

# Jet Parametrization

## UHH-CMS Jet-Calibration Meeting

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# Out of Cone Effects

Educated Guess:

$$\begin{aligned}
 E_T &= E_T \int_0^{r_c} e^{-x} dx + E_T \int_{r_c}^{\text{inf}} e^{-x} dx \\
 K - factor &= \frac{1}{1 - e^{-r_c}} \\
 &= 1 + e^{-r_c} \\
 &= 1 + A e^{-B * E_T}
 \end{aligned}$$

- $E_T$  is used instead of  $E$ , because the radius  $R$  is Lorentz invariant
- Fit chooses  $A$  to be large (about 4000 if  $B = 1$ )
- Improvement in  $\frac{P_T^{\text{CorJet}}}{E_T^\gamma}$  curve (see plots in a few slides)
- If  $\eta$  binning is introduced, parameter  $A$  decreases with increasing  $|\eta|$ , i.e. description not complete

# Punch Thought

- Small effect in used samples therefore hard to study
- Longitudinal maximum of Jet scales with  $\ln(E)$
- Detector thickness is strongly  $\eta$  dependent

Educated Guess:

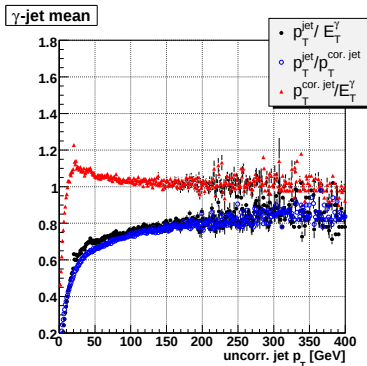
$$\text{if}(E > e^{P[1]})$$

$$E_{T^*} = 1 + p[2] * (\ln(E) - P[1])$$

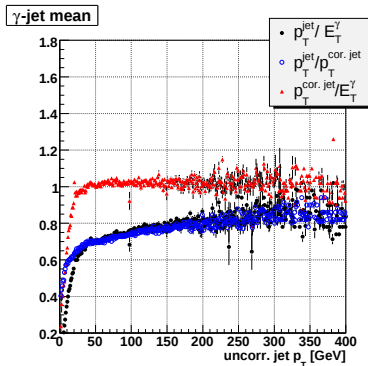
- No function of detector thickness implemented
- Hardly possible to avoid binning in  $|\eta|$
- Fit chooses  $p[2]$  to be small

# Controlplots

old Parametrization:

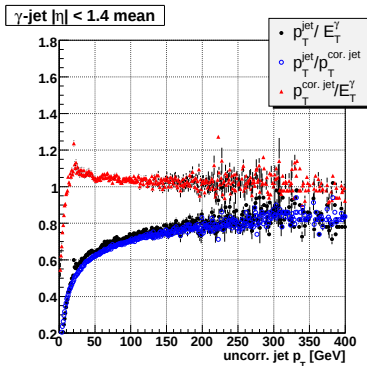


new Parametrization:

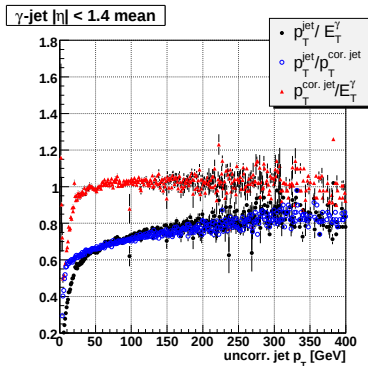


# Controlplots

old Parametrization:

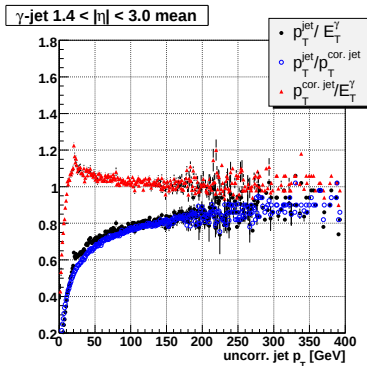


new Parametrization:

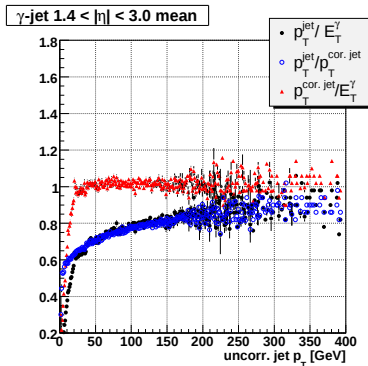


# Controlplots

old Parametrization:

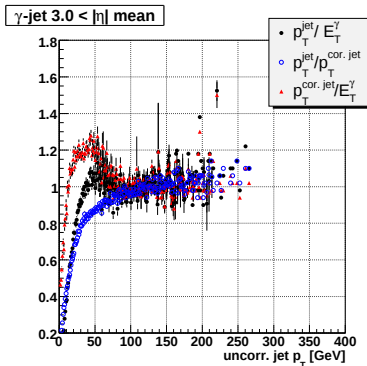


new Parametrization:



# Controlplots

old Parametrization:



new Parametrization:

