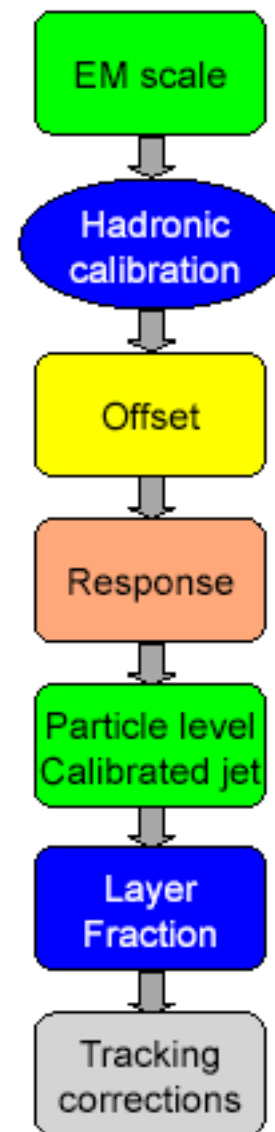


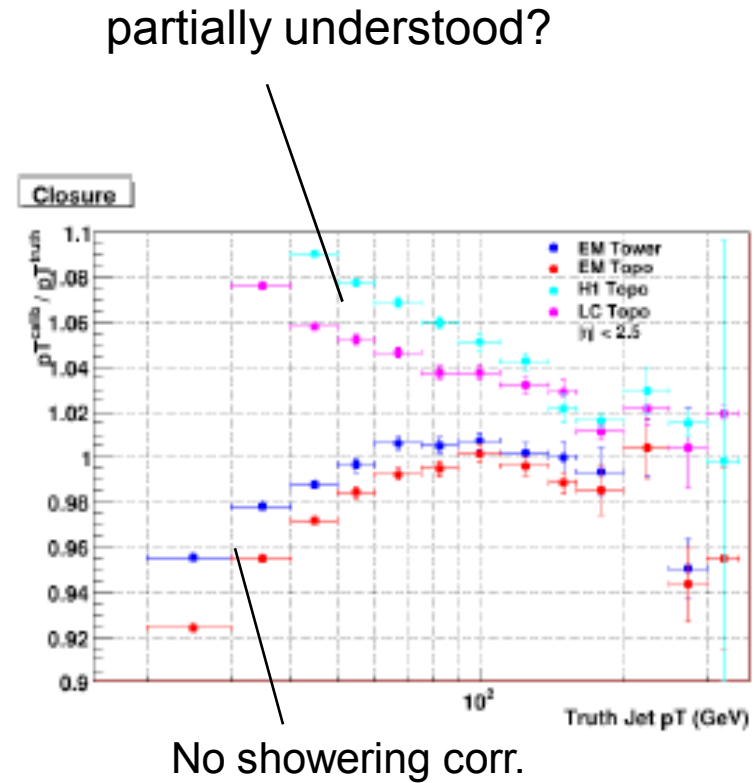
# Jet Energy Scale

- Factorization of jet energy scale components critical
  - Important to keep detector and physics separate
  - Important to keep jets and E<sub>miss</sub> distinct:
    - Jet elements: offset, response, showering/bending
    - E<sub>miss</sub>: response
    - Be clear on what mean by these things: response, showering, out-of-cone
  - Do not include: fragmentation or radiation out of cone, underlying event (l.e. any interactions within pp giving the hard interaction)
- JetCalibTools package very useful to provide software for delivery of calibration



# Balancing Methods

- $\gamma$ +jet/Z+jet/dijets
  - getting large effort
  - Emiss and Pt balance approaches
  - **we support strongly**
- $\gamma$ +jets comments
  - Question of fit functions for response
  - Important to do inversion with care (e.g. E' method)
    - fit functions at intermediate steps creates complications
  - Implement a toy Monte Carlo to study method
  - Add forward reference region,  $|\eta| \sim 2$
- **Caution:** direct Pt balance brings in
  - physics (ISR/FSR, fragmentation)
  - detector effects which should not go into Emiss (offset, showering/bending)



# Systematics

- Falls under issue of 'open issues' for Review Panel: we will not give complete discussion (this for Jet/Etmiss)
- Common categories
  - In-time pileup, luminosity
- Not all same for different methods
  - Local Hadronic calibration/H1
    - E.g. Dead material, pile-up, coherent noise, out-of-cone for H1?
  - E/p + MC approach
    - E.g. Fragmentation model, calorimeter response model, shower profiles, ISR/FSR model
    - E/p: track efficiencies, resolutions, backgrounds
  - $\gamma/Z$ +jet approach
    - E.g. ISR, delta phi, backgrounds, mis-vertexing
- How assess these for jets? What is the actual list?

# Samples

- Can establish basic scale, but flavor dependences may compare to desired 5-10% uncert.
  - Systematics in this region?
  - Separate from sample dependences which are analysis-specific
- Critical to have MC samples of sufficient size to study key data sets
  - dijet, Z+jet,  $\gamma$ +jet, min-bias
  - Do in a consistent way
    - Need samples for systematics (generator, geant version, etc.)
  - What is mc09 prognosis? How much will it differ from mc08?

QuickTime™ and a  
BMP decompressor  
are needed to see this picture.

Note: semileptonic  
Decays still included  
-need to redo w/respect  
to particle level

# Energy Resolution

- Can you decouple response and resolution?
  - Dijet balance is important tool to determine whether jet resolution in data is consistent with expectations
    - Needs to be made reliable and given priority
    - See effect in the data
  - Dijet trigger dependence of jet energy scale?

