Z(ee) + ≥n Jets xsection:
- News
- Unsmearing studies
- Plans

News ... (1)

- Complete redo of the analysis:
  - Using latest bad run/LBN list
  - Cutting jets in physics eta instead of detector eta
  - We loose 19 Z candidate events (13 less 0-jet events, 6 less 1-jet events)

Z + 0jets	12,247
Z + 1jets	1,427
Z + 2jets	189
Z + 3jets	25
Z + 4jets	3
Z + 5jets	2
Total	13,893

... news ... (2)

- Discovered a problem in acceptance calculation:
  - Stable-parton-bug ('stable' quarks make it into particle jet reco ...)

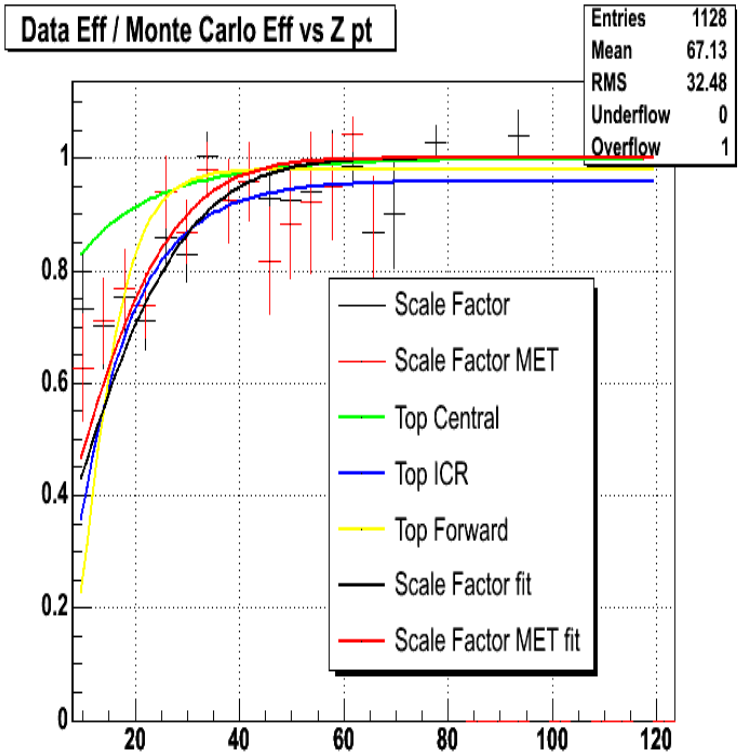
Jet Mult	Previous Acc	New Acc
≥1	23.7%	25.1%
≥2	25.4%	25.4%
≥3	27.8%	27.4%
≥4	28.9%	28.5%
≥5	30.8%	30.3%

- Xsections:

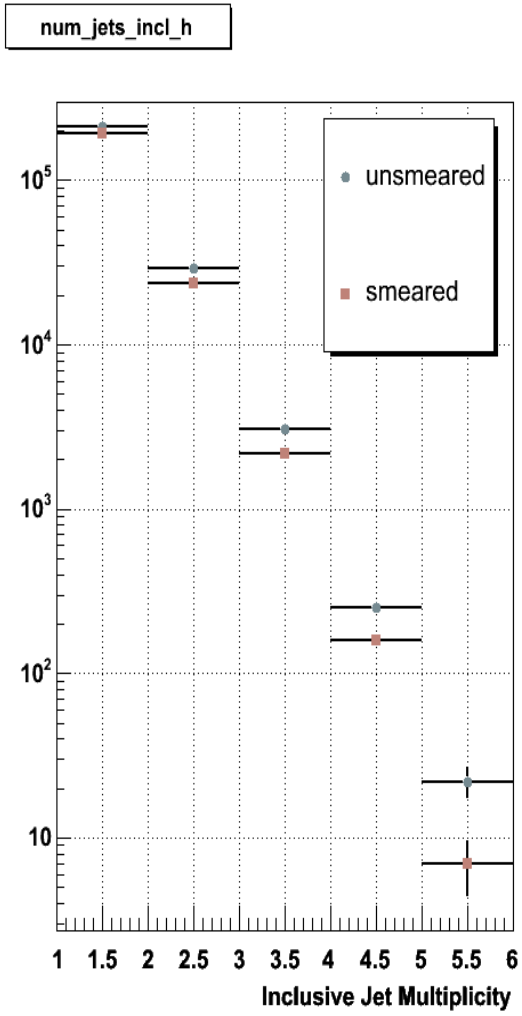
Jetmult	**xsection** (JES uncertainty, Lumi uncertainty)
≥1	**28.0 pb** ±2.8pb ±1.9pb
≥2	**4.15 pb** ±0.66pb ±0.29pb
≥3	**0.560 pb** ±0.156pb ±0.039pb
≥4	**0.110 pb** ±0.019pb ±0.008pb
≥5	**0.0389 pb** ±0.0195pb ±0.0027pb

