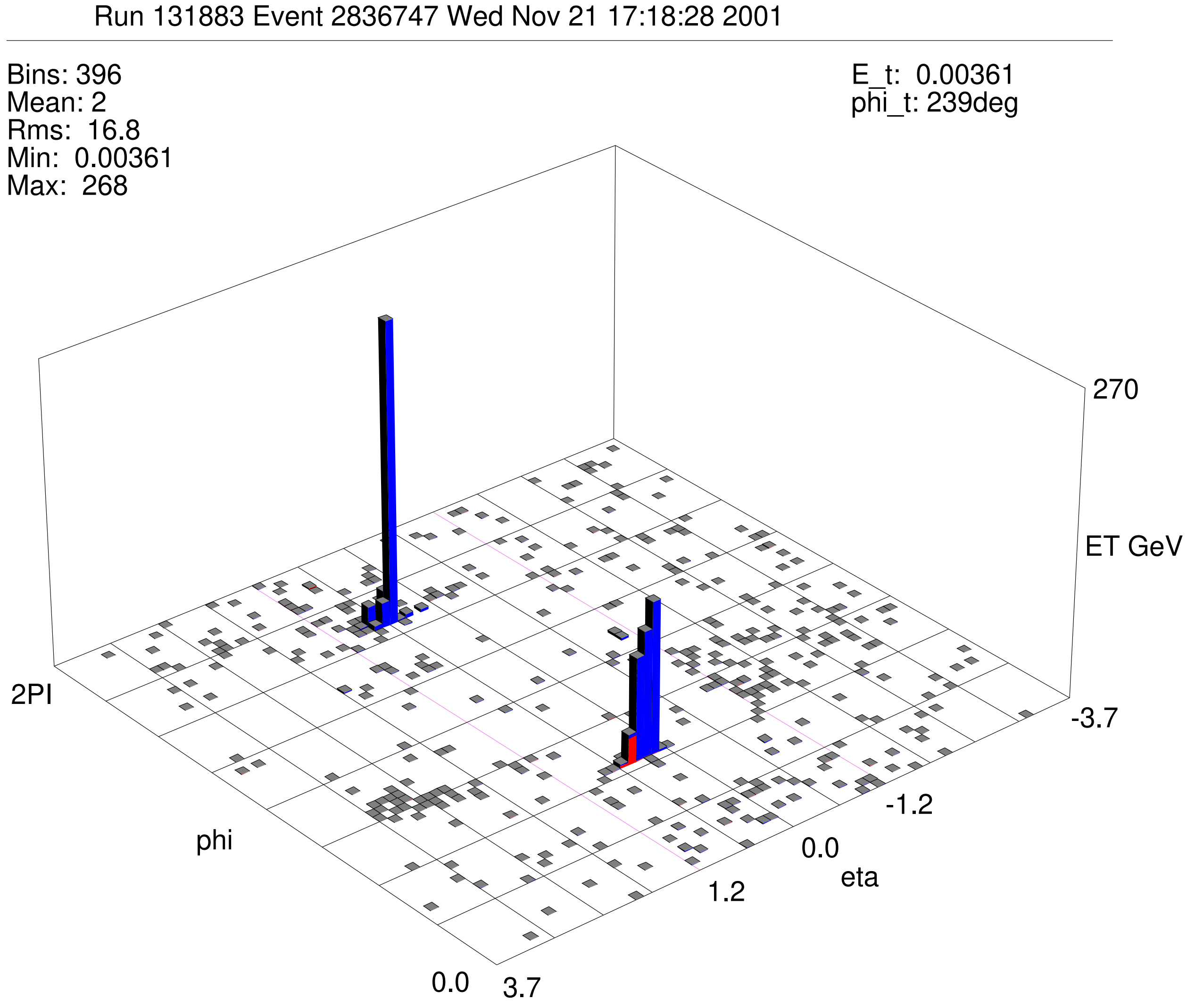
- the same problem with the dijet mass theory

