Jet corrections meeting

http://www-cdf.lbl.gov/∼currat/talks/

Charles Currat
LBNL

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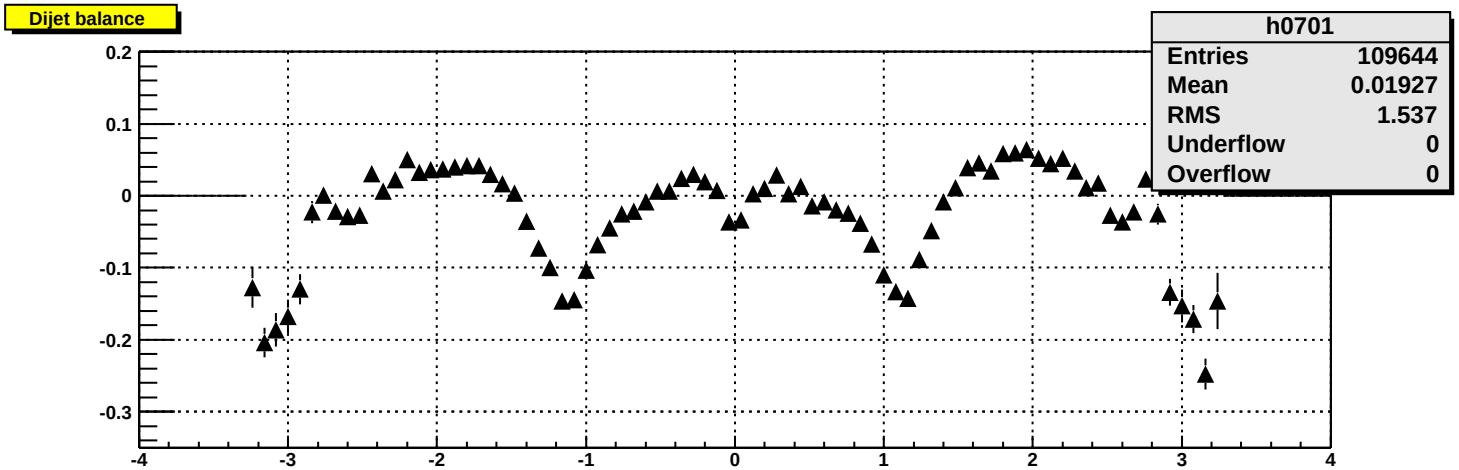
- Correction for time dependence in the plug calorimeters
- Dijet balance data/MC comparison

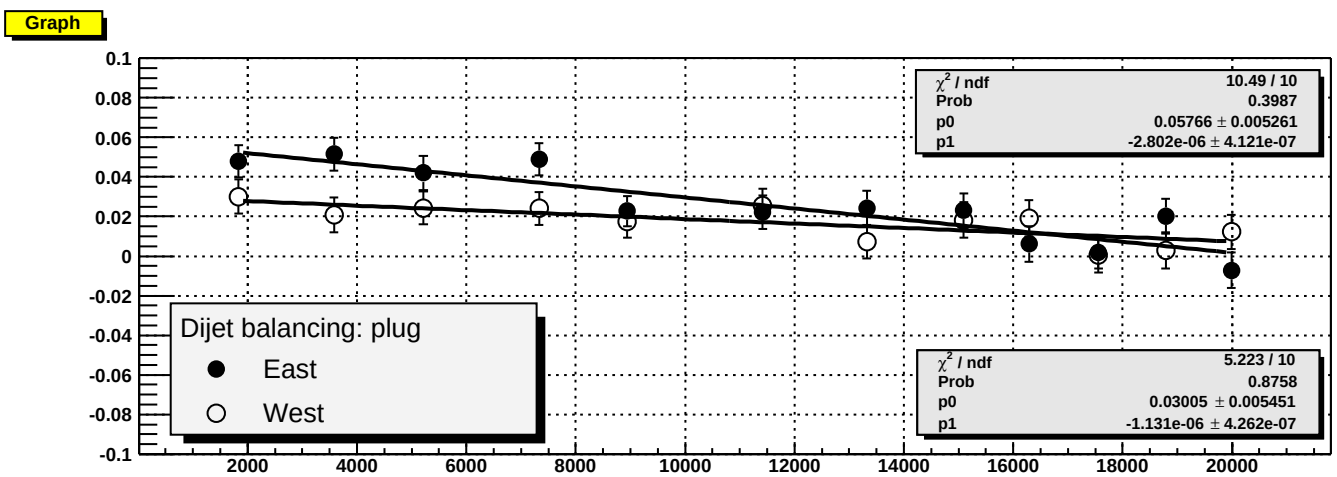
Time dependence in the plug

- Several methods have been assessed (source data, "loose" interpolation between laser runs)
- Current prescription based on laser runs in plug, tower-by-tower (Howard B. & Beate H.), "tight" interpolation:
  - around 130 files covering runs 134898 (Dec'01) to 155348 (Dec'02)
  - still not definitive (normalization issue), new set of files to be released soon
- Meantime, quick & dirty check: apply the (tower) correction as is at jet level according to jet's 4-vector (no reclustering, no reprocessing)
- Switched from customized ntuples (covering Feb'02–Jun'02, $\sim 20\, pb^{-1}$) to `STntuples` (Anwar's v. 4.9.1 production, covering Dec'01–Dec'02, $\sim 100\, pb^{-1}$) ⇨ considerably more (disk space required $0.7Gb \longrightarrow 100Gb$, time to process/transfer, ... technical impediments)

