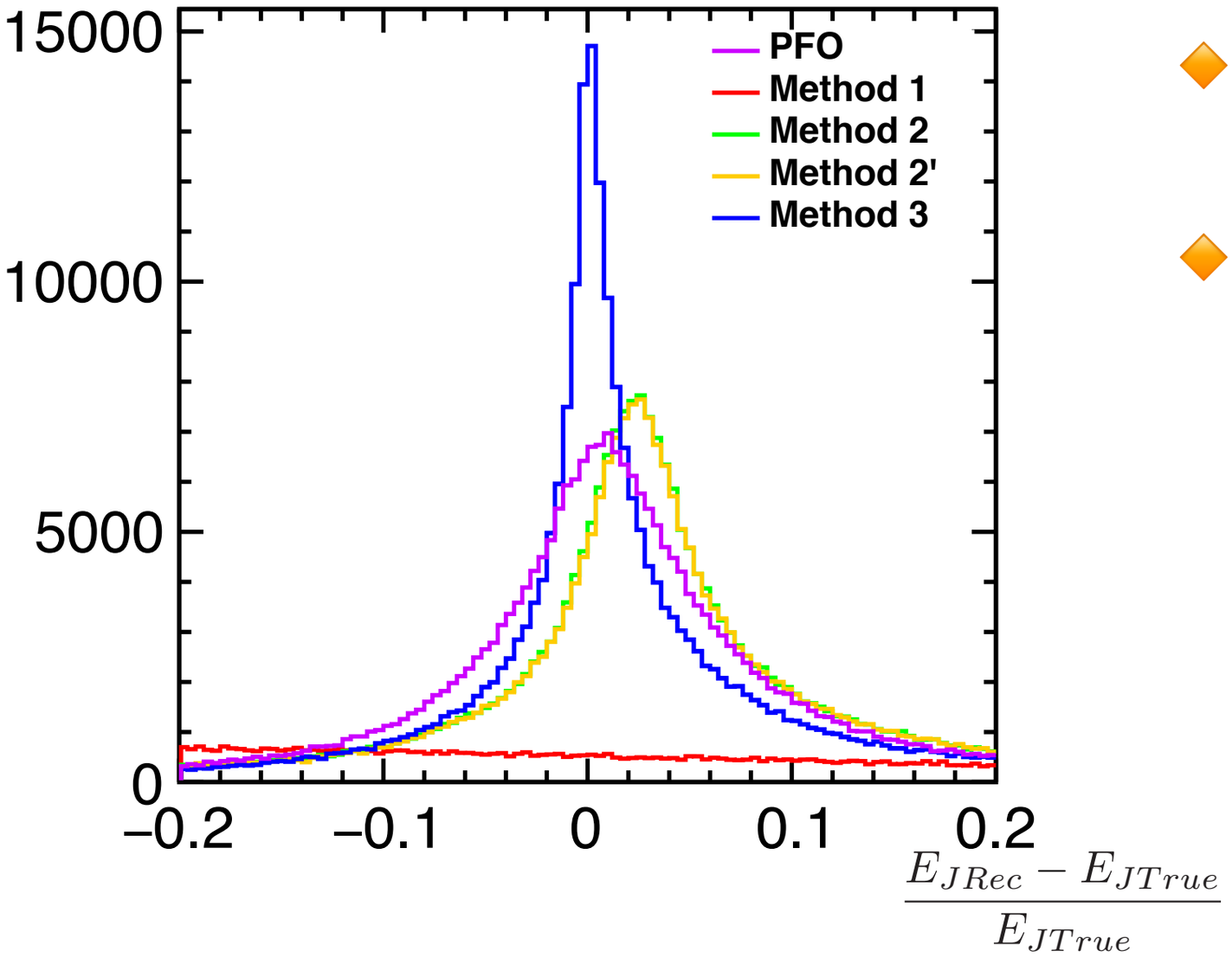
Status on e^+e^- -> γZ process
Jet Energy Calibration