To do list

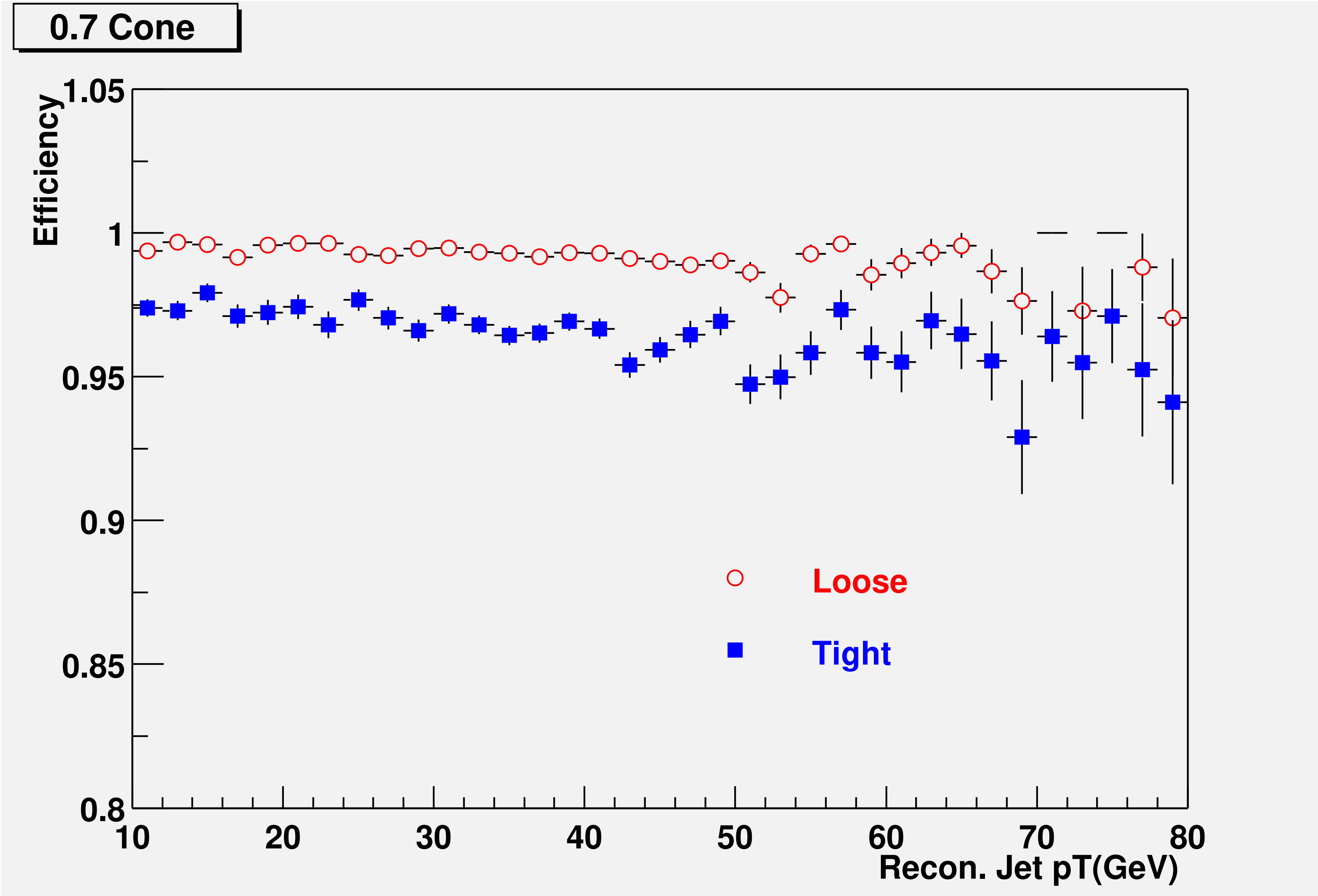
- ▷ solve the problem with the theory
- ▷ check the good run list with Jet/MET ID group run list
- ▷ check more systematically run by run the luminosity and the trigger cross sections provided by Luminosity ID group
- ▷ look with the event display on the high p_T events
- ▷ figure out what are the efficiencies for used cuts
  - jet selection criteria
    - from MC, the efficiency is about 99% for jets up to 80 GeV
    - is it true also for jets up to 500 GeV ?
  - event selection criteria
    - what is the efficiency for cut on MET?
    - MET vs. $METNE$ (may be not an issue, inclusive p_T spectra look the same)
    - cut on z-position of the vertex
  - L1 efficiencies
- ▷ add more data (taken with trigger version 3)

