Jet Corrections meeting

http://www-cdf.lbl.gov/∼currat/talks/

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September 4, 2002

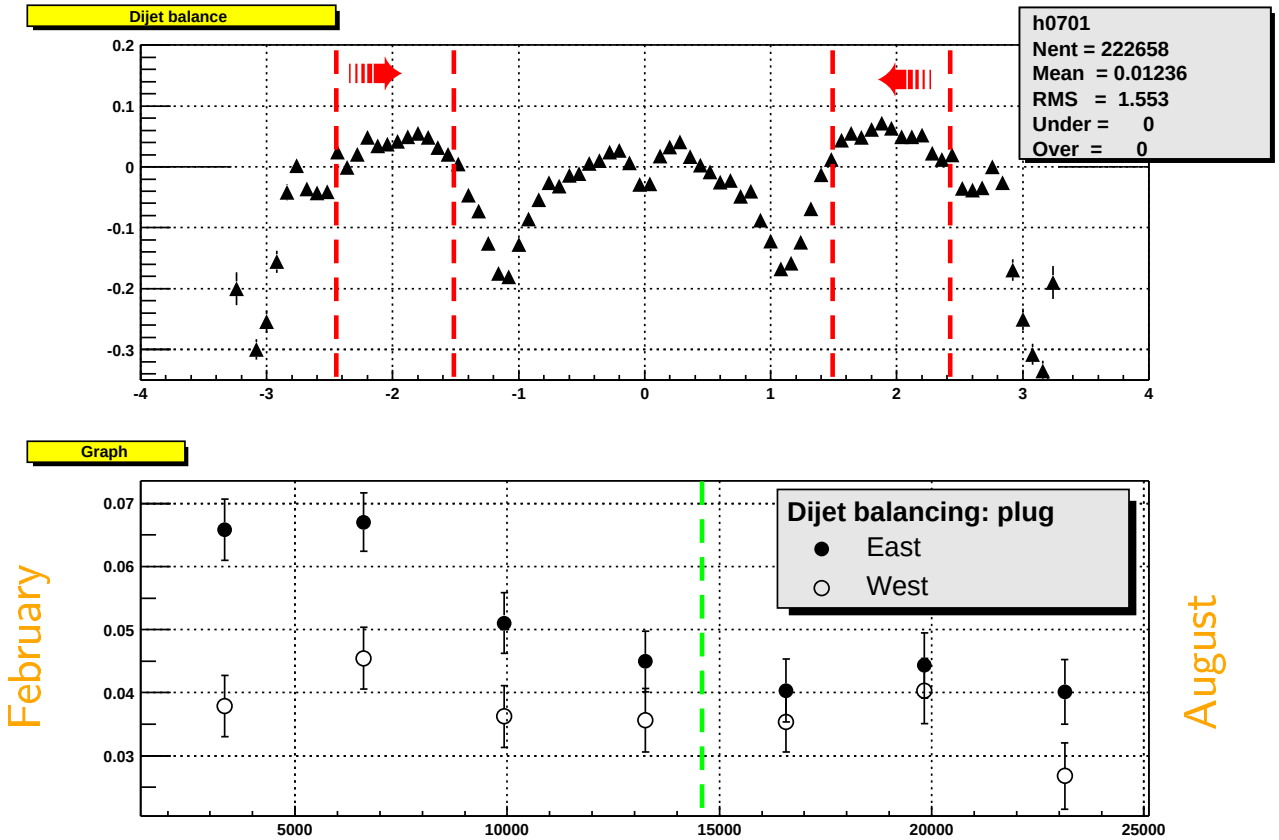
- Time dependence in dijet balance (update)

Summary

- New JET_20 data since June shutdown included: runs # 138425–149859 (∼3.3M events)
- Using FastZvertex (strategy 3): COT based
- JET_20 special runs # 149863,149864,149866 (0.5M evts) skipped ... no COT
- GOOD RUNS selection according to QCD group:
  `http://cdfsga.fnal.gov/internal/people/links/GiuseppeLatino/QCD_group/GoodRuns_QCD.html`
- Cuts used:
  - |z-vertex| < 60 cm (FastZvertex)
  - E_T trigger jet > 20 GeV
  - $0.2 < |\eta_{trig}| < 0.8$
  - E_T 3rd jet < 15 GeV
  - $\frac{E_T(j_3)}{\frac{1}{2}(E_T(j_{trig})+E_T(j_{prob}))} < 0.25$
  - $\Sigma E_T(j,j) > 50$ GeV
  - $\Delta\phi(j,j) > 2.7$
- Code: CdfSim v4.5.3 until shutdown / CdfSim v4.7.0int4 with Beate's "reverse patch" to exclude PPR correction, after shutdown
- Sample divided into 7 chunks of 3300 nb^{-1} from Feb-Aug

