Object-Based Etmiss: Implementation in Athena

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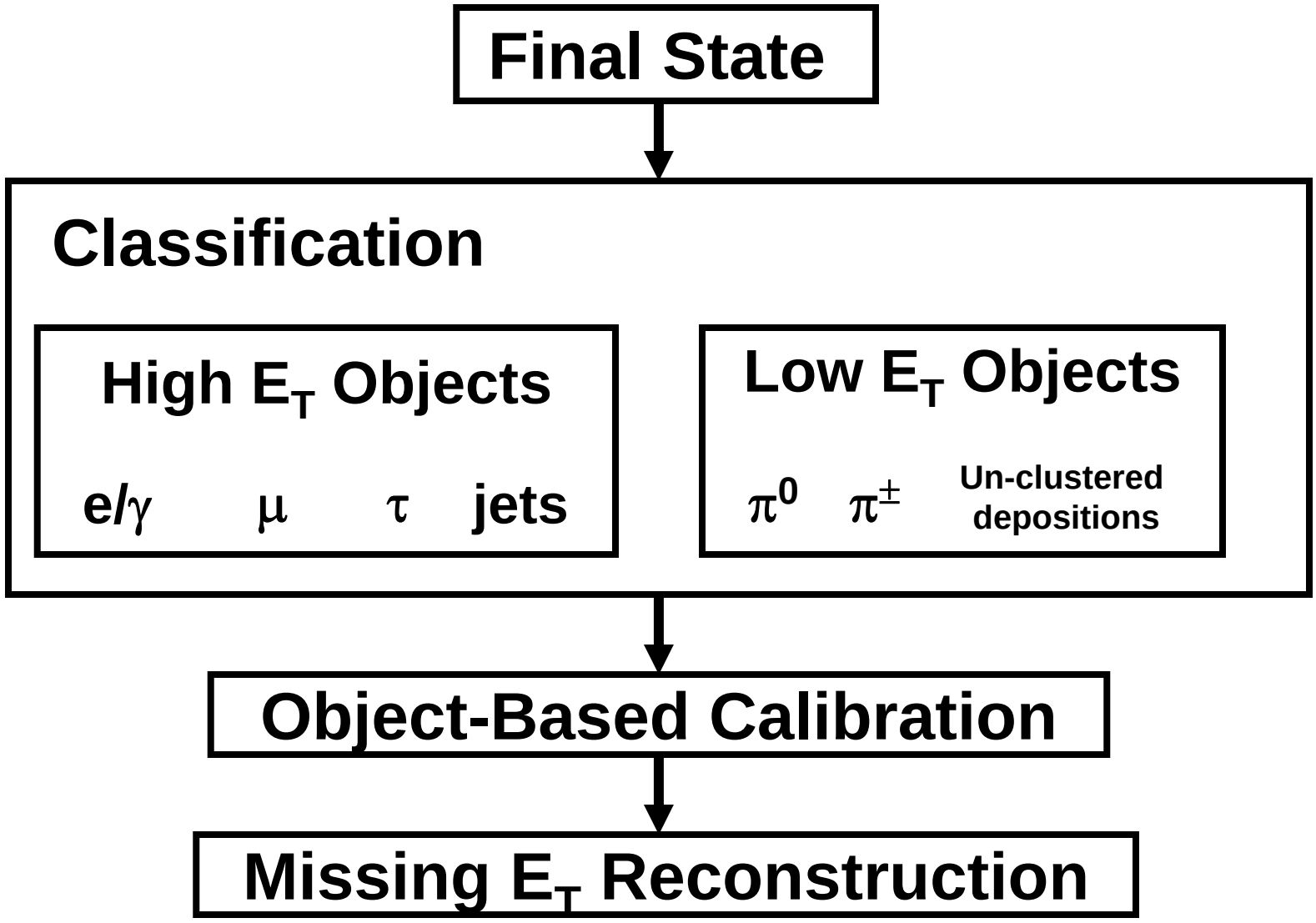
Special Thanks to Y.Fang and L.Flores
Munich Workshop 03-05/05/06

Object-Based Missing E_T



Object Based Calibration

- The Object-Based approach is very FLEXIBLE. It accommodates any calibration strategy

Local Hadronic calibration

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Use local hadronic calibration or in-situ calibration or a combination of both