Ugly event

- ▷ *pre-shutdown data*

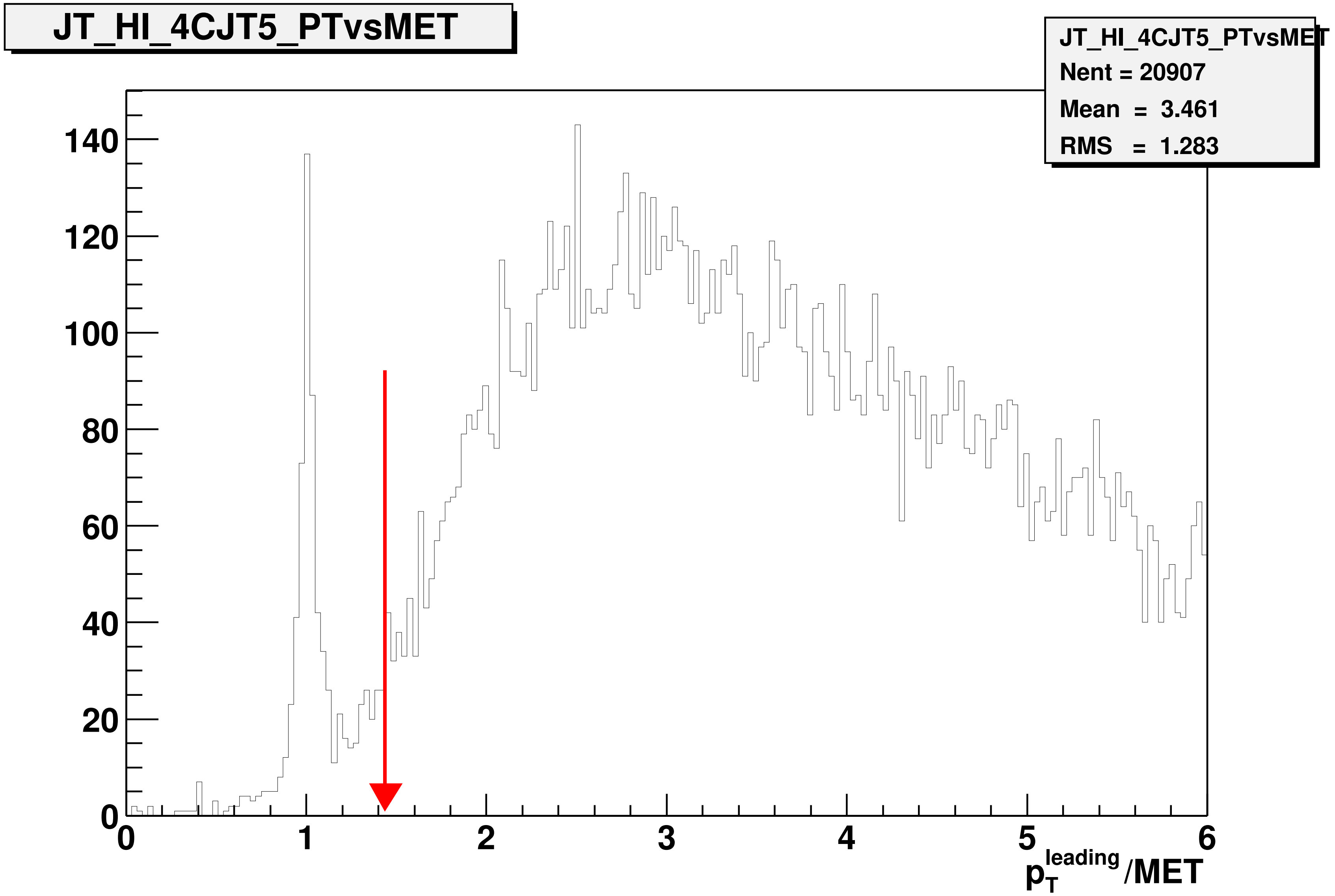


Efficiencies of jet selection cuts

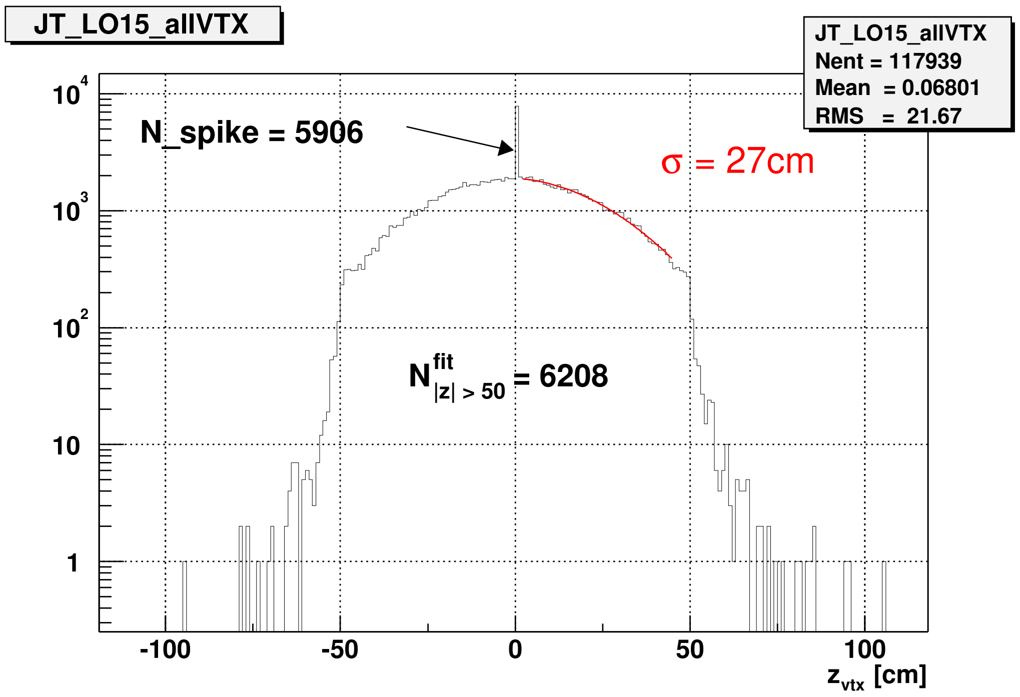


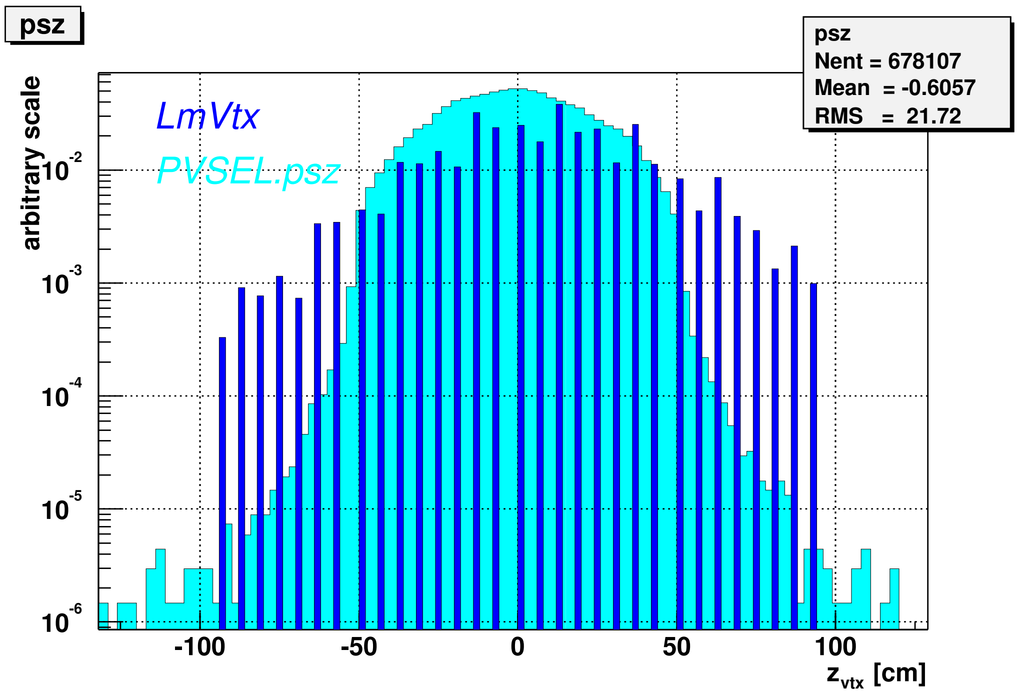
Cut on MET

