

Measuring Jet Energy Resolution

Ron Cassell

3/31/11

- 3 different data sets used to measure jet energy resolution
- 3 different answers.
- QQ no beam/brem/gluon:
100,200,350,500,1000 GeV
- uds with gluon radiation: 91,200,360,500 GeV
- Single u: 50,100,250,500 GeV

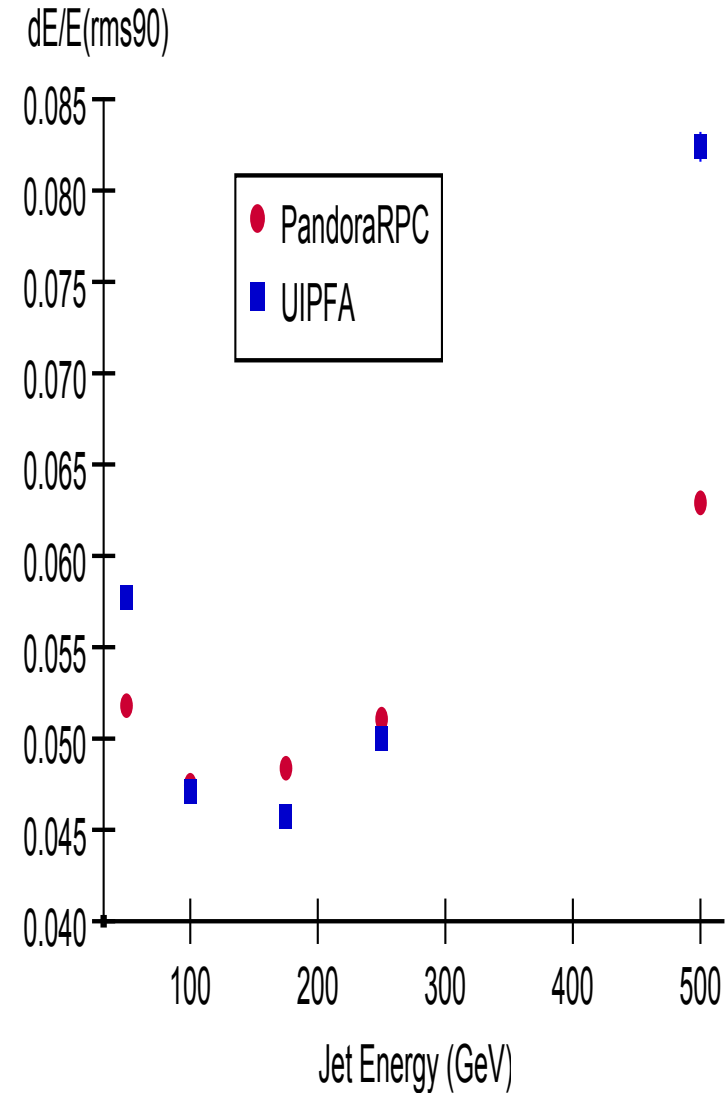
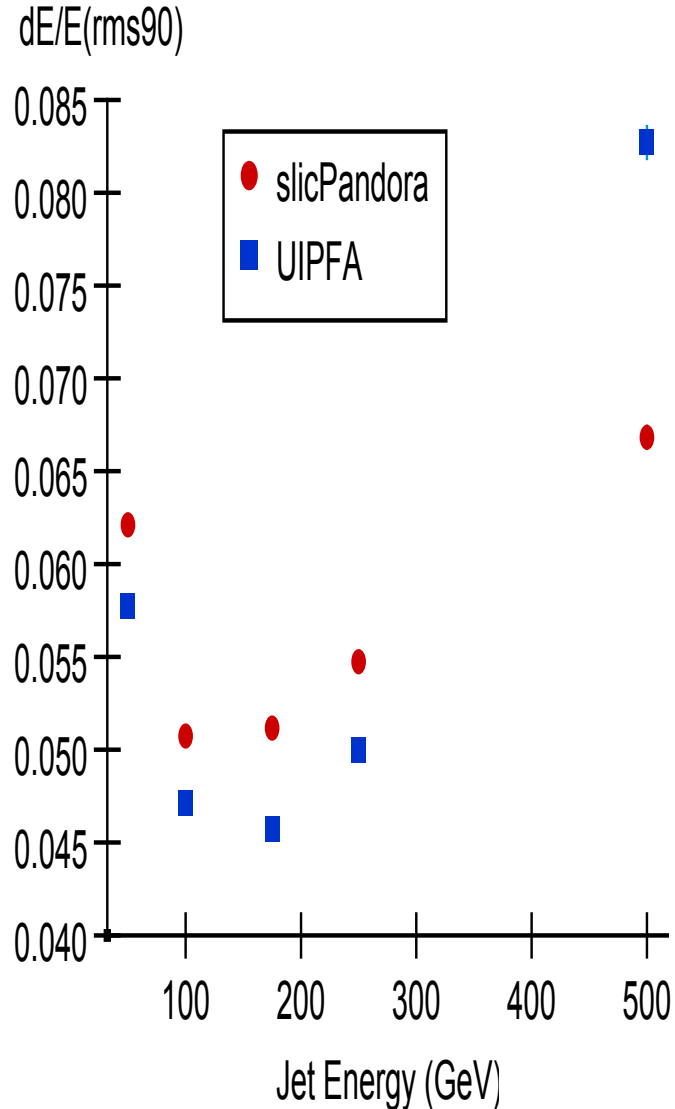
Jet Energy Resolution: sidloi3: cos < 0.95

