



# Status of Jet Corrections in Run II



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- Provide Jet Corrections along the lines of Run I
- Di-Jet group: improve jet resolution

## Jet Corrections Step 1:

- Check the calorimeter E-scale (with calor., electron, muon groups)
  - ◆ Use electrons, muons, gam-jet balance
- Test Run I JTC96X corrections and determine their uncertainties
- Determine the relative central-plug response
- Tune simulation to reproduce test-beam data and low  $P_T$  pion data

## Jet Corrections Step 2 (reduce uncertainties)

- Determine underlying event
- Tune jet fragmentation (charged tracks in jets) in Monte Carlo to reproduce tracks in jets.
- Determine absolute jet corrections using the Monte Carlo.
- Complete the new Run II corrections: JTC02X (?).



# Summary of Jet $E_T$ Scale in CDFII



## Calorimeter E-scale

**CEM** : absolute scale checked with  $Z \rightarrow e+e-$

**Results show E-scale OK within 2–3%.**

**CHA** : scale checked with MIP peak from  $J/\psi$  muons

**Run II scale 4% low with respect to run I**

**WHA**: First observation of MIP peak from muons!

**PEM** : absolute scale checked with  $Z \rightarrow e+e-$ , one e in the central

**Need many corrections: face , tower–tower, PPR.**

**Scale off up to 10% depending on cluster algorithm used.**

**Observe EAST–WEST plug difference of 2–3%**

**PHA**: calibration from test beam. Need plug muons

**Jet E-scale:**  $\gamma$ -jet balance, using JTC96X corrections, seems to be  
**~6% off for central jets.**

(bug not fixed here, see later. Effect expected to be small in central)



# Summary as of May 31–02



- Particle response:
  - CEM electrons E-scale OK within ~3%
  - CHA muon MIP peak is shifted by about 4%
  - PEM electrons need more work. E-scale low by 4–10%
  - WHA and PHA could benefit from muon triggers
- Gam–Jet balance
  - Central E-scale within 3% from run I
  - Could use Run I correction in central (~6% shift but need to look again)
- Relative plug–central corrections from Di–jet balance: wait for further checks of bug fix.
- Calorimeter simulation tuning proceeding very well. Will improve when isolated track trigger data is added.



# What do we need to do



Understand East–West plug puzzle :

the same in gam–jet balance

3% difference in di–jet balance

Rerun everything with fixed bug in Cal Towers

Revisit corrections with JTC96X (gam–jet balance)

Evaluate relative correction for present Central Calorimeter

E–scale (using the 4% CHA correction)

More work on the MC

compare what we have now with data

fix obvious discrepancies