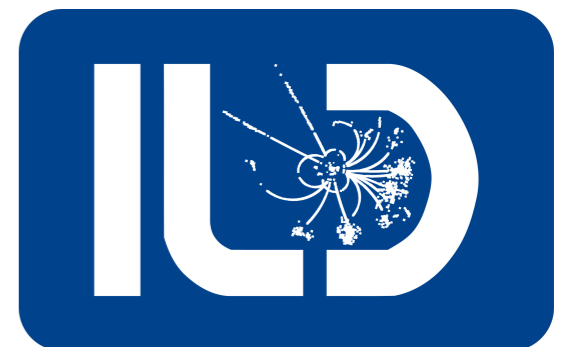


Jet Energy Scale Calibration using $e^+e^- \rightarrow \gamma Z$ process at the ILC

Takahiro Mizuno
SOKENDAI



Current status

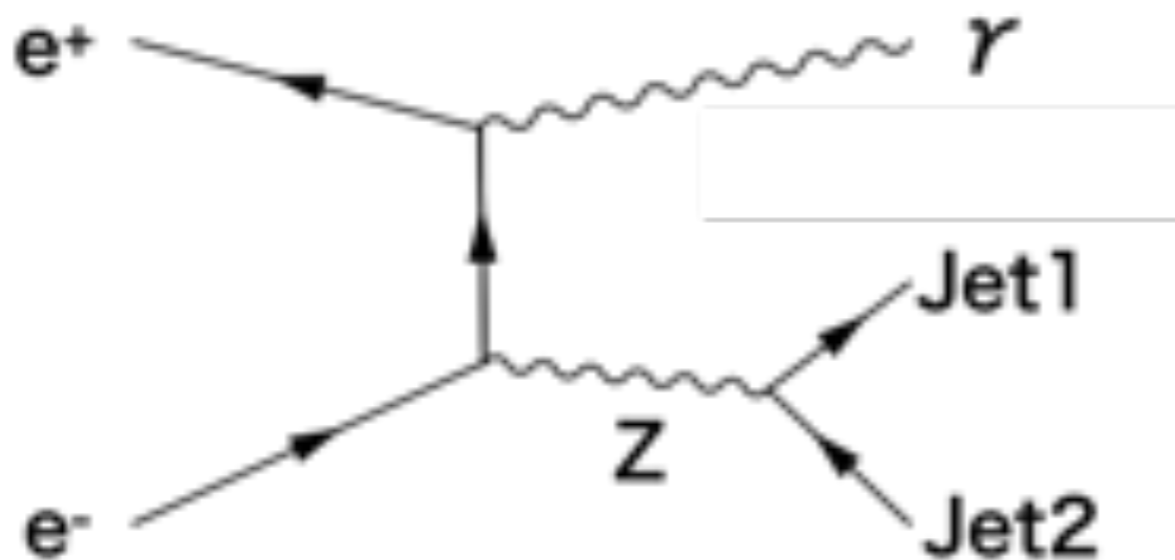
- Jet definition is modified and now we use jets using same particles in PFO and MC.
- Previous samples which I made plots reported last week contained a mistake.
- I found a bug.
The place of MCPhotonPointer was wrong.
Signal and ISR photon were not excluded to form the jets because the definition of the pointer was in an “if statement”.
It is fixed and new root files are generated.

Jet E Reconstruction

Measured: PFO Jet E

Reconstructed: Ang.Method below

Ang.Method: Jet energies based on jet angles and masses using 4-momentum conservation