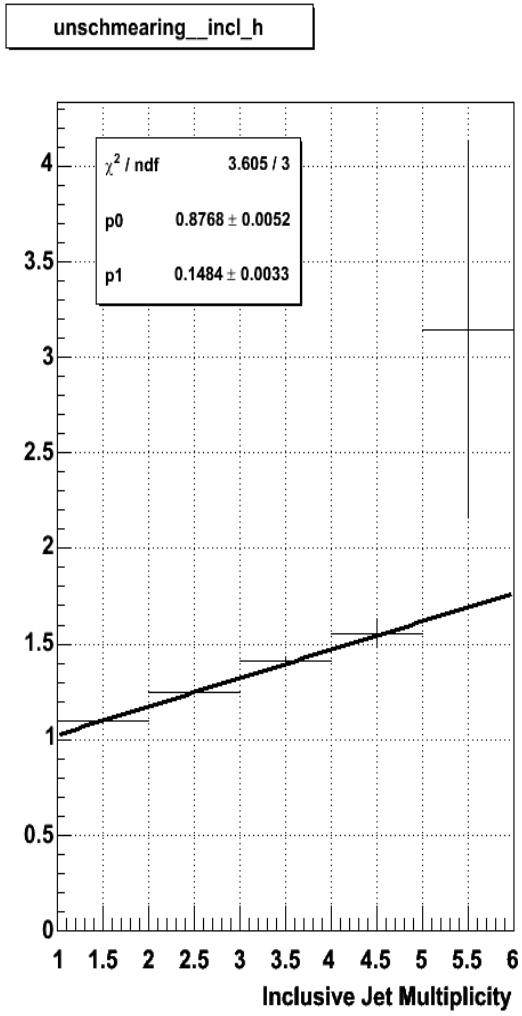
... news (3)

- Systematics studies:
  - Jet Reco/ID efficiencies (James): comparing with top group (Nils Gollub)
  - Unsmearing: checking effects of changing data resolution by 5-10%
- Corrections:
  - Jet promotion (Alan): ATHENAlized 30+ million events ZB/MB sample
- CKKW samples: Alan processing Batch 3 samples (reco and ATHENAlization)
- Analysis note is up to date and being reviewed



Unsmearing studies (1)



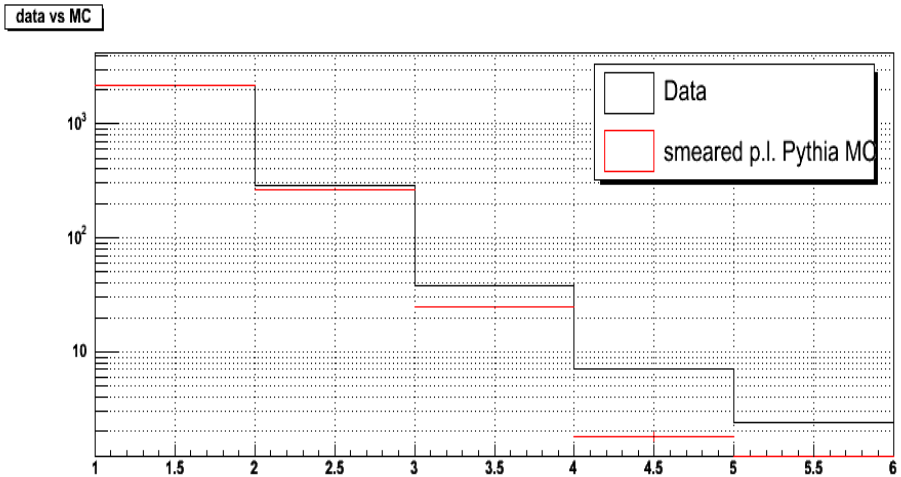


Taking the ratio of unsmeared and smeared jet multiplicities to derive unsmearing factors:

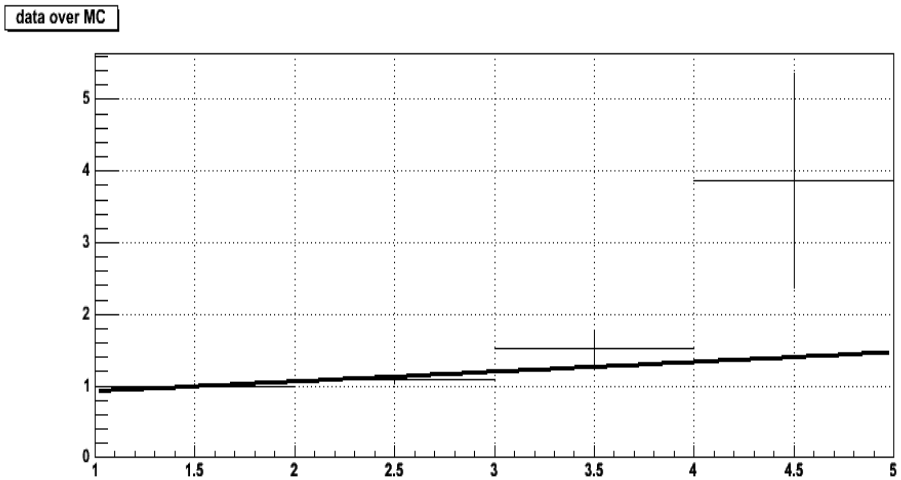
Jet Mult	unsmearing
≥1	1.10
≥2	1.25
≥3	1.40
≥4	1.54
≥5	1.69