Takahiro Mizuno

Recent Progress

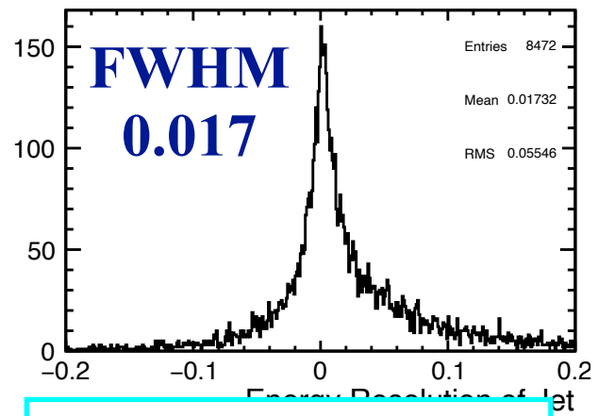
Jet 1 Reconstructed Energy Method Comparison $|\theta\gamma_{PFO}-\theta\gamma_{MC}|<0.01$ events



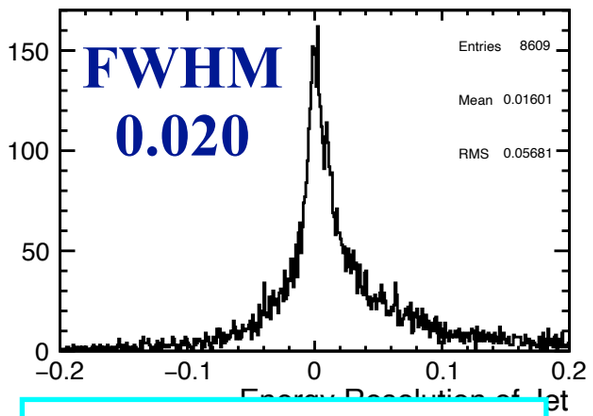
- Looking at Method3 Angle & Energy dependence
- With $|\theta\gamma_{PFO}-\theta\gamma_{MC}|<0.01$ cut