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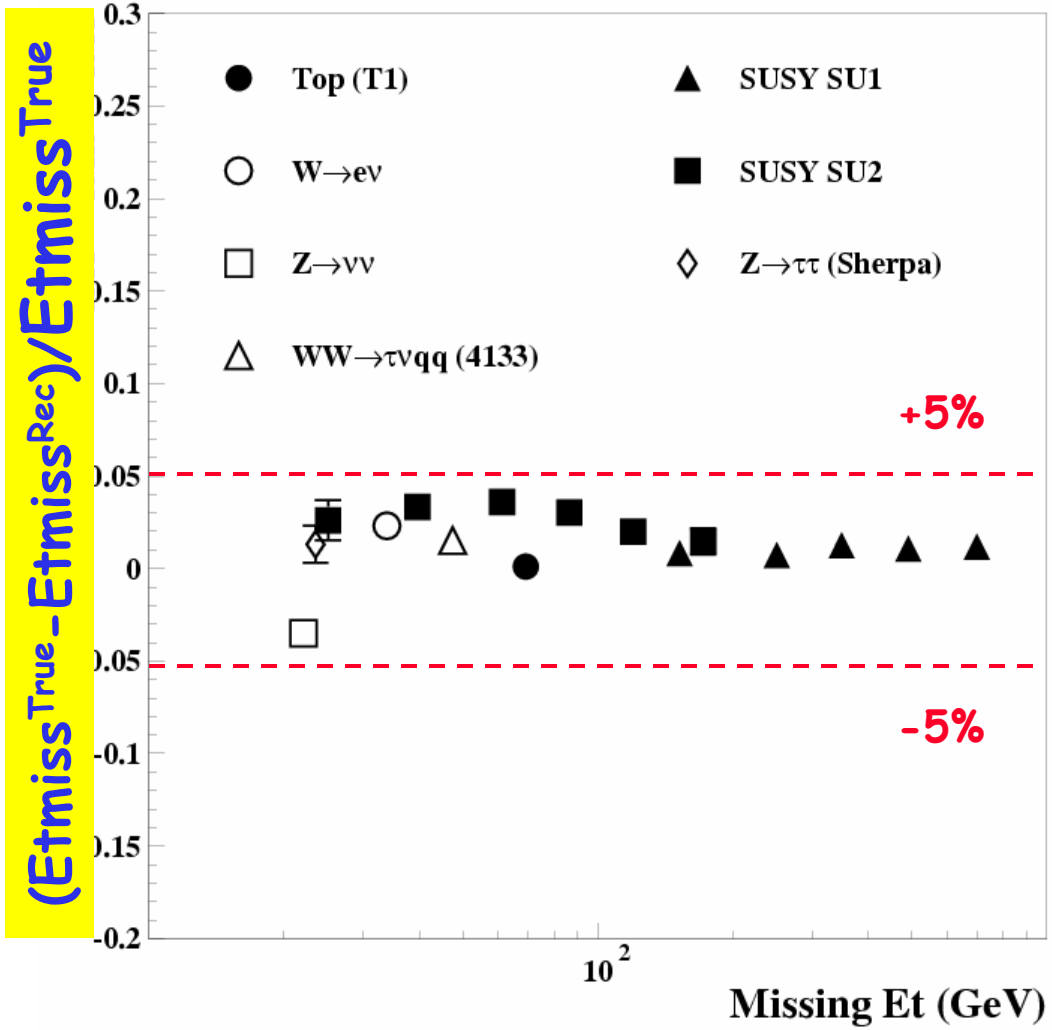
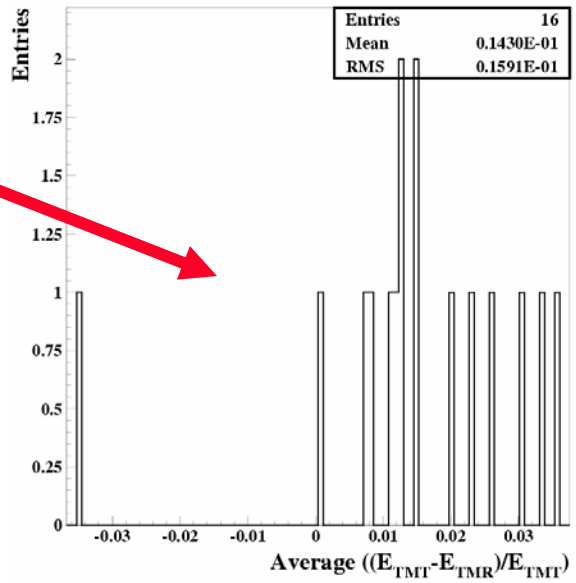
In-situ calibration

Object	Calibration Sample	Calibration Method
Electrons	$Z \rightarrow ee$	Mass constraint
Photons	$Z \rightarrow ee\gamma, \mu\mu\gamma$	Mass constraint
Jets	Z+jets, γ+jets, di-jets, $W \rightarrow jj$ (in tt)	P_T balance, W mass constraint
Single $\pi^{\pm}$	min-bias, $W \rightarrow \tau\nu$	E/P
Single π^0	$Z \rightarrow ee\gamma, \mu\mu\gamma$	Mass constraint, $E_{\pi 0}/E_{\gamma}$ from MC