Dijet balance — uncorrected

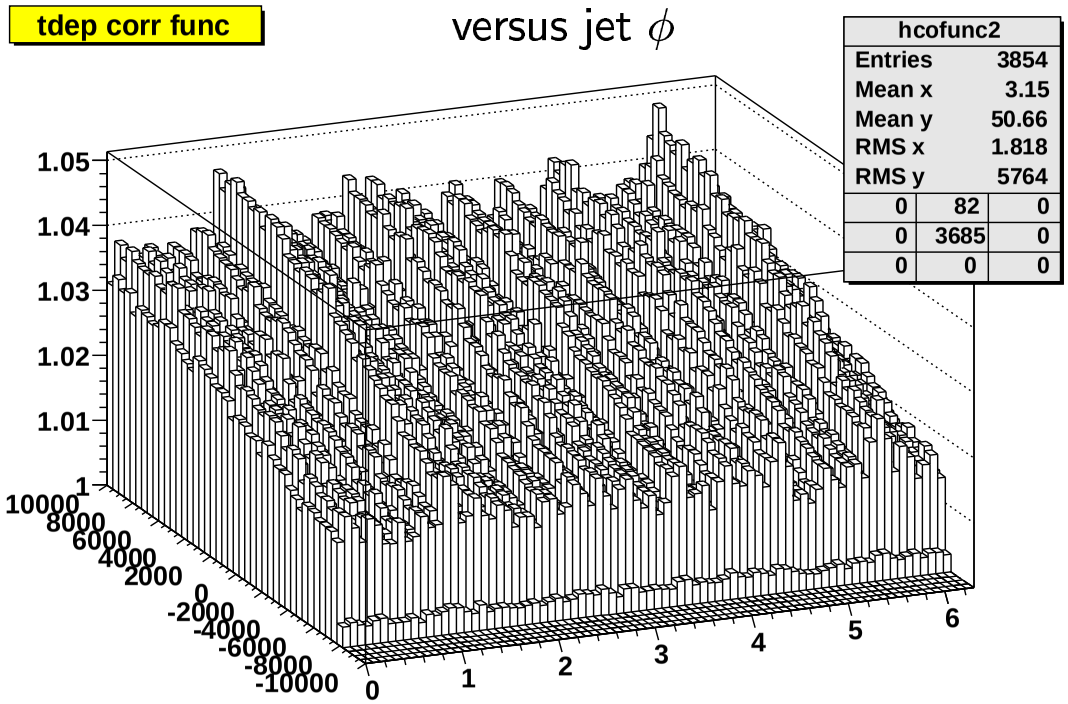
Reminder. Already shown a couple of times. Feb'02 – June'02