2.2. Method 3 Jet 1 energy resolution θ dependence

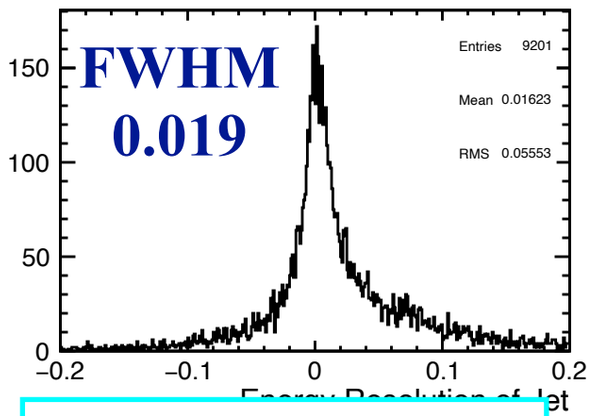
$0.0<|\cos\theta_{J1}|<0.1$



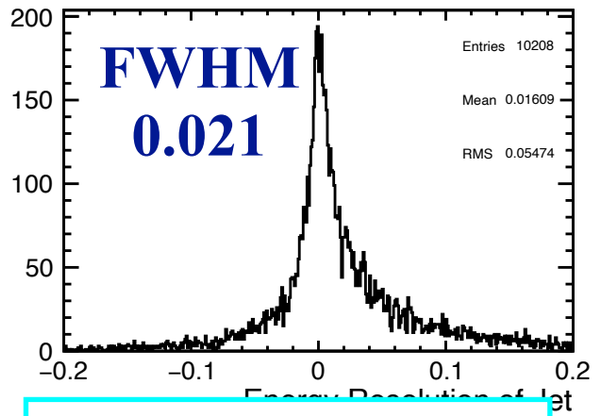
$0.1<|\cos\theta_{J1}|<0.2$



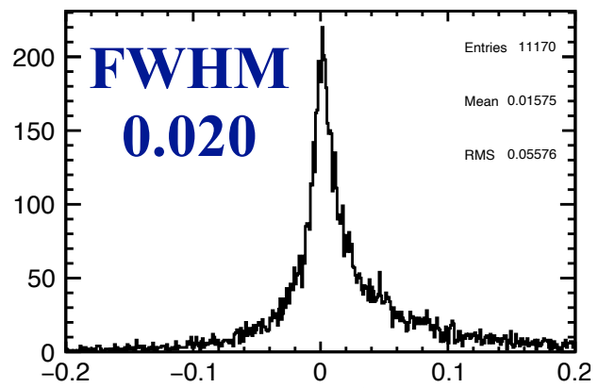
$0.2<|\cos\theta_{J1}|<0.3$



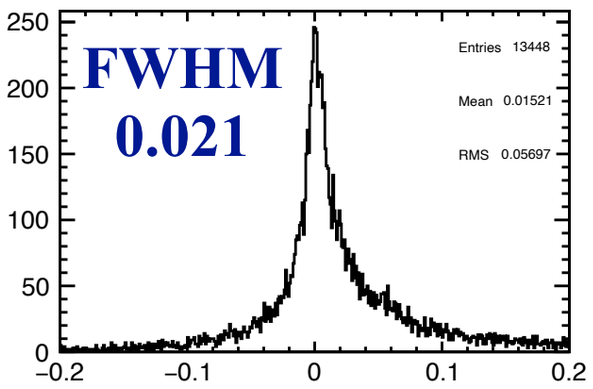
$0.3<|\cos\theta_{J1}|<0.4$



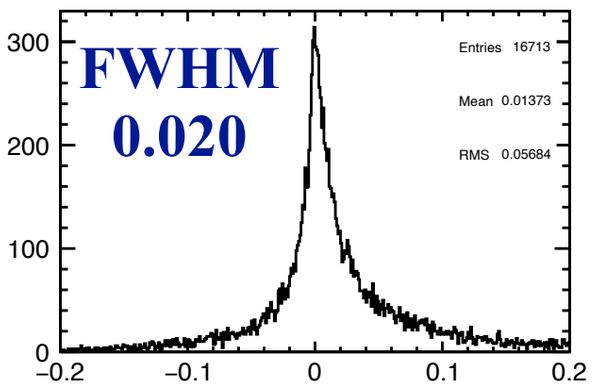
$0.4<|\cos\theta_{J1}|<0.5$