- old plot for Moriond sample and for all events



Cut on primary vertex position

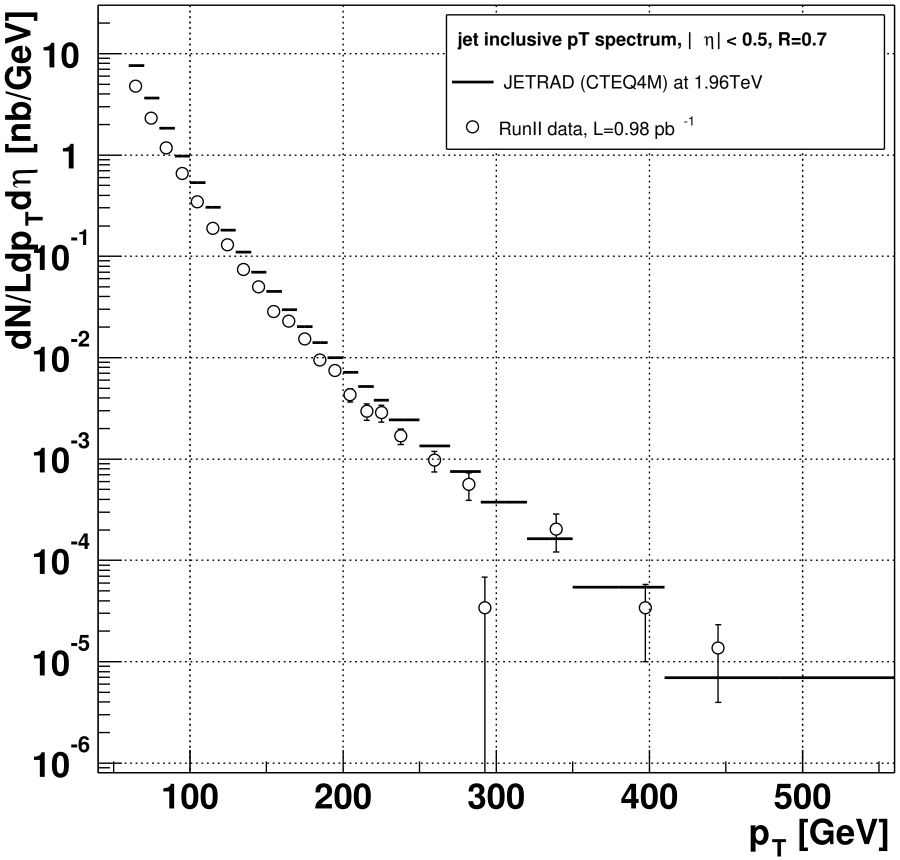




- ▷ What to do with the events with no primary vertex?
- ▷ Do we understand the shape?
  - Why there is so steep fall down for vertexes reconstructed from tracks?
  - Does it have an impact on luminosity?

Cut on events with no primary vertex

p10.15.01



only events with primary vertex