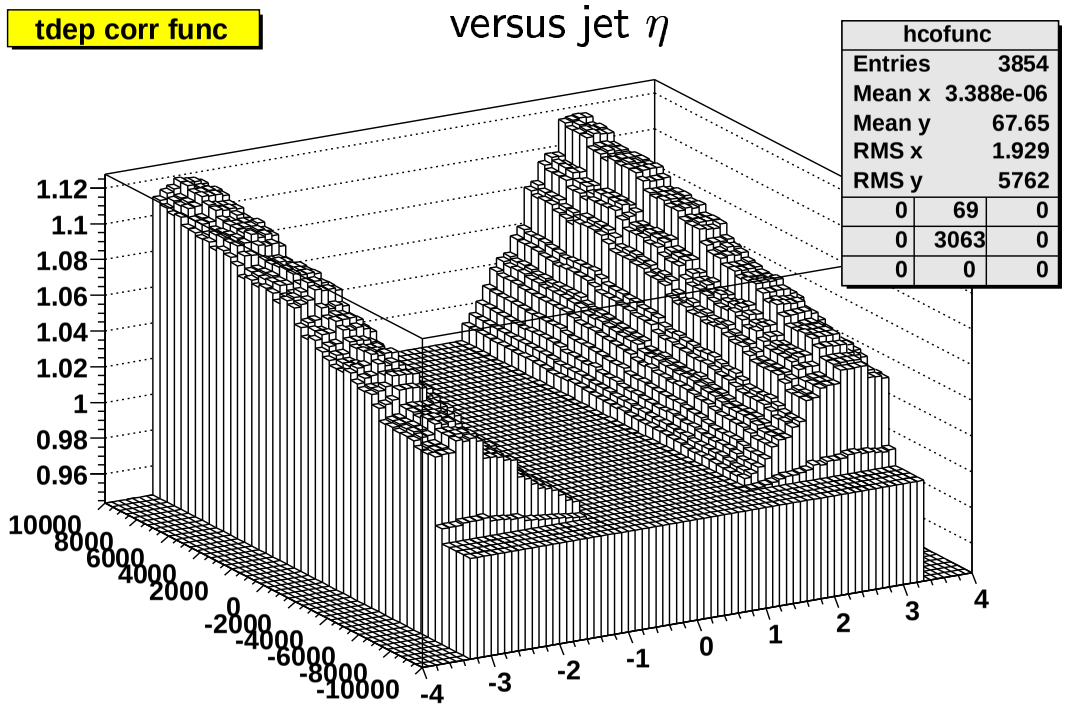




☞ Significant slopes

Correction function



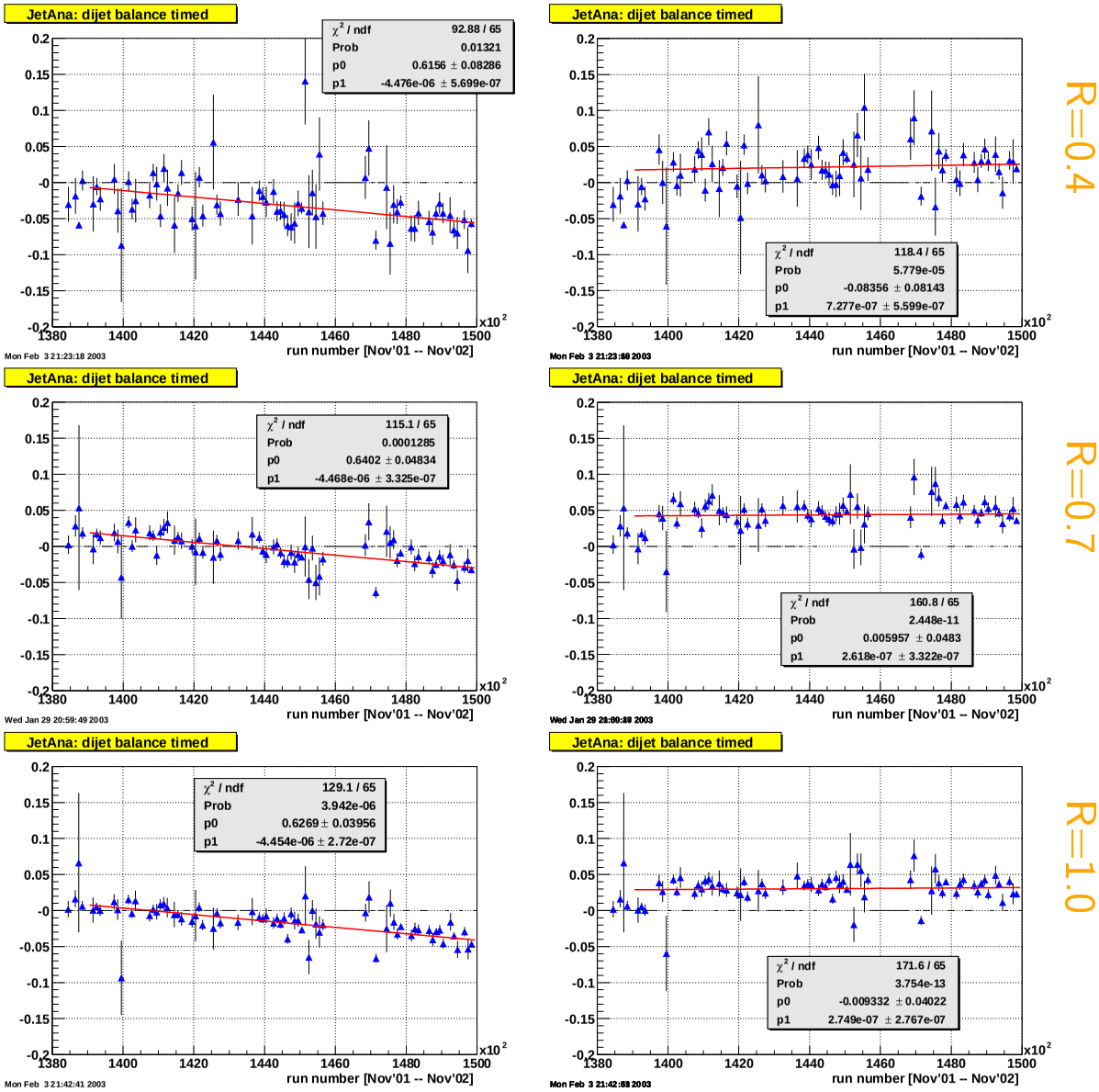


☞ Amplitude O(10%)

Correction function

Plug calorimeters, $|\eta| > 1.8$ region. No East/West distinction.

Before | After



☞ Looks OK! Watch out for offset. Should be fixed in final set of tower level correction files