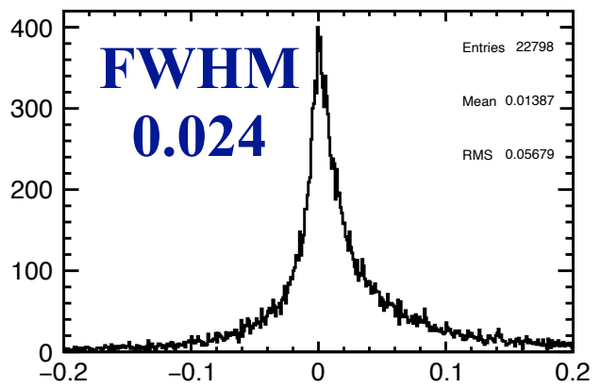
$0.5<|\cos\theta_{J1}|<0.6$



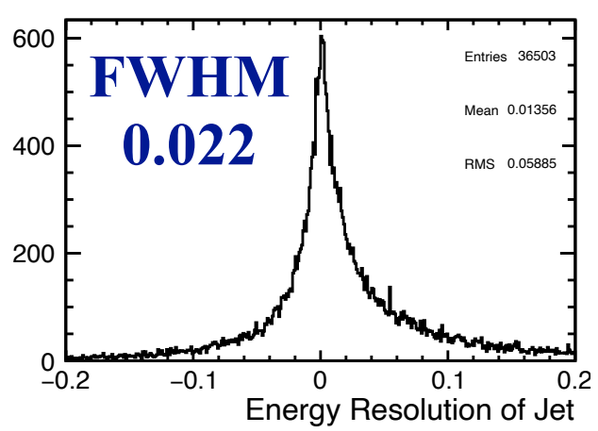
$0.6<|\cos\theta_{J1}|<0.7$



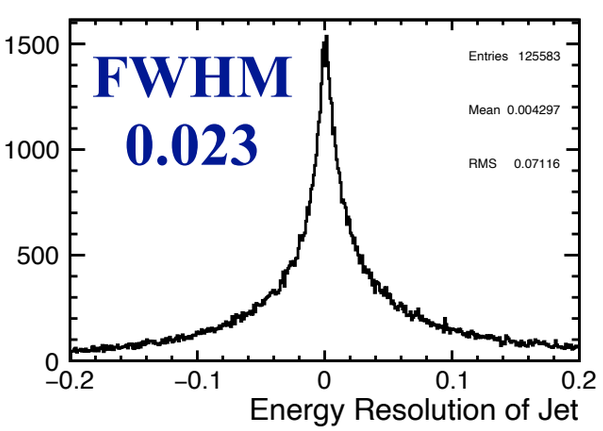
$0.7<|\cos\theta_{J1}|<0.8$



$0.8<|\cos\theta_{J1}|<0.9$



$0.9<|\cos\theta_{J1}|<1.0$

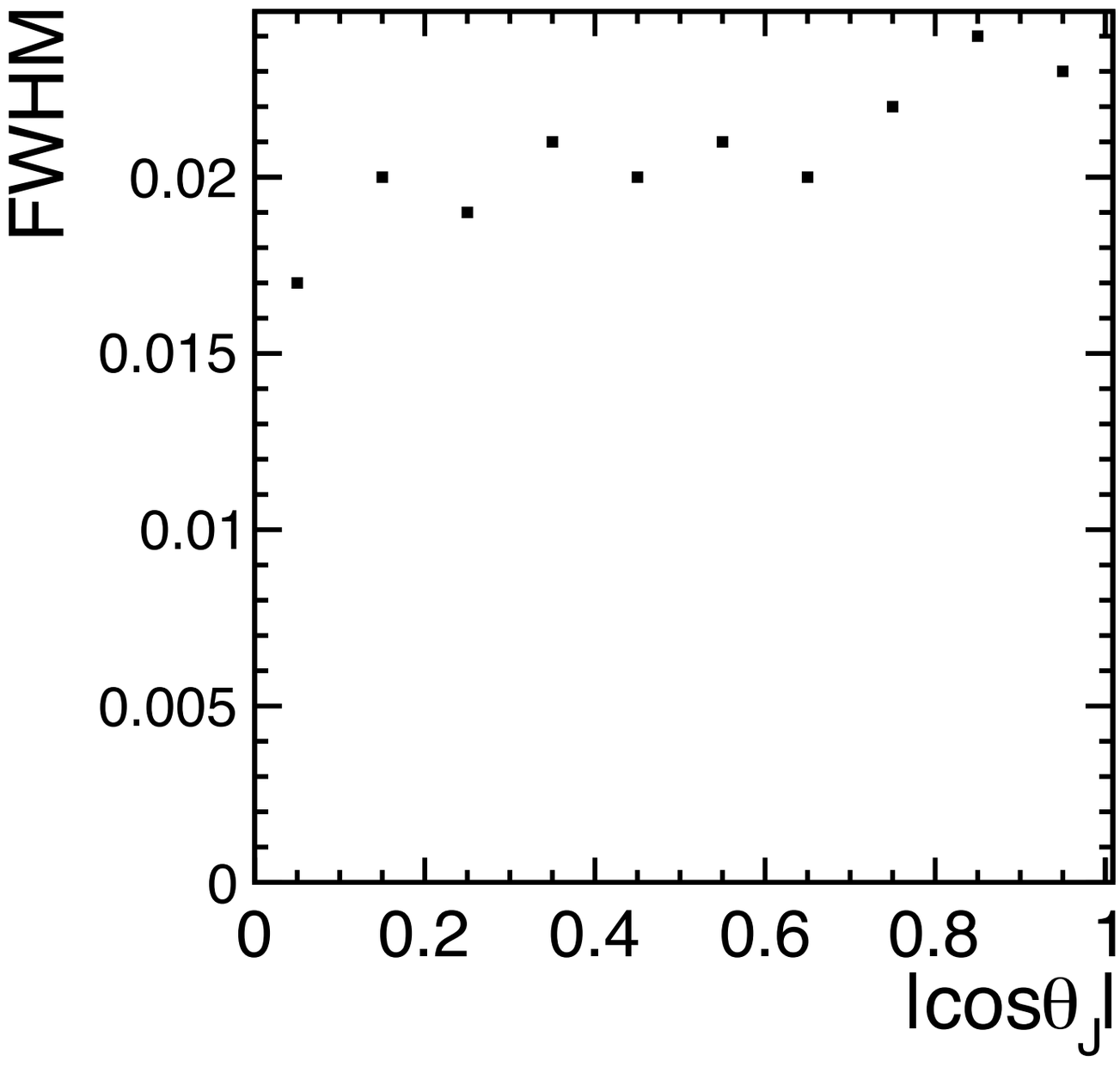


We can see slight θ dependence.
Forward JER is worse.
Distribution is not simple gaussian.

