CMS Draft Analysis Note

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L1 Jet Energy Scale Correction

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DRAFT

Abstract

This is the abstract.

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PDFAuthor: Greg Landsberg and Duong Nguyen
PDFTitle: L1 Jet Energy Scale Correction
PDFSubject: CMS
PDFKeywords: CMS, Physics, Trigger, Jet Energy Correction

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1 Introduction

This is the introduction.
Plots:

- Profile plot of ratio of Et L1 jet and GenJet Et
- Delta Et L1 jet and GenJet Et

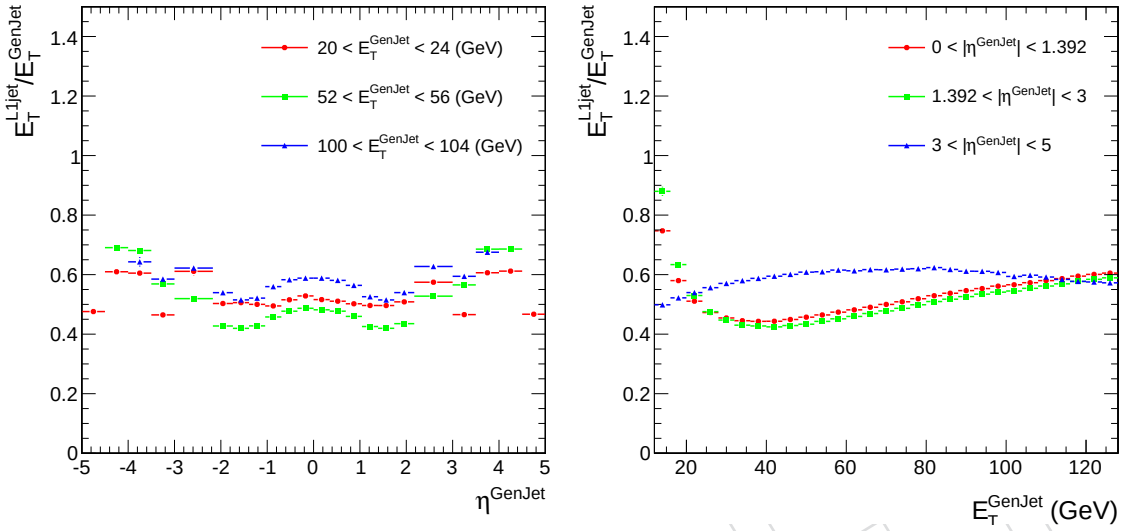

Figure 1: Mean ratio of L1 jet transverse energy and particle jet transverse energy versus particle jet η (left) and transverse energy (right)