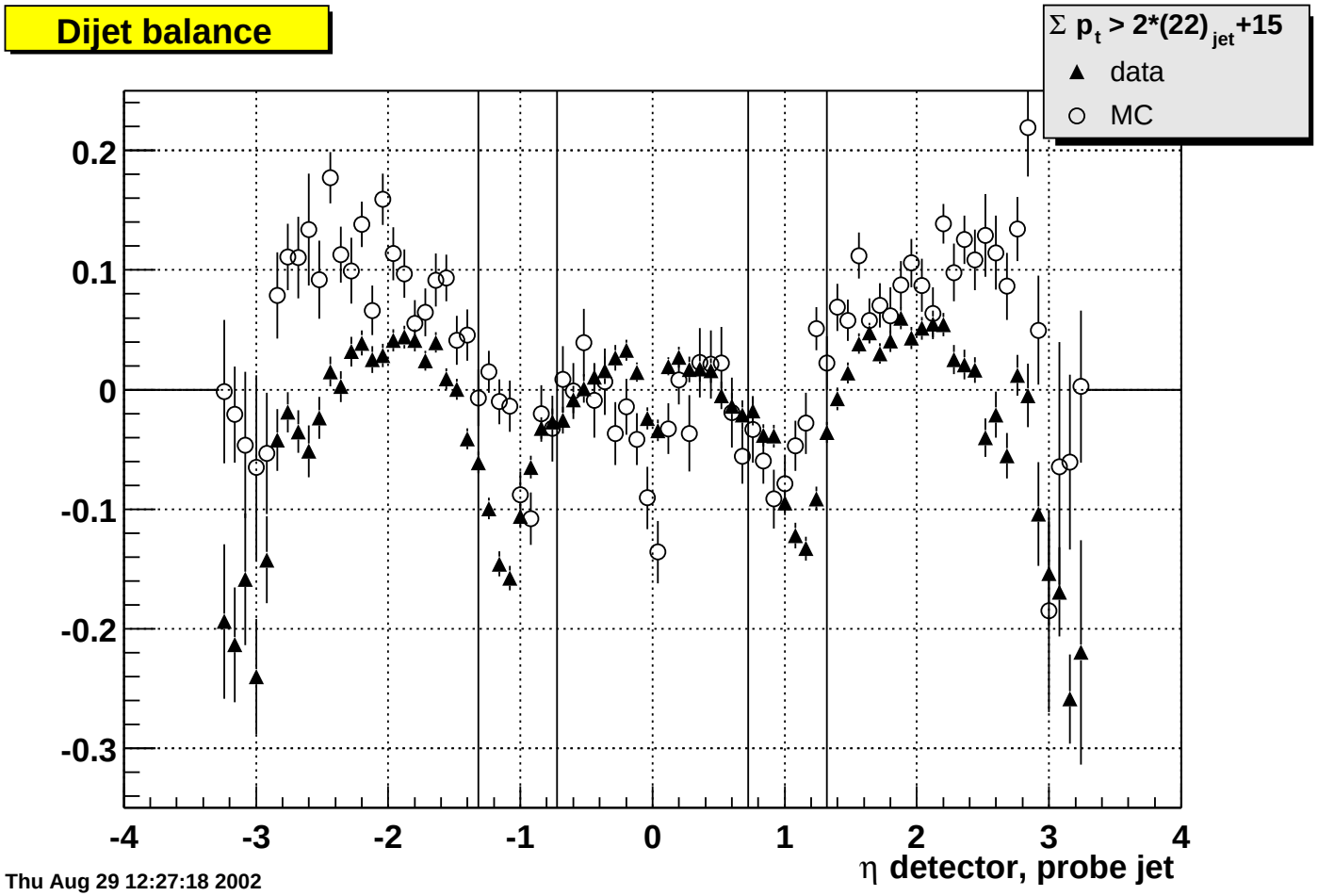
Dijet MC sample

- In charge of producing the `STntuples` for the `jtopXd, X=2,4-9` samples (respectively with $p_T > 18, 0, 5, 10, 40, 60, 90$ GeV cut at parton level, 3M + 6*0.5M events). Last samples (still) running. Location/description in

  `fcdfsgi2:/cdf/data52/qcd/mc_dijet/491_stn_rev/jtop_stn.txt`
- Needed to assess/derive the p_T-dependent relative corrections in the simulation
- ...and have a better look to the "cracks structure"

Dijet balance — old MC comparison

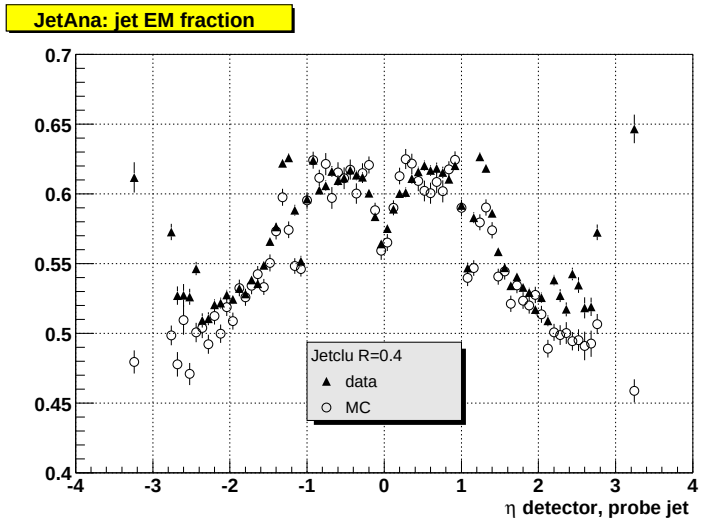
Back to August 2002, `CdfSim v. 4.5.3` and 0.7 cone

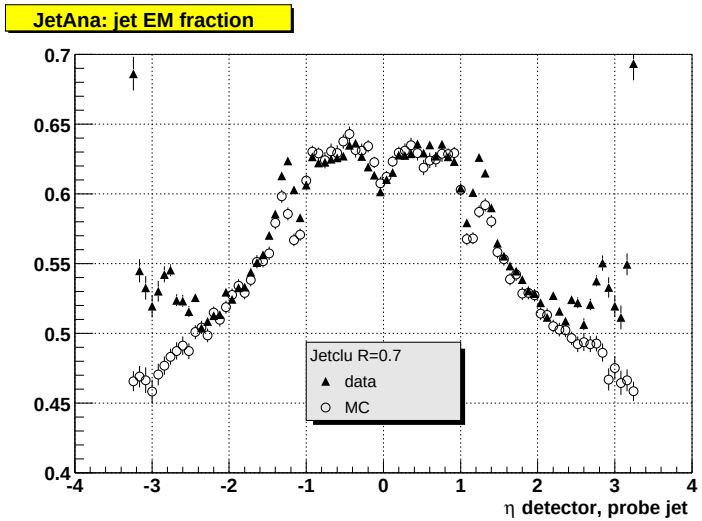


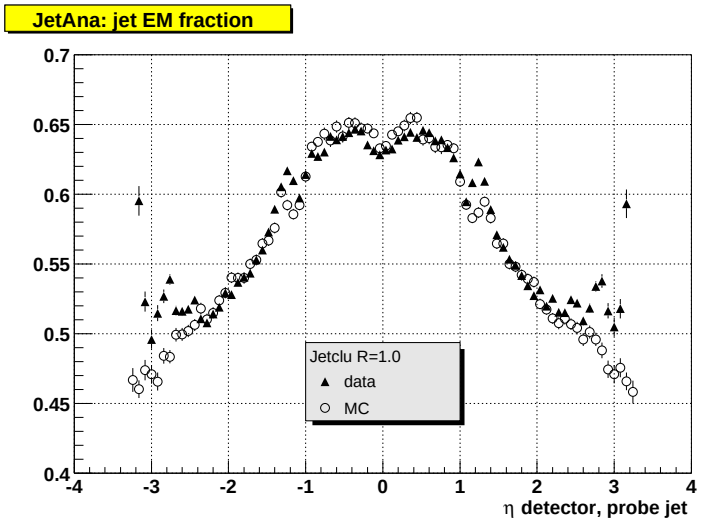
☞ Cracks structure...