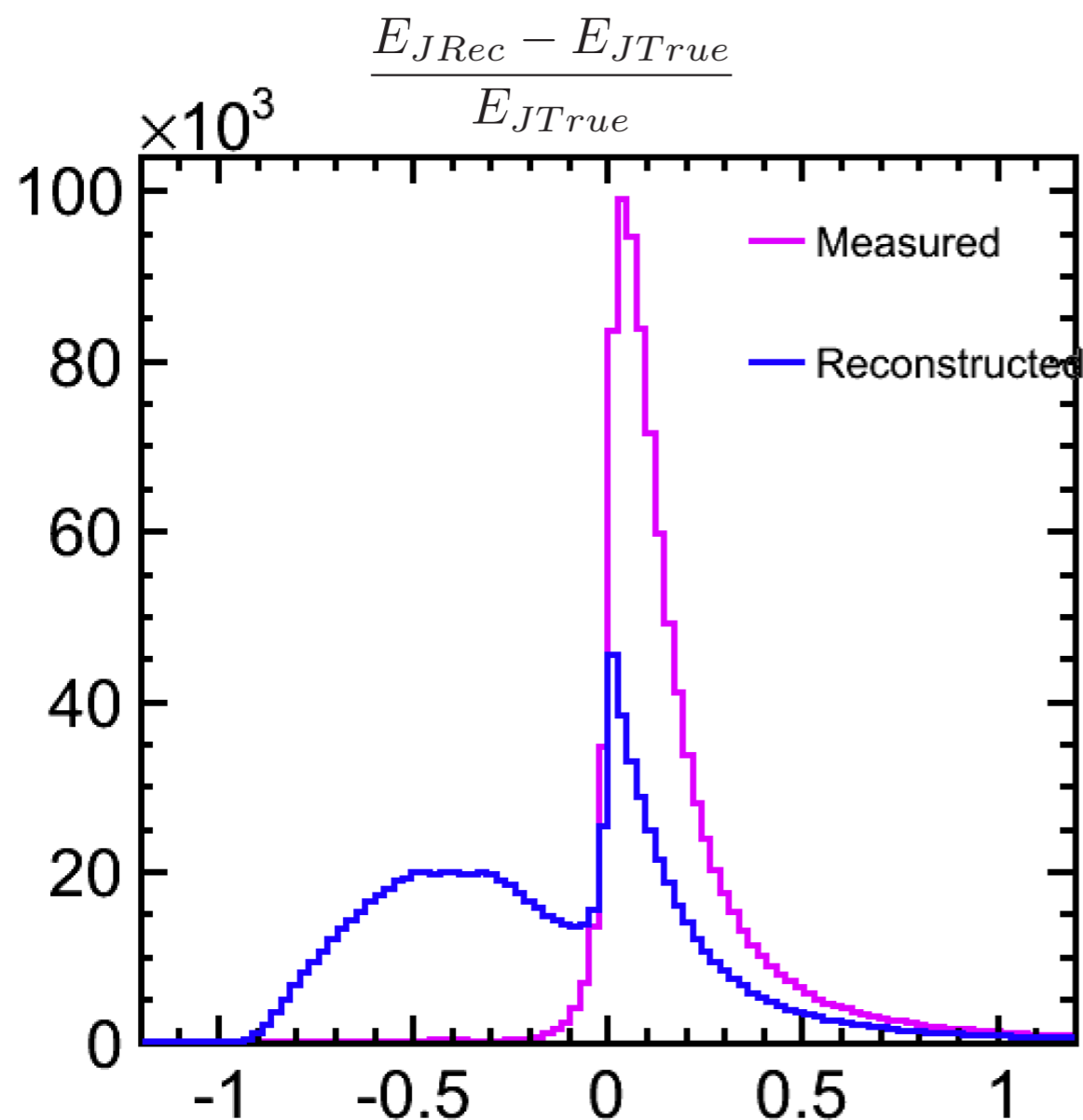
Direction Angle
 θ : polar angle
 ϕ : azimuthal angle

