Preshower Status

Brad Wray
The University of Texas at Austin
August 13, 2008
Energy Correction

• Previously
  – $E_{\text{loss}} = E_{\text{raw}} - E_{\text{true}}$
  – $E_{\text{corr}} = E_{\text{loss,nonPre}} - E_{\text{loss,pre}}$

• Use $E_{\text{raw}}$ instead of $E_{\text{calib}}$ because, in some sense, the calibration accounts for preshowers
  – Preshower effects should be more apparent in the quantity $E_{\text{raw}} - E_{\text{true}}$ than in $E_{\text{calib}} - E_{\text{true}}$
Energy Correction

• Would like to correct the energy using $E_{\text{raw}}$ then apply the calibration
  
  $$E_{\text{corrected}} = E_{\text{raw}} + E_{\text{corr}}$$

• What we will actually use is
  
  $$E_{\text{corrected}} = E_{\text{calib}} + E_{\text{corr}}$$

• Should we use
  
  $$E_{\text{loss}} = E_{\text{raw}} - E_{\text{true}} \quad \text{or} \quad E_{\text{loss}} = E_{\text{calib}} - E_{\text{true}}$$
BBbar MC \( E_{\text{raw}} \) and \( E_{\text{calib}} \) equivalent
BBbar MC

$E_{\text{calib}}$ gives better correction
BBbar MC

Mean and peak equivalent for theta correction
Mean better for nHits & theta correction
BBbar MC  
nHits & theta gives better correction
$\text{BBbar MC}$  

$E_{\text{raw}}$ and $E_{\text{calib}}$ equivalent
BBbar MC

$E_{\text{calib}}$ gives better correction
BBbar MC

Mean and peak equivalent for theta correction

Mean better for nHits & theta correction
BBbar MC  nHits & theta gives better correction
MMG MC

$E_{\text{raw}}$ and $E_{\text{calib}}$ equivalent
MMG MC \(E_{\text{calib}}\) gives better correction for peak, equivalent for mean
MMG MC

Mean and peak equivalent
MMG MC

nHits & theta gives better correction
MMG MC

$E_{\text{raw}}$ and $E_{\text{calib}}$ equivalent
$E_{\text{calib}}$ gives better correction for peak, equivalent for mean
MMG MC  Mean and peak equivalent
MMG MC

nHits & theta gives better correction
Conclusions

• Theta Correction equivalent for $E_{raw}$ and $E_{calib}$ (for both peaks and means)
  – Mean and peak approximately equivalent

• nHits & Theta Correction better for $E_{calib}$ than $E_{raw}$ (for both peaks and means)
  – Mean better than peak

• nHits & Theta Correction appears better than Theta Correction

• nHits & Theta Correction using means and $E_{calib}$ appears to be the best correction