Jet EM fraction — no jet corrections

Now with `CdfSim v. 4.9.1` and 0.4/0.7/1.0 cones (`JetClu`)



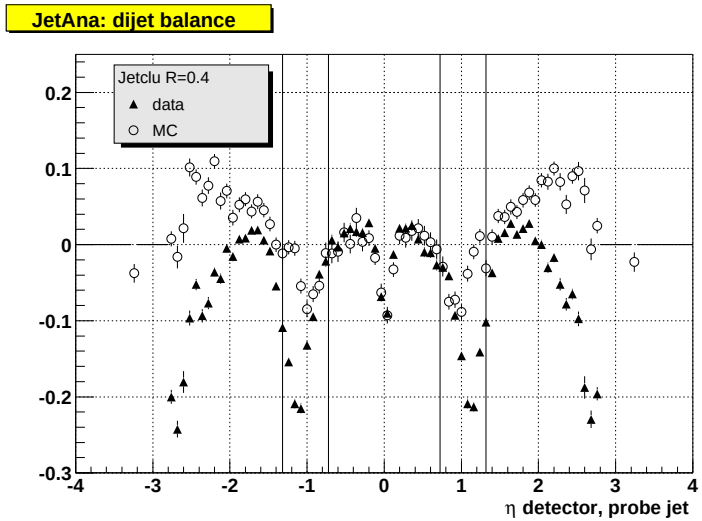


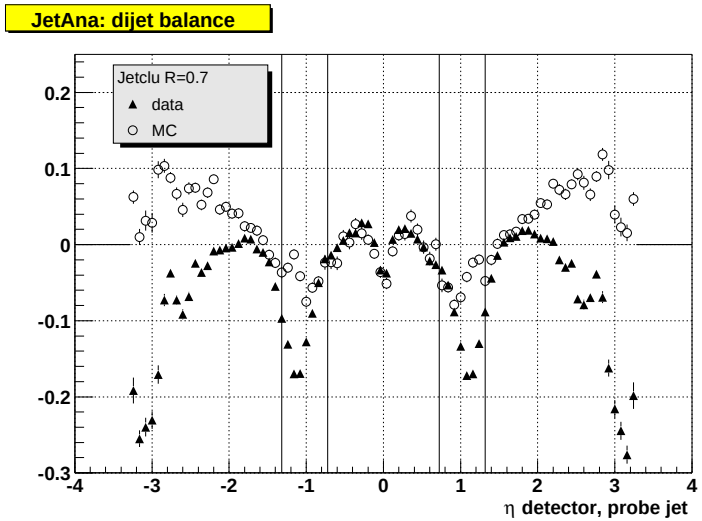


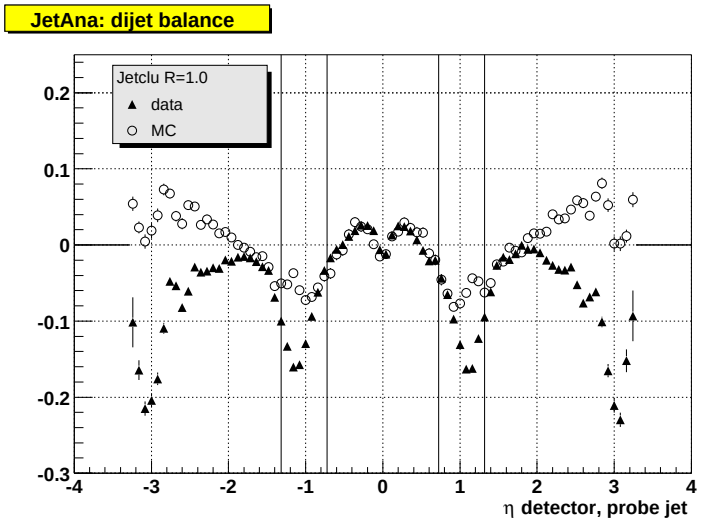
☞ Whole central including 90°-crack looks OK ... WHA cracks ?!

Dijet balance — no jet corrections

Now with `CdfSim v. 4.9.1` and 0.4/0.7/1.0 cones (`JetClu`)