$$\frac{E_{JRec} - E_{JTrue}}{E_{JTrue}}$$

2.2. Method 3 Jet 1 energy resolution θ dependence

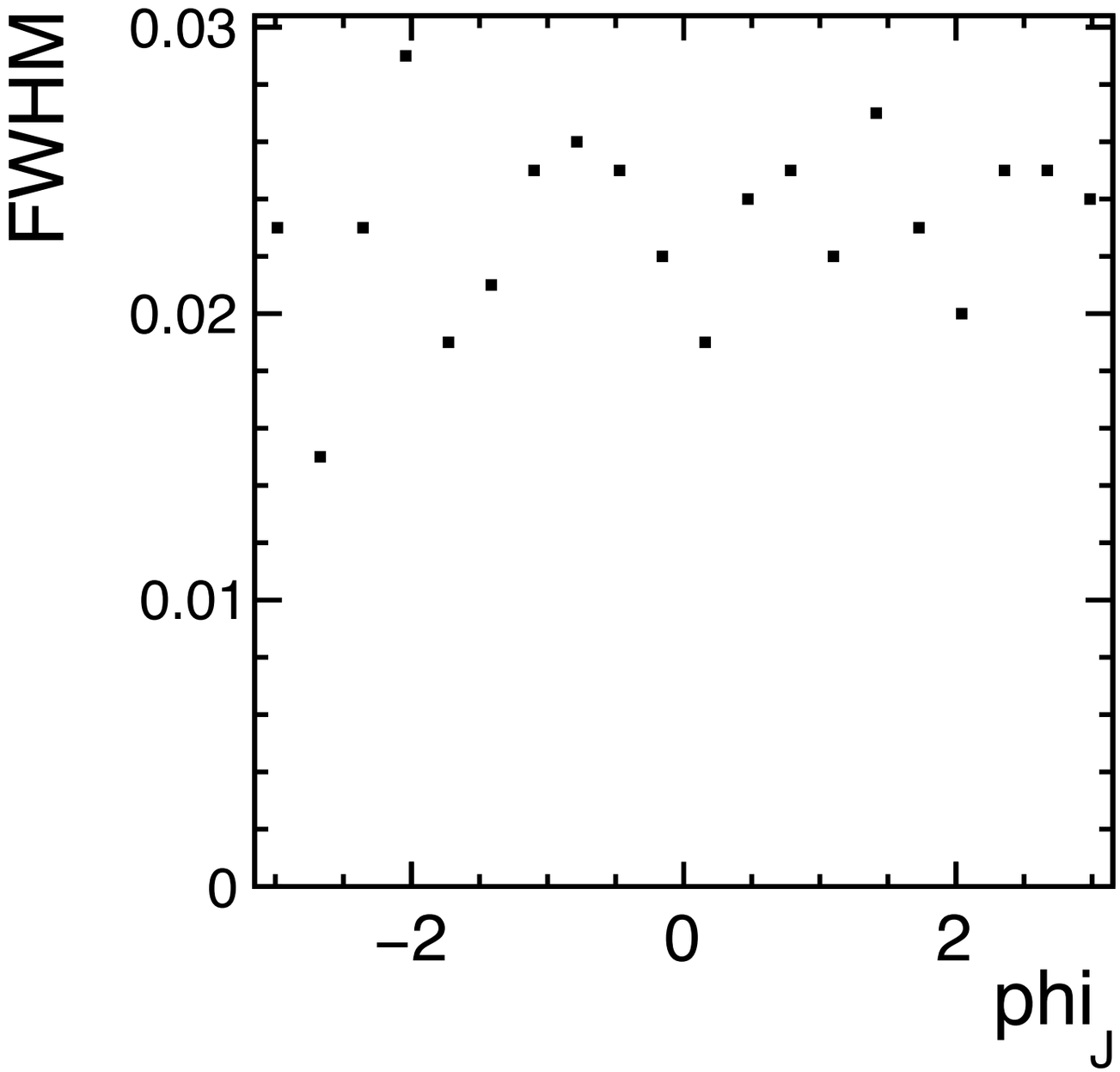
FWHM of $\frac{E_{JRec} - E_{JTrue}}{E_{JTrue}}$