Missing E_T Linearity Using OBMET in ATHENA



- Observe small shift +1.5%
  - Observe drop in jet energy scale of since 11.0.2
  - Ongoing work with CSC
- Spread of linearity is ~2%



Status of Calibration with CSC Samples

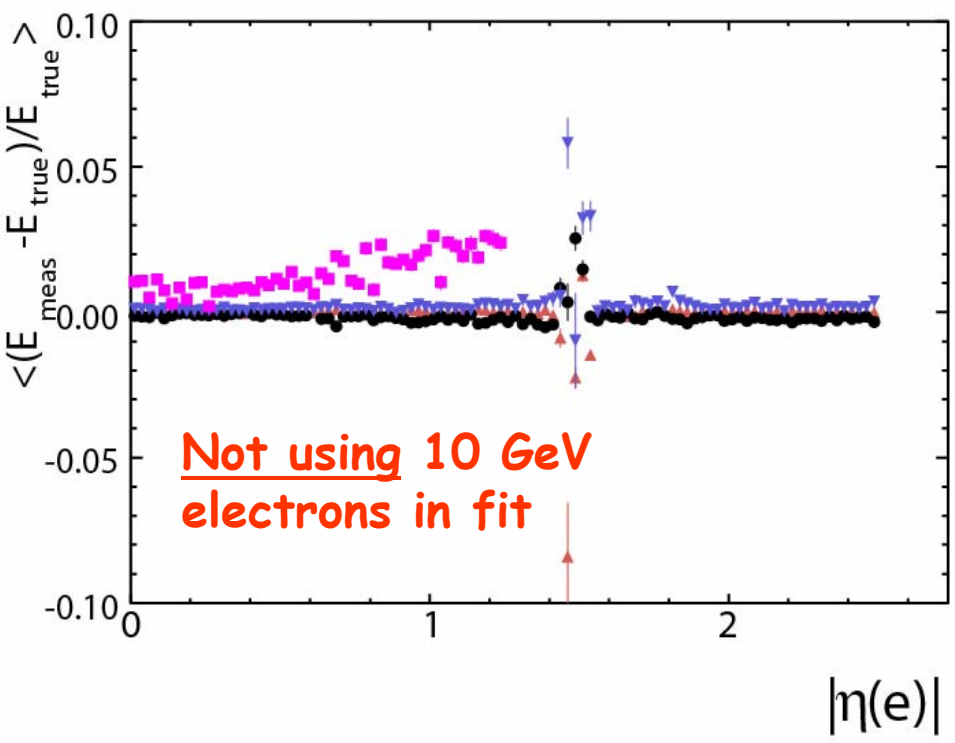
- We follow the same sequence as implemented when we calibrated "Rome" samples
- Start understanding electromagnetic objects
  - Single electrons
  - Single pi0's
  - Used 11.0.41 for this purpose
- Hadronic depositions
  - Release 11.0.42 already out (G4 bug free?)
  - Running single pions and jets