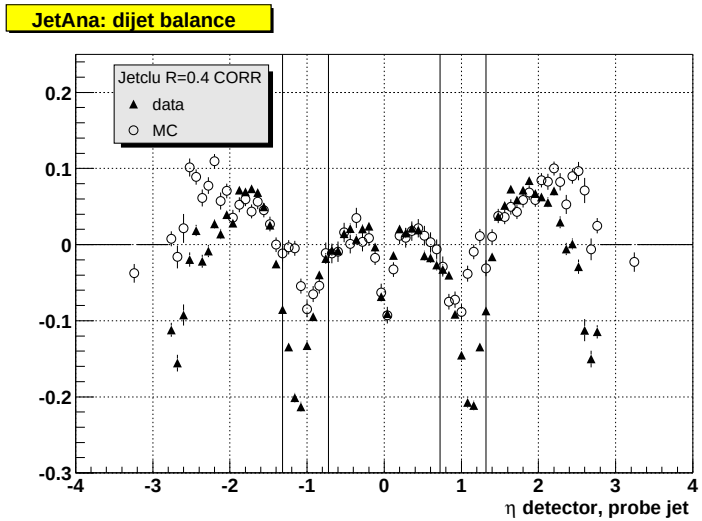


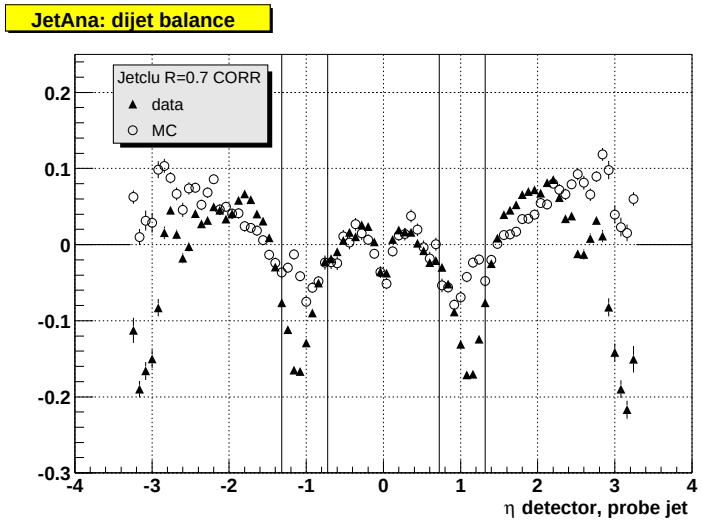


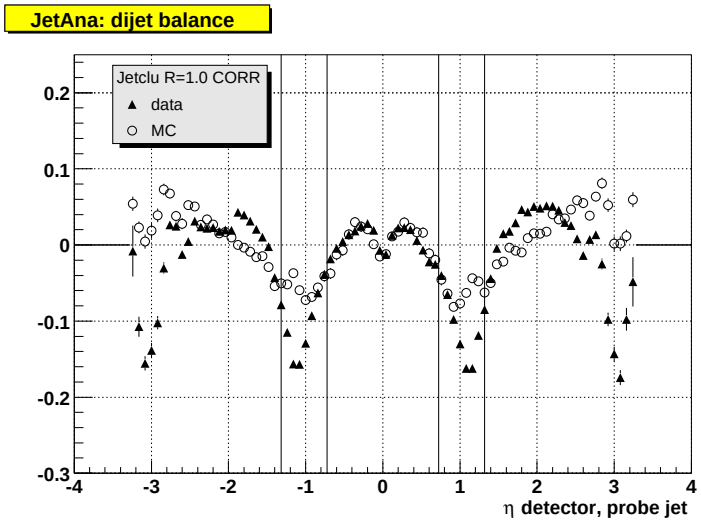
☞ Whole central including 90°-crack looks OK ... WHA cracks ?!

Dijet balance — with time correction

Now with `CdfSim v. 4.9.1` and 0.4/0.7/1.0 cones (`JetClu`)





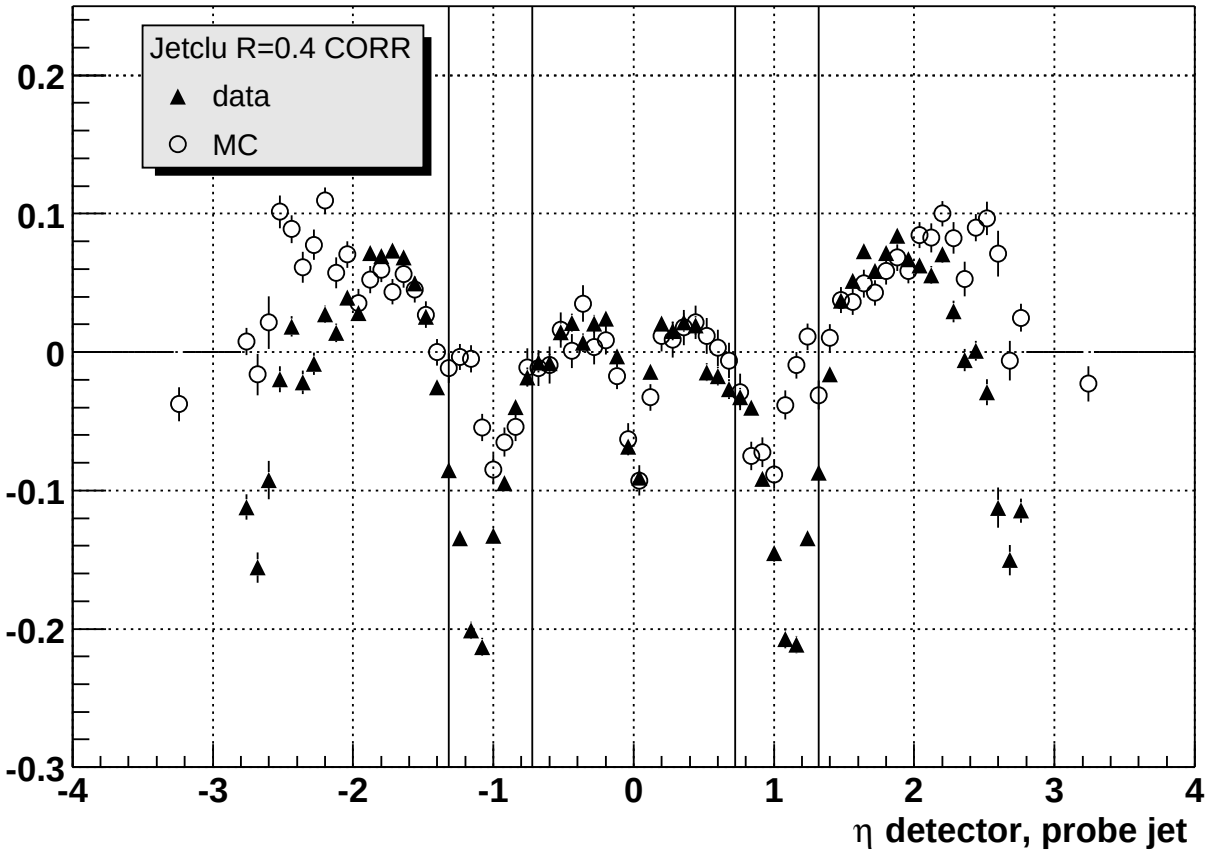


☞ Whole central including 90°-crack looks OK ... WHA cracks ?!