Inputs and outputs

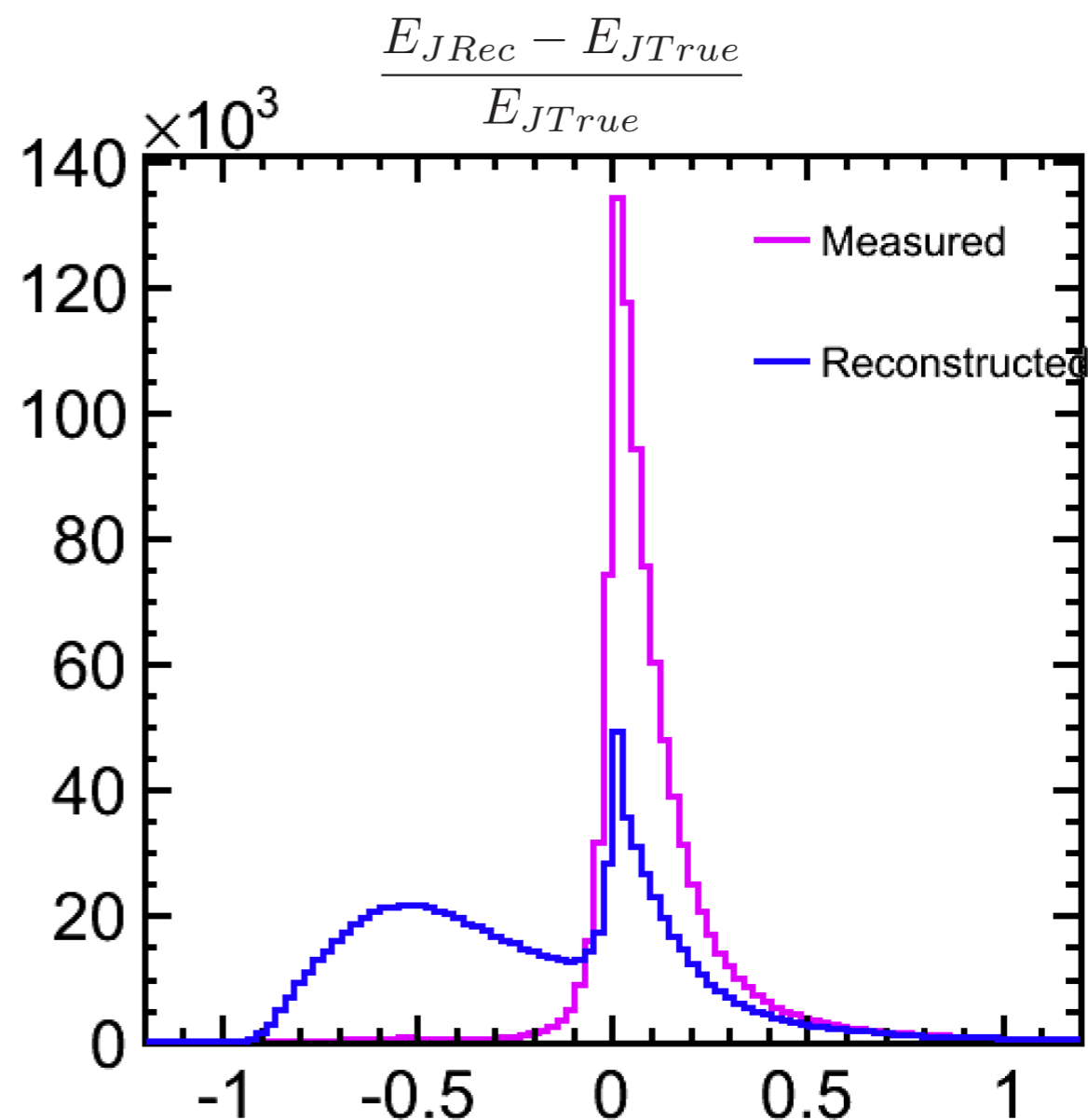
Using $(\theta_{J1}, \theta_{J2}, \theta_{\gamma}, \phi_{J1}, \phi_{J2}, \phi_{\gamma}, m_{J1}, m_{J2}) \rightarrow$ Determine $(P_{J1}, P_{J2}, P_{\gamma}, P_{ISR})$