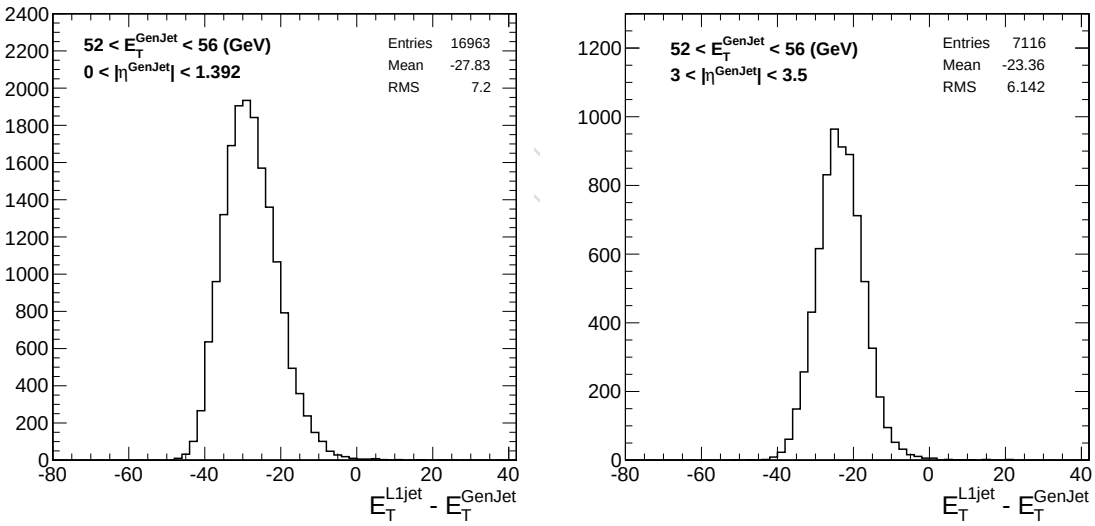

Figure 2: Difference between L1 jet and particle jet transverse energy for particle jet η at a HB (left) and HE (right) region

2 Monte Carlo Data Samples

Full simulated Monte Carlo samples used in the analysis are listed at Table 1.

Name	Number of events	Cross section (pb)
/QCD_Pt0to15_7TeVpythia8/ Spring10START3X_V26Bv1/GEN-SIM-RAW	700000	$2.117\ 10^{12}$
/QCD_Pt15to20_7TeVpythia8/ Spring10START3X_V26Bv1/GEN-SIM-RAW	700000	$5.638\ 10^{8}$
/QCD_Pt20to30_7TeVpythia8/ Spring10START3X_V26Bv1/GEN-SIM-RAW	600000	$2.264\ 10^{8}$
/QCD_Pt30to50_7TeVpythia8/ Spring10START3X_V26Bv1/GEN-SIM-RAW	600000	$5.018\ 10^{7}$
/QCD_Pt50to80_7TeVpythia8/ Spring10START3X_V26Bv1/GEN-SIM-RAW	600000	$6.035\ 10^{6}$
/QCD_Pt80to120_7TeVpythia8/ Spring10START3X_V26Bv1/GEN-SIM-RAW	600000	$7.519\ 10^{5}$
/QCD_Pt120to170_7TeVpythia8/ Spring10START3X_V26Bv1/GEN-SIM-RAW	500000	$1.120\ 10^{5}$

Table 1: Monte Carlo samples

3 Correction Derivation

This section describes how to obtain the correction
Plots:

- dR
- DeltaEt and the fit
- Correction and the fit

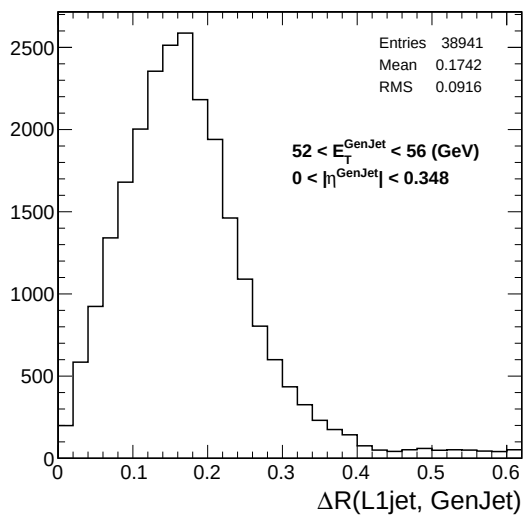

Figure 3: ΔR, spatial separation of particle jet and L1 jet.

4 Validation

This section presents the validation of the correction

- Profile plot of ratio of corrected L1 jet Et and GenJet Et vs. eta
- Delta L1 jet Et and GenJet Et