Dijet balance — data/MC comparison

Now with `CdfSim v. 4.9.1` and 0.4 cone (`JetClu`), time correction applied

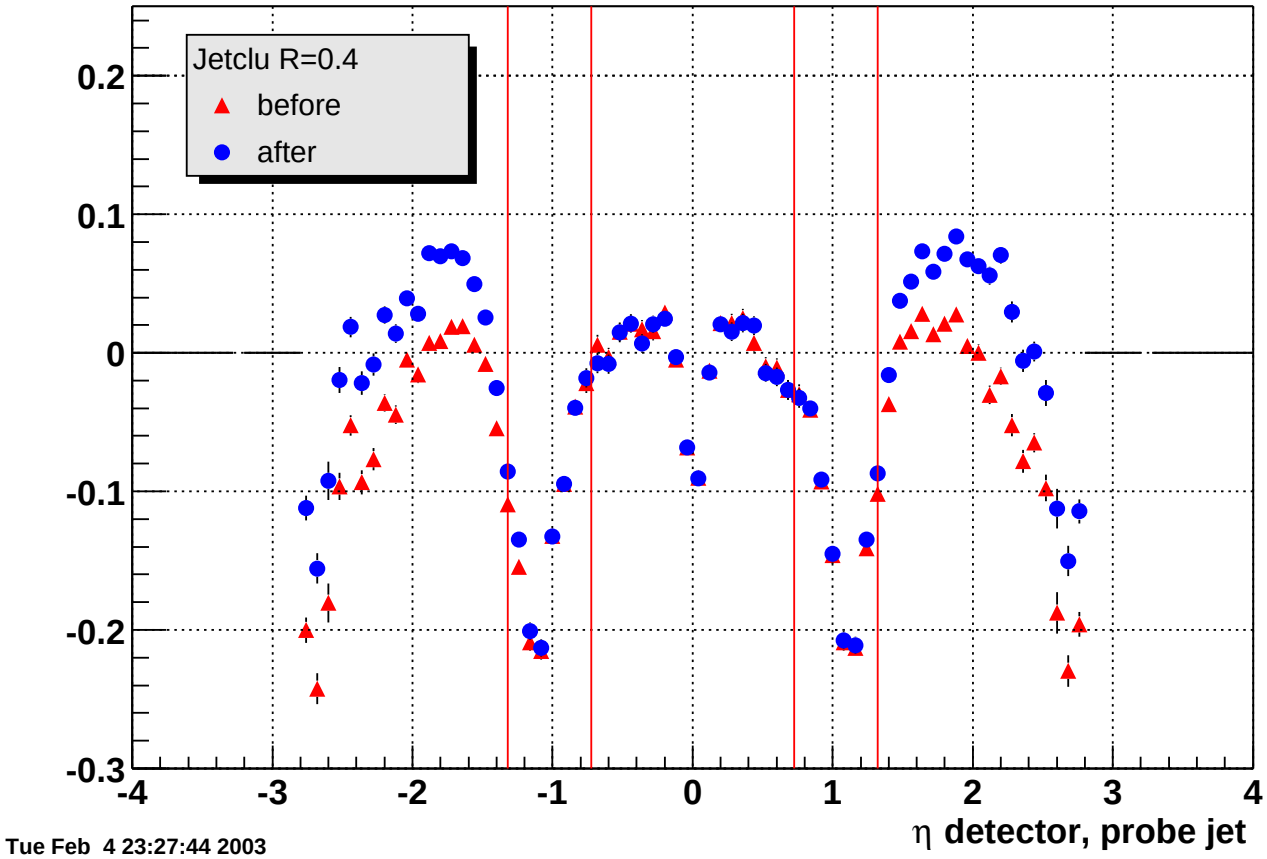
JetAna: dijet balance



Effect of corrections

Now with `CdfSim v. 4.9.1` and 0.4 cone (`JetClu`)

JetAna: dijet balance

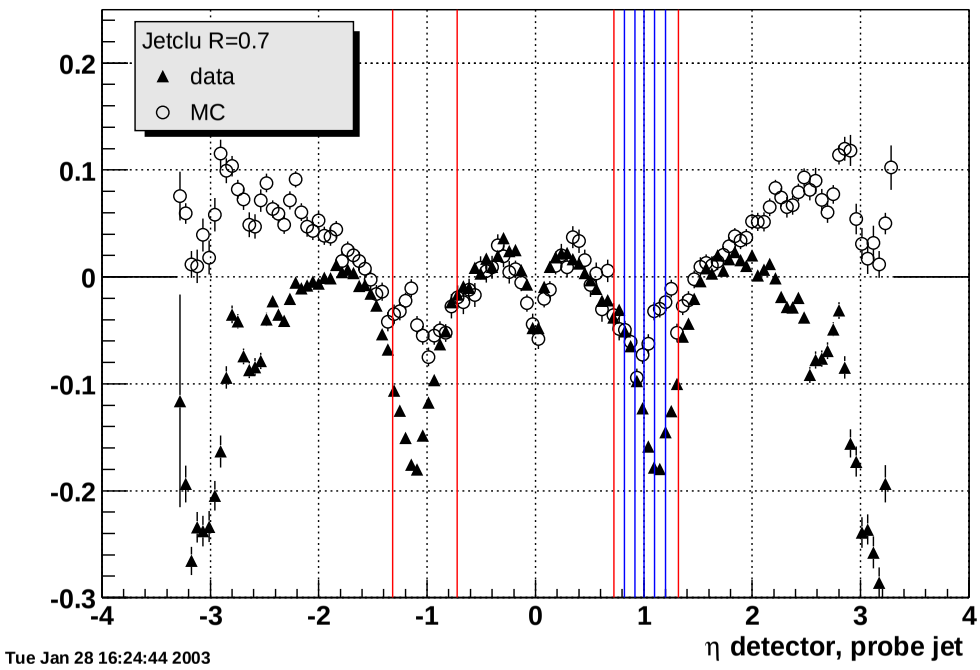


☞ Effect of time correction is major!