- **We can see slight θ dependence.**
- **Forward JER is worse.**
- **Distribution is not simple gaussian.**

2.2. Method 3 Jet 1 energy resolution φ dependence

FWHM of $\frac{E_{JRec} - E_{JTrue}}{E_{JTrue}}$



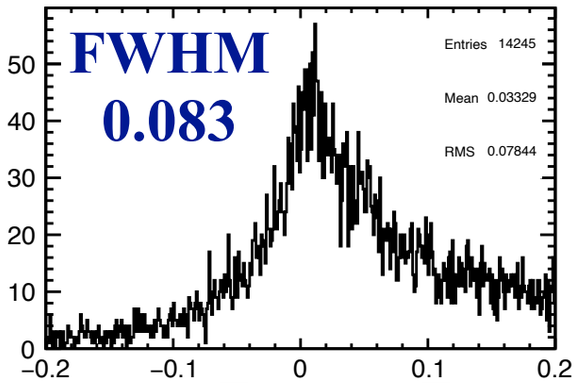
- **Could not judge whether there is some dependence or just a fluctuation**
- **I should try below.**

①check carefully what happens if I change the binning of (ERec-EMC)/ EMC distribution

②try to evaluate the error of FWHM.

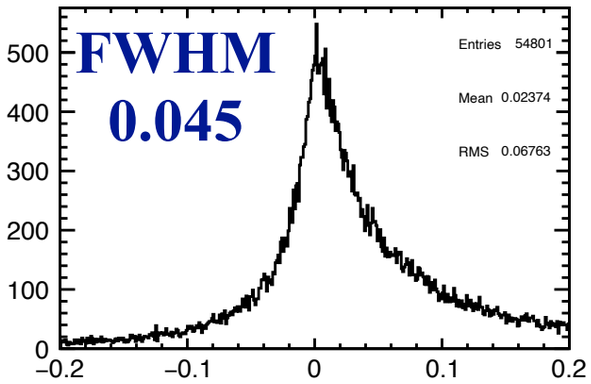
2.2. Method 3 Jet 1 energy resolution Energy dependence

50GeV<E_{J1}<100GeV



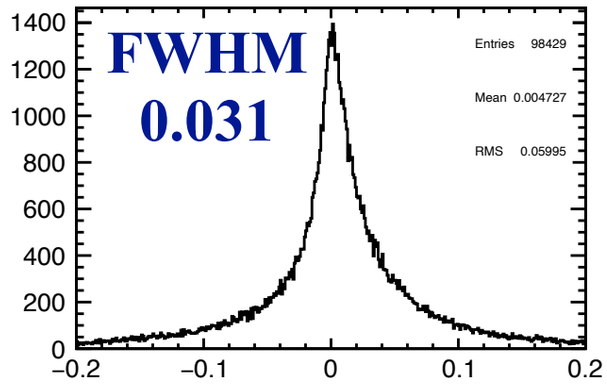
$$\frac{E_{JRec} - E_{JTrue}}{E_{JTrue}}$$

100GeV<E_{J1}<150GeV



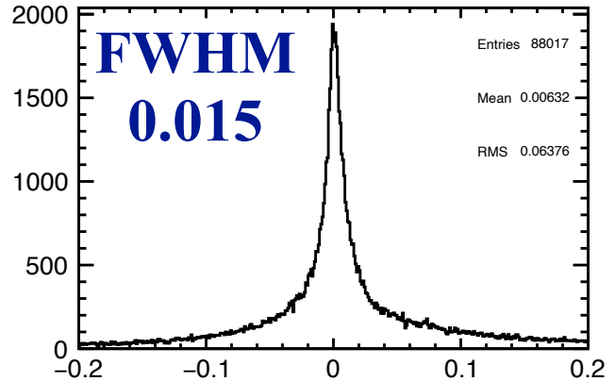
$$\frac{E_{JRec} - E_{JTrue}}{E_{JTrue}}$$

150GeV<E_{J1}<200GeV



$$\frac{E_{JRec} - E_{JTrue}}{E_{JTrue}}$$

200GeV<E_{J1}<250GeV



$$\frac{E_{JRec} - E_{JTrue}}{E_{JTrue}}$$

We can see clear jet energy dependence.

For the lower energy jets, JER is worse.

Thank you for your attention!