Time dependence: plateau (1)

- *Top:* dijet balance for the full sample
- *Bottom:* average balance for each 3300 nb^{-1} chunk, for $1.5 < |\eta(probe)| < 2.4$ (plateau)

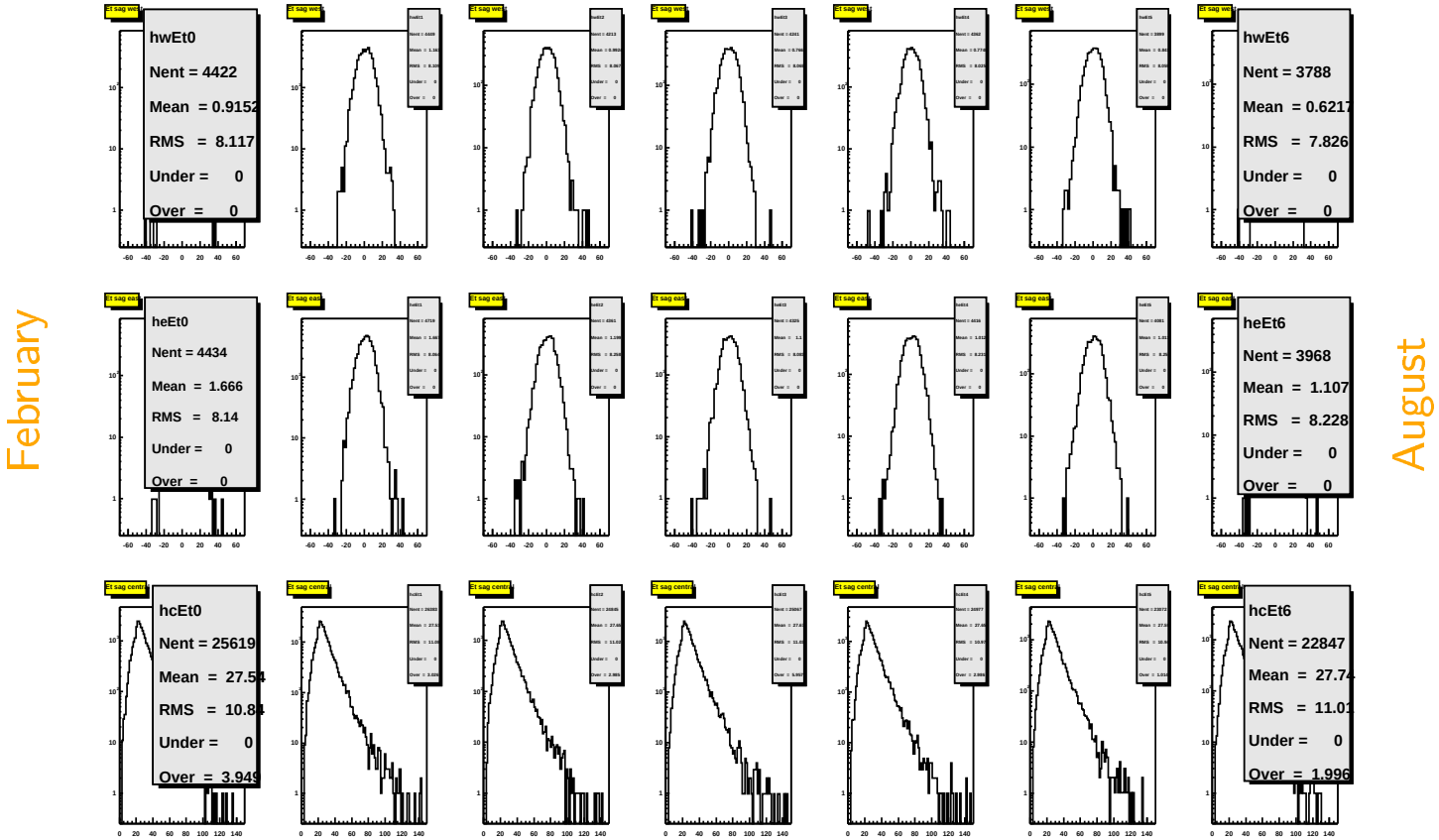


☞ More stable since shutdown ... ?!