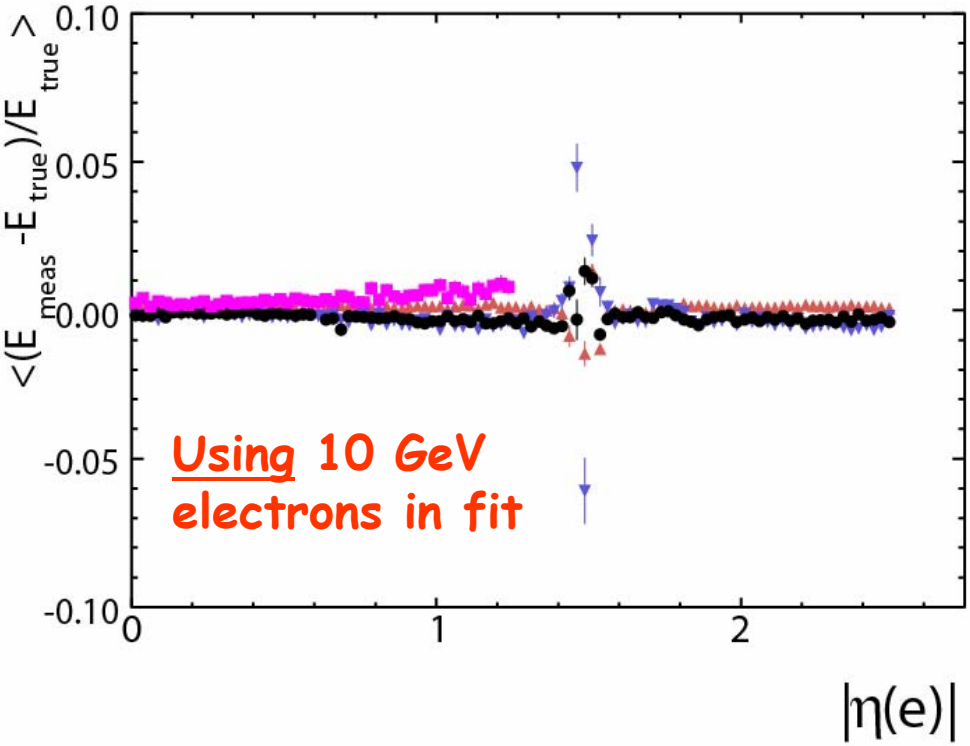
Electron Calibration

- Electron calibration (LW) performed using single electrons with topo-clusters 6,3,0

Luis Flores

Red 100 GeV Blue 20 GeV
Black 50 GeV Pink 10 GeV

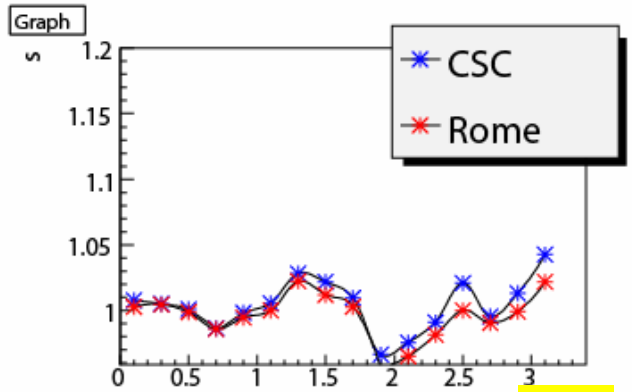


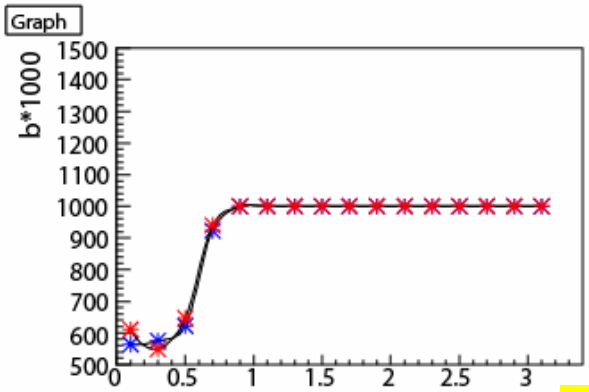


Single π^0 in $|\eta|<3.2$ (CSC)

$$E_{rec} = \lambda\left(b + W_0 E_{pres} + E_1 + E_2 + W_3 E_3\right)$$

E=30-40 GeV π^0's





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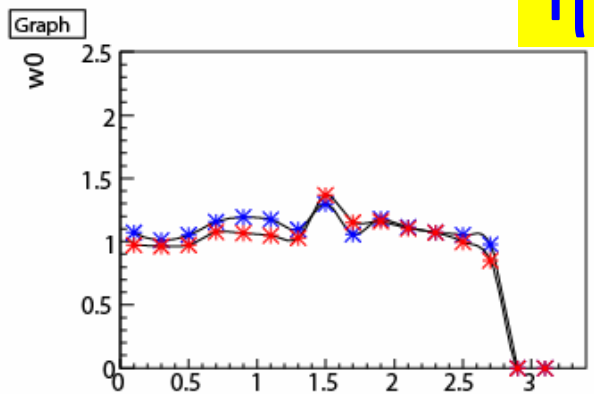

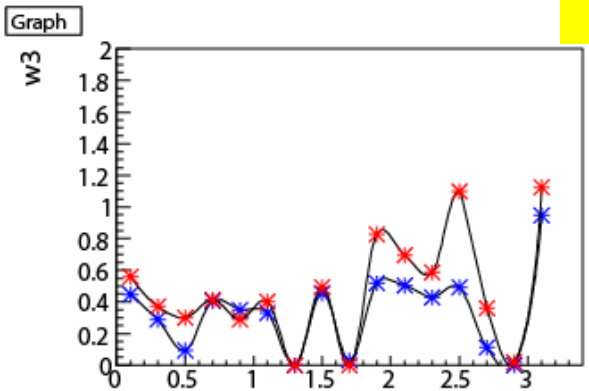

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