(jet reco/ID efficiencies are folded in as well)

Unsmearing studies (2)

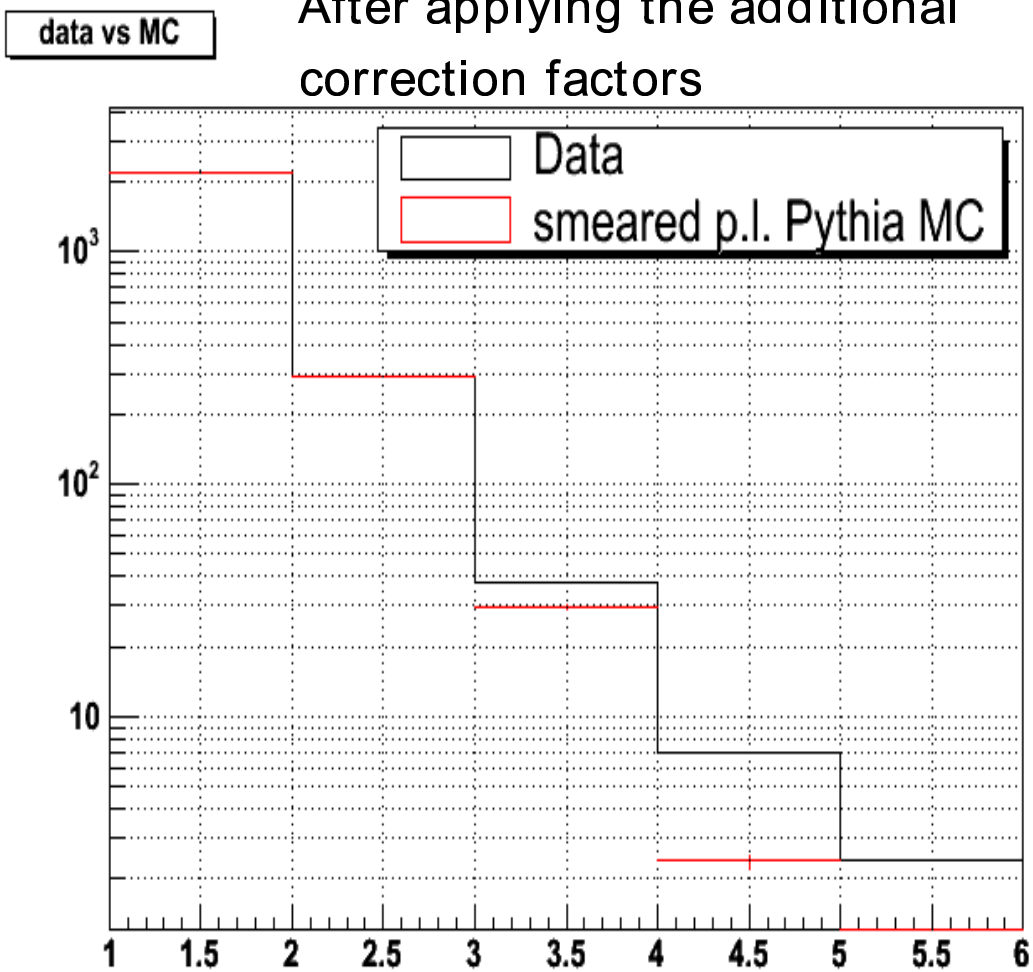


Problem:
smeared (+ jet reco/ ID) Pythia doesn't describe higher jet multiplicities well



We correct for this by taking the ratio between data and MC as an additonal correction factor

Unsmearing studies (3)



After applying the additional correction factors

Using the reweighted smeared p.l. Pythia MC and re-derive the unsmearing coefficients (previous numbers in parenthesis)

Jet Mult	unsmearing
≥1	1.10 (1.10)
≥2	1.29 (1.25)
≥3	1.47 (1.40)
≥4	1.66 (1.54)
≥5	1.85 (1.69)

(jet reco/ID efficiencies are folded in as well)

Plan

- Have analysis + note ready by Monday including the following systematics:
  - Lumi
  - JES
  - Unsmearing
  - Jet Reco/ID
  - Corrections (Trigger, EM, Tracking, Acceptance)
  - Event counting & background subtraction