Jet Energy Reconstruction Result

Jet 1



Jet 2

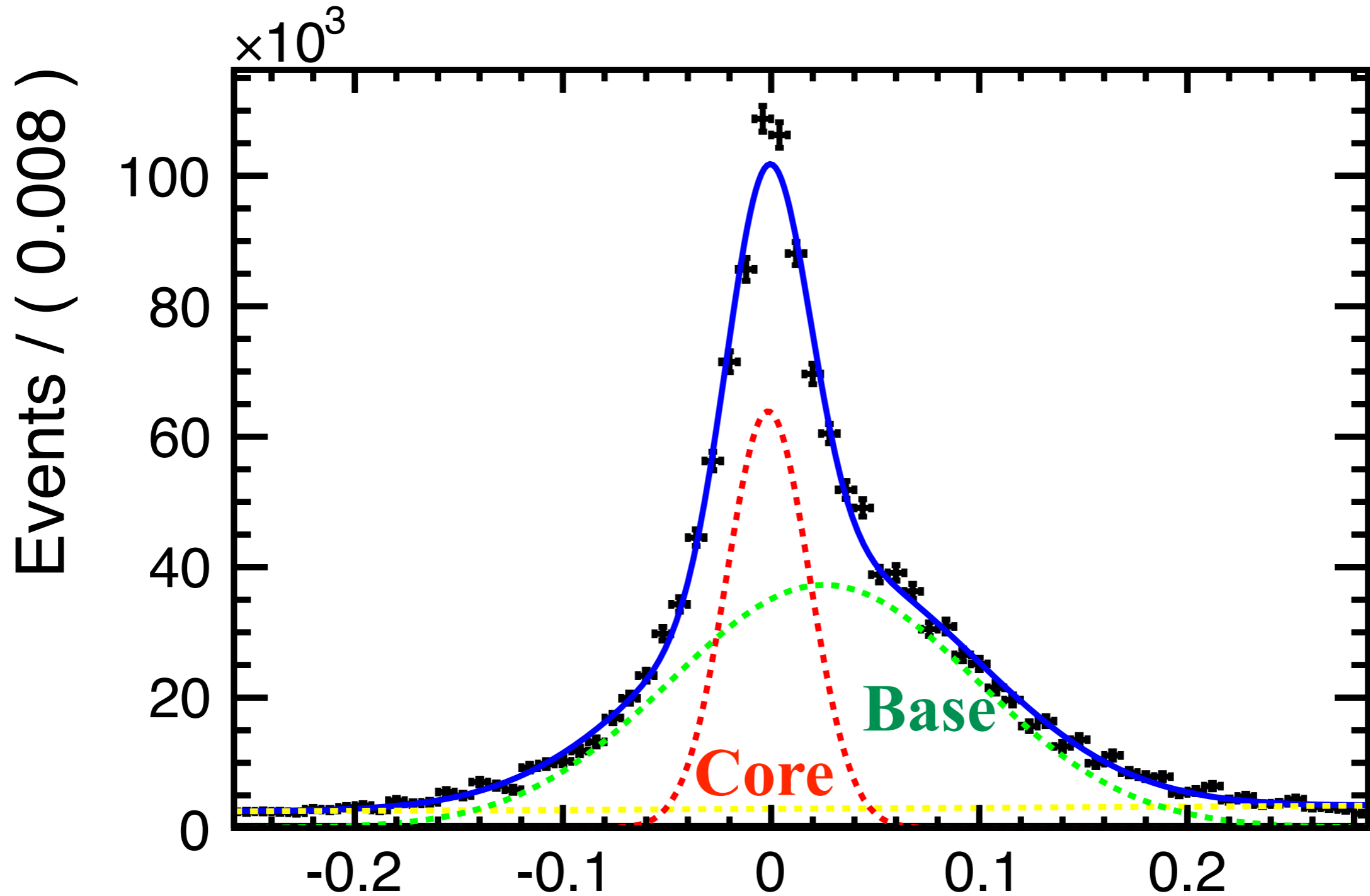


**Reconstructed energy has a bump in negative region.
Measured energy tends to have positive bias.**

Fit the relative difference of reconstructed jet energy with

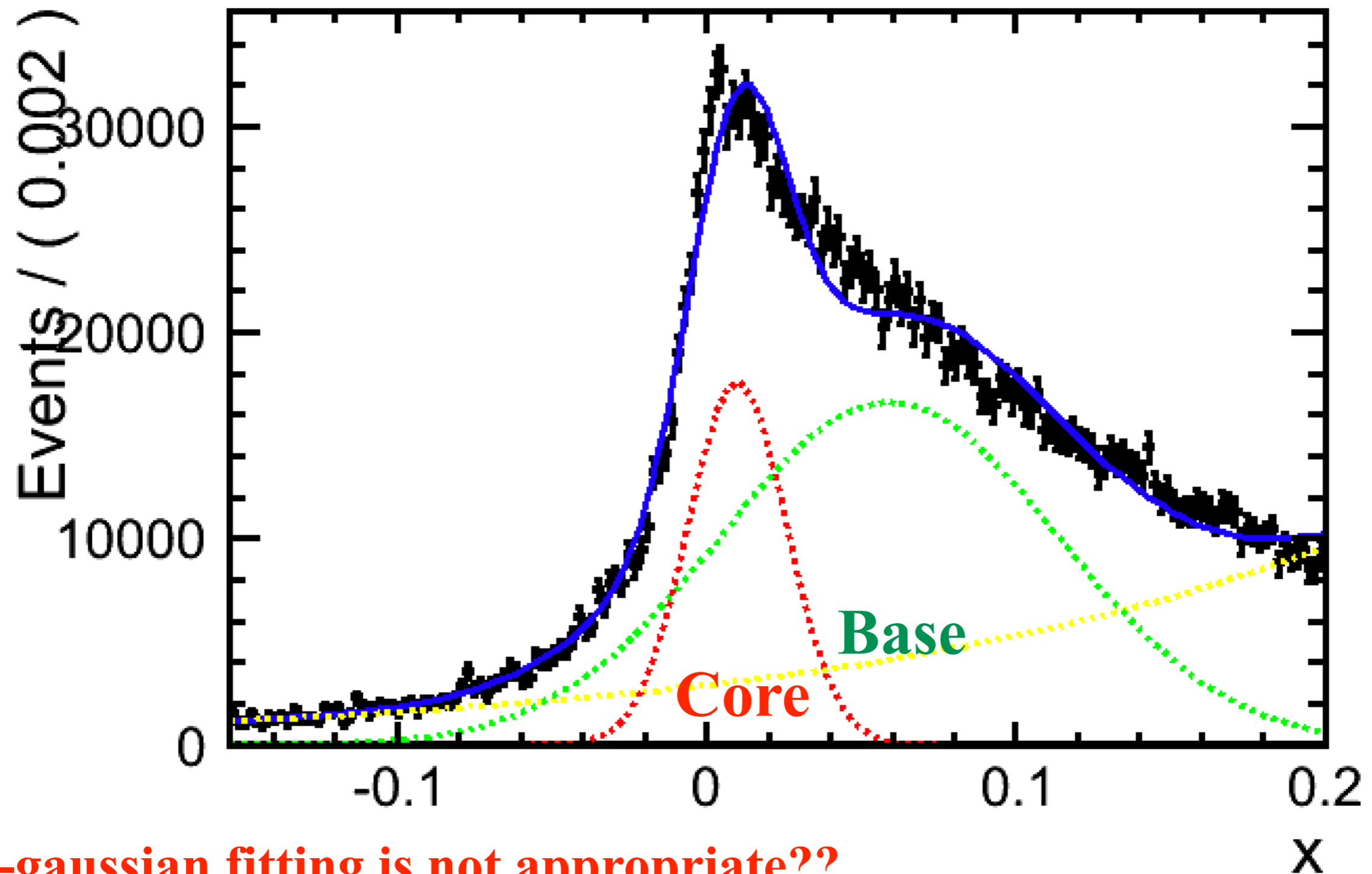
Gaus (Core)+Gaus (Base)+exponential

Calibration is based on **the mean value of the Gaus (Core).**



-> Check the **energy** dependence.

Ang. Method $\frac{E_{JRec} - E_{JTtrue}}{E_{JTtrue}}$ fitting



2-gaussian fitting is not appropriate??



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