QQ_sidloi3.aida

- Cut events with $q |\cos\theta| > 0.95$.

- Plot sum of energy of all Reconstructed Particles.

- Use distribution $(\text{rms90}/\text{mean90}) * \text{sqrt}(2)$

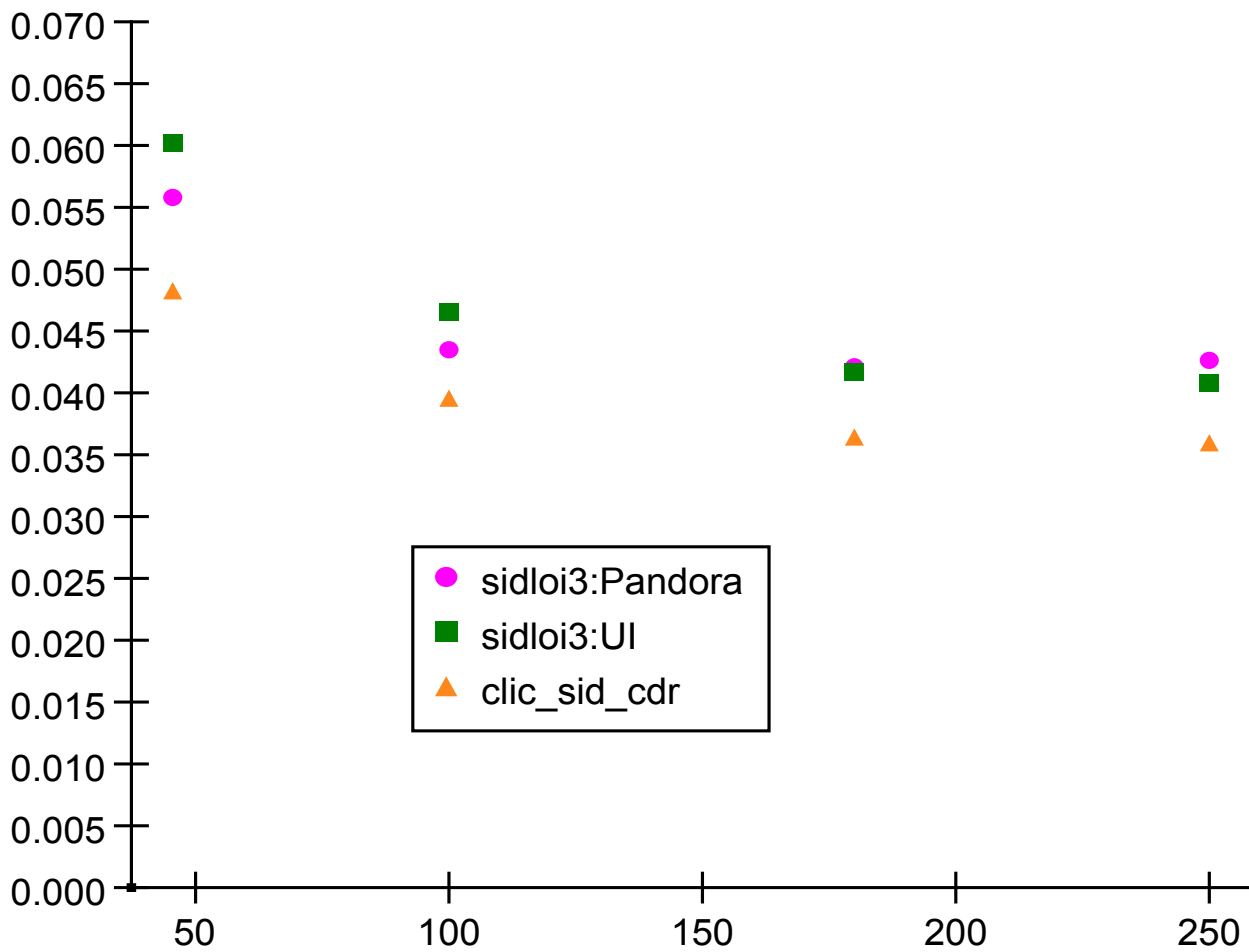


uds files

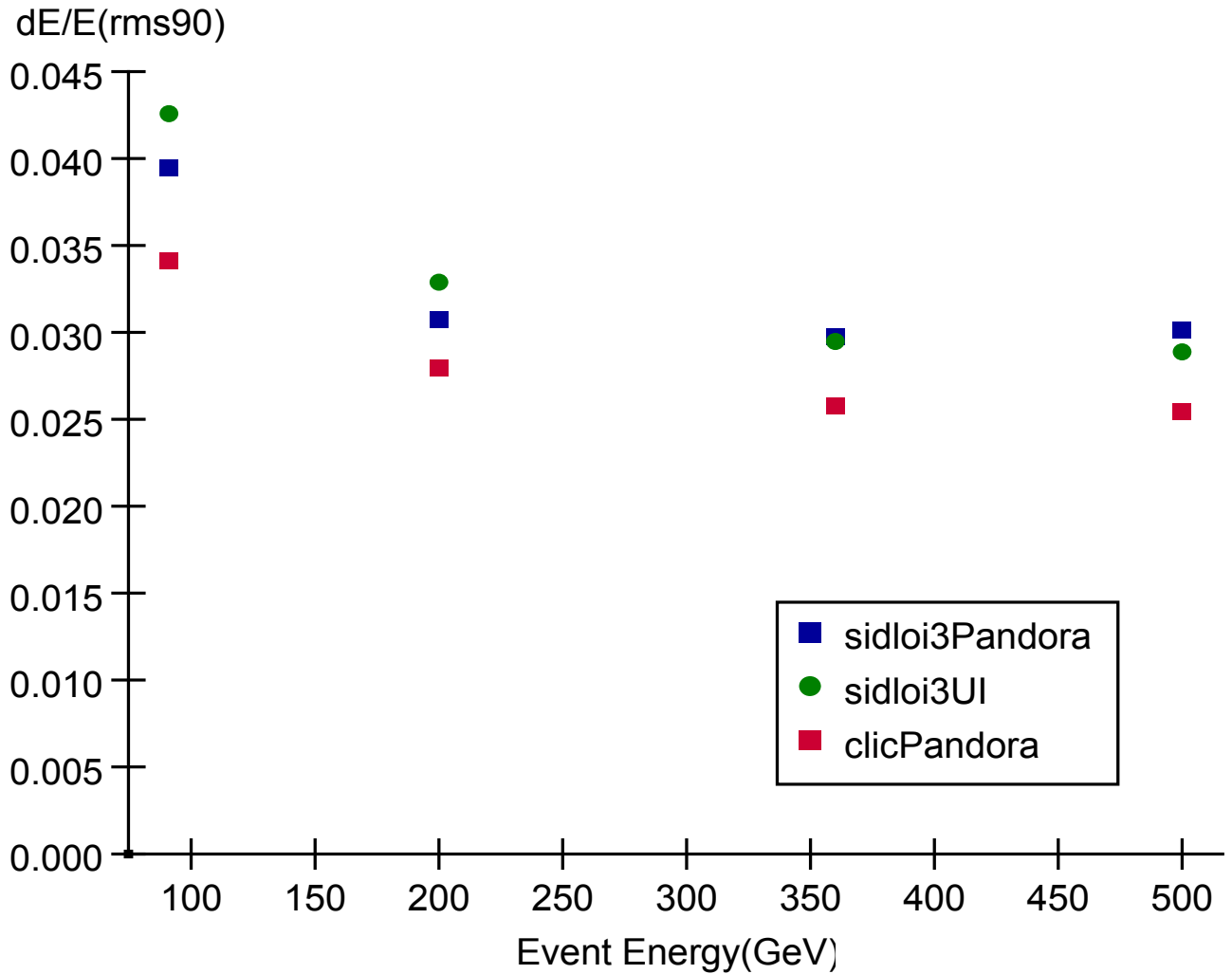
- Apply same $\cos\theta < 0.95$ cut as with QQ events.

uds

- Cut events with $q |\cos\theta| > 0.95$.
- Plot sum of energy of all Reconstructed Particles.
- Use distribution $(\text{rms90}/\text{mean90}) * \sqrt{2}$



uds events: Event energy resolution



- Cut events with $q |\cos\theta| > 0.95$.