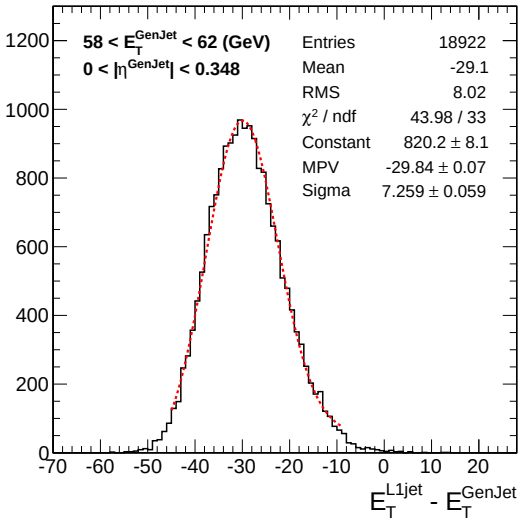

Figure 4: Transverse energy difference and the fit

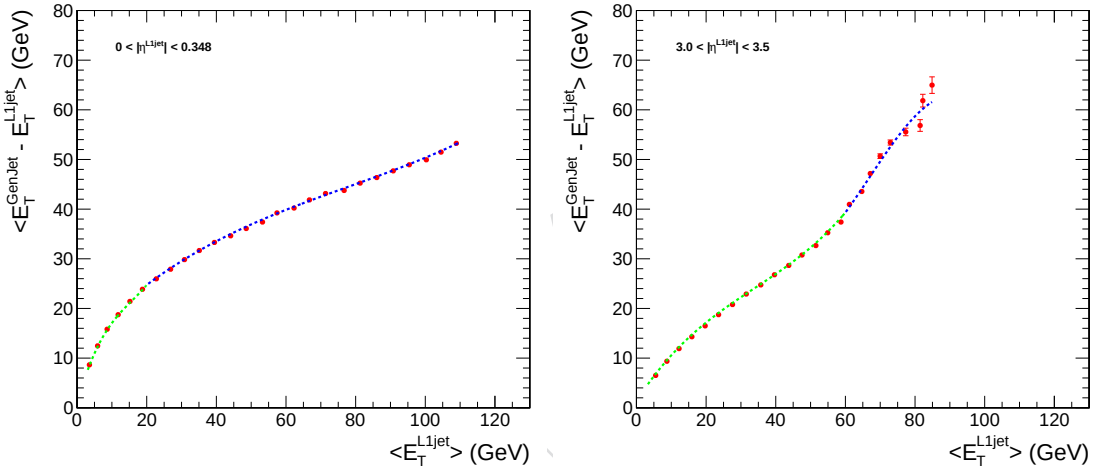

Figure 5: The correction vs. the mean L1 jet transverse energy for the first (left) and seventh (right) η bin

- Turn on curve and resolution plots

5 Conclusions

This is the conclusion section

We thank Andrew Askew, Oleksiy Atramentov, Marat Gataullin, Yuri Gershtein, Sam Harper, Conor Henderson, and Bernadette Heyburn for many useful discussions and help with various photon ID tools developed by them. We are also grateful to Marco Pieri for a number of clarifications and discussions on electron and photon ID and to the ARC members John Conway, Yuri Gershtein, and Marco Paganoni for a number of editorial suggestions.

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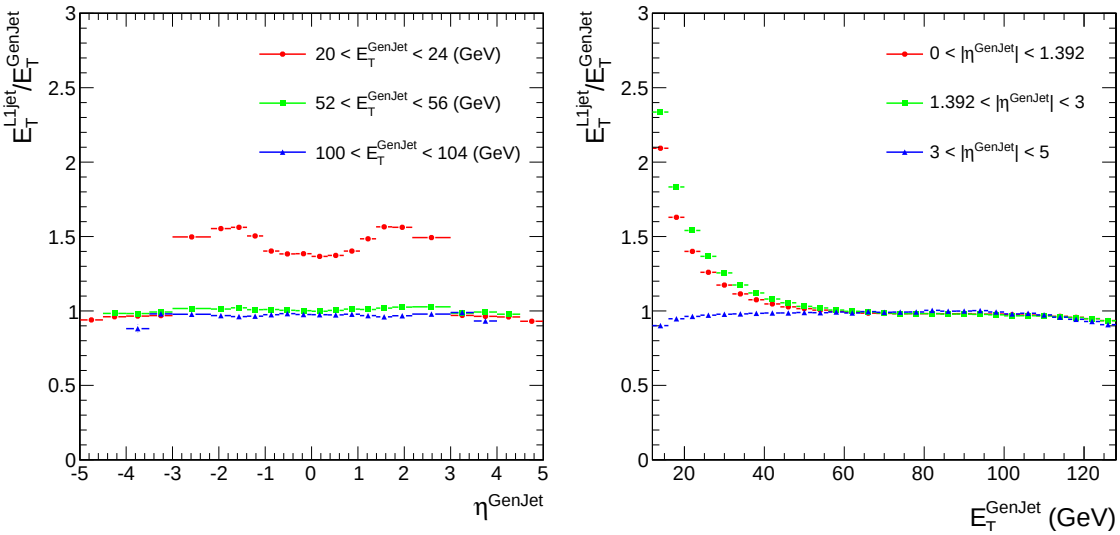