Time dependence: plateau (2)

Splitting up the dijet balance variable (numerator/denominator) ...

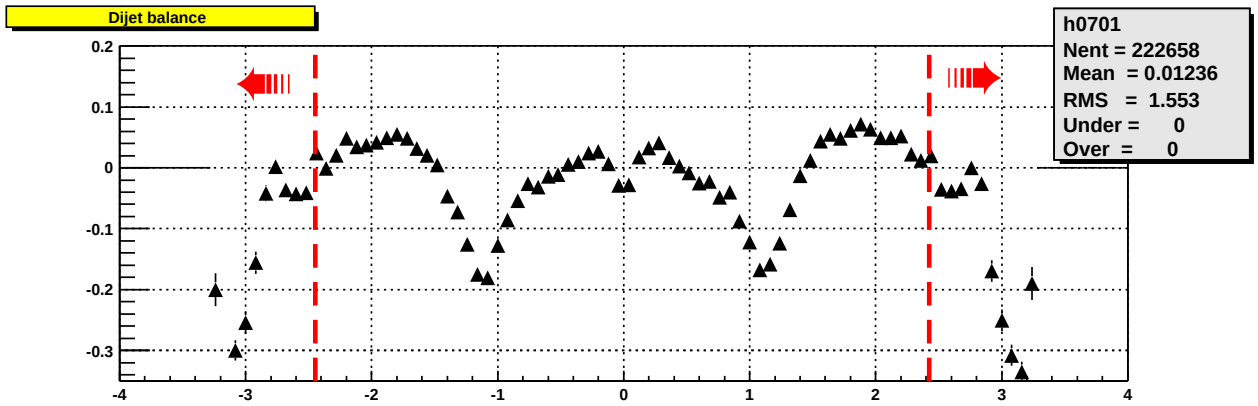
- *Left to right:* $E_T(probe) - E_T(trigger)$ difference for each 3.3 pb^{-1} chunk, for $1.5 < |\eta(probe)| < 2.4$
- *Top to bottom:* West plug, east plug, $E_T(trigger)$ (i.e. central)

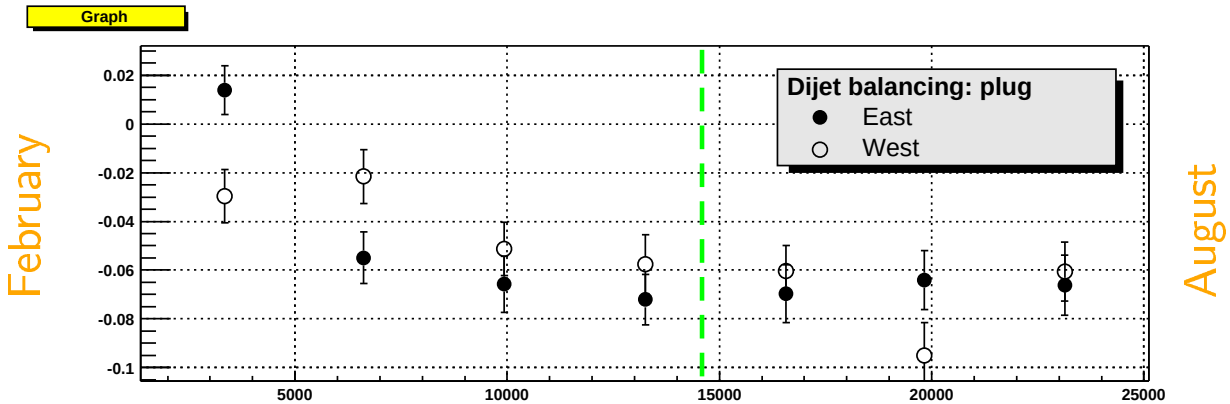


☞ Drop in energy: -1% (west) / -2% (east)

Time dependence: high η (1)

- *Top:* dijet balance for the full sample
- *Bottom:* average balance for each 3300 nb^{-1} chunk, for $|\eta(probe)| > 2.4$