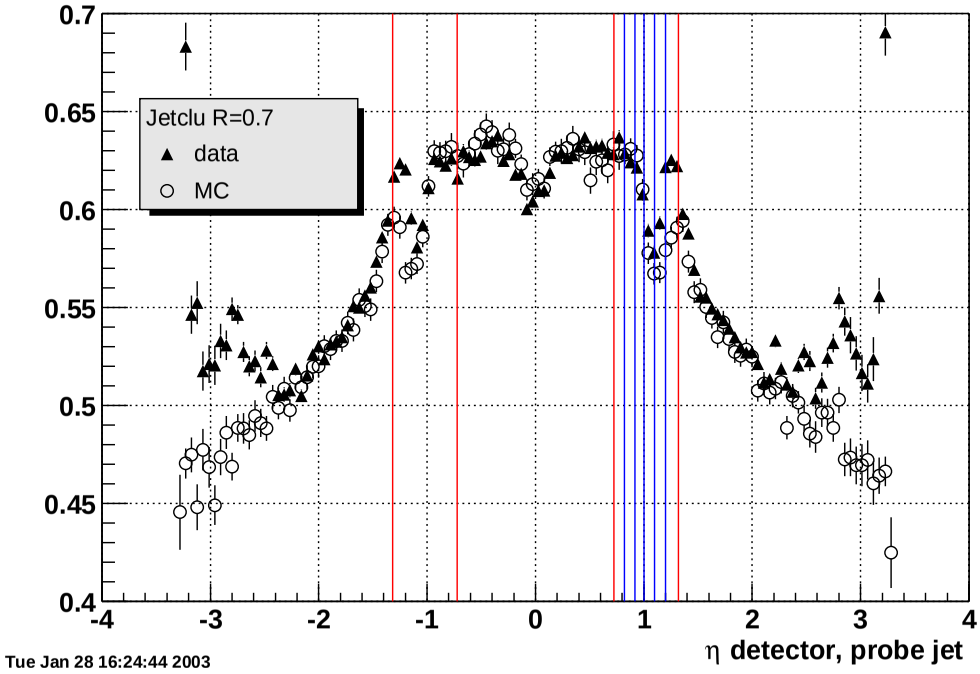
Data/MC comparison – WHA issue

Rebinned. Blue lines delimit towers `ieta=19,...,14`

JetAna: dijet balance

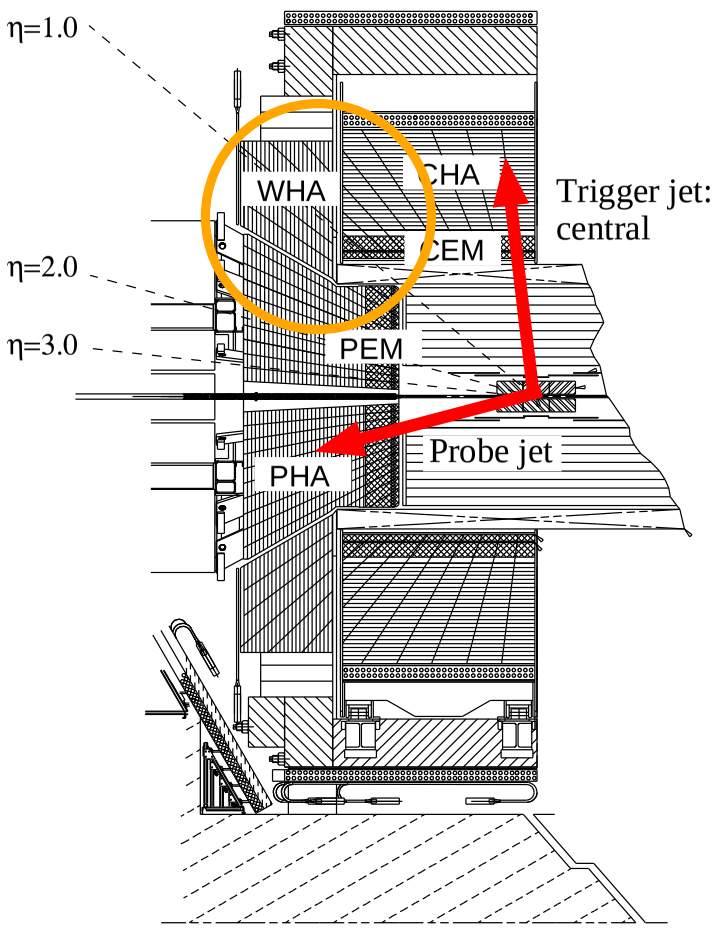


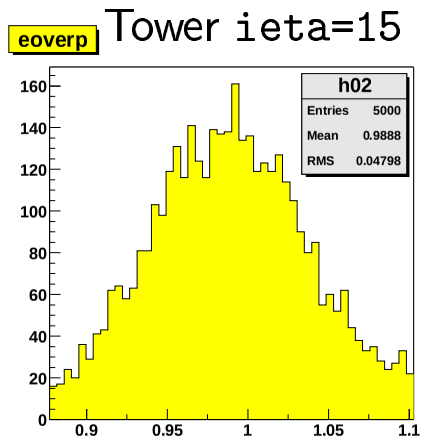
JetAna: jet EM fraction

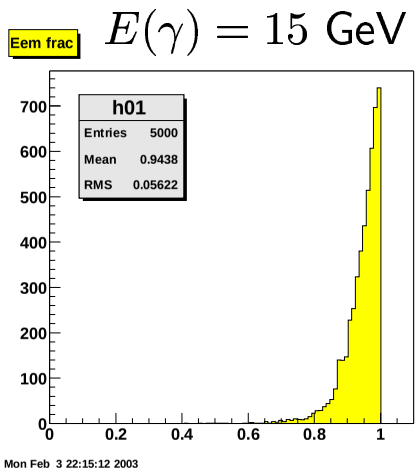


Data/MC comparison – WHA issue

- Resuscitated `Gflash` toolbox to investigate about E-scale in WHA (no tuning has ever been done...)
- Shooting single particles in individual towers, scan the cracks







☞ Comparison with Run I data (cf CDF notes #835,#1513) indicates the problem is in the simulation