Figure 6: Mean ratio of L1 jet transverse energy and particle jet transverse energy versus particle jet η (left) and transverse energy (right) after applying the correction

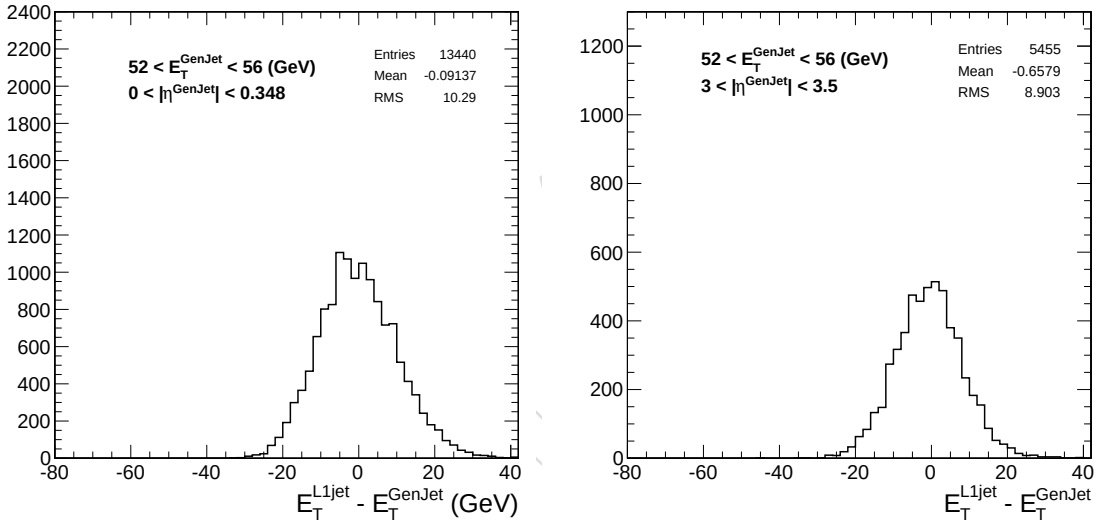

Figure 7: Difference between L1 jet and particle jet transverse energy for particle jet η at a HB (left) and HE (right) region afer applying the correction

land); CEA and CNRS/IN2P3 (France); BMBF, DFG and HGF (Germany); GSRT and Leventis Foundation (Greece); OTKA and NKTH (Hungary); DAE and DST (India); IPM (Iran); SFI (Ireland); INFN (Italy); KICOS (Korea); CINVESTAV, CONACYT, SEP and UASLP-FAI (Mexico); PAEC (Pakistan); SCSR (Poland); FCT (Portugal); JINR (Armenia, Belarus, Georgia, Ukraine, Uzbekistan); MST and MAE (Russia); MSD (Serbia); MCINN and CPAN (Spain); Swiss Funding Agencies (Switzerland); NSC (Taipei); TUBITAK and TAEK (Turkey); STFC (United Kingdom); DOE and NSF (USA).

References