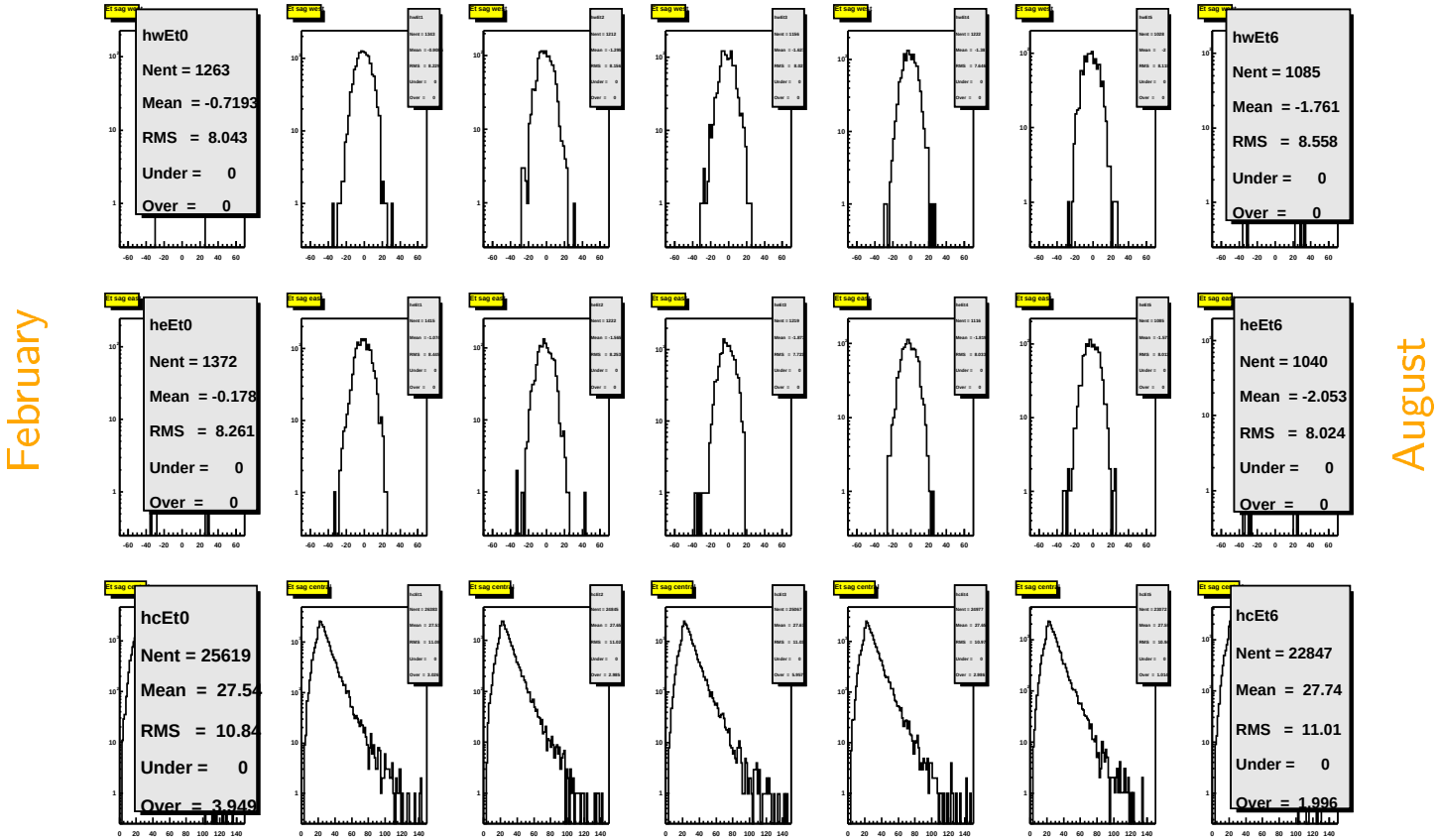


☞ More stable since shutdown ... ?!

Time dependence: high η (2)

Splitting up the dijet balance variable (numerator/denominator) ...

- *Left to right:* $E_T(probe) - E_T(trigger)$ difference for each 3.3 pb^{-1} chunk, for $|\eta(probe)| < 2.4$
- *Top to bottom:* West plug, east plug, $E_T(trigger)$ (i.e. central)



☞ Drop in energy: -4% (west) / -7% (east)

Event reduction

Time dependence study in dijet balance approach costs a lot ...

Original sample	4532700	1
Jet_20	3342000	0.74
Good runs	2357000	0.52
Central jet	1595682	0.35
z-vertex	1255415	0.28
ΣE_T	291067	6.4%
3rd jet	233940	5.2%
Final	222658	4.9%
plugs $\|\eta\| > 1.5$	76825	1.7%
7 chunks in time	$\sim$ 11k	0.24%

☞ Best estimates (whatever variable is involved) at the level of a couple of % at best. We're tracking down effects of the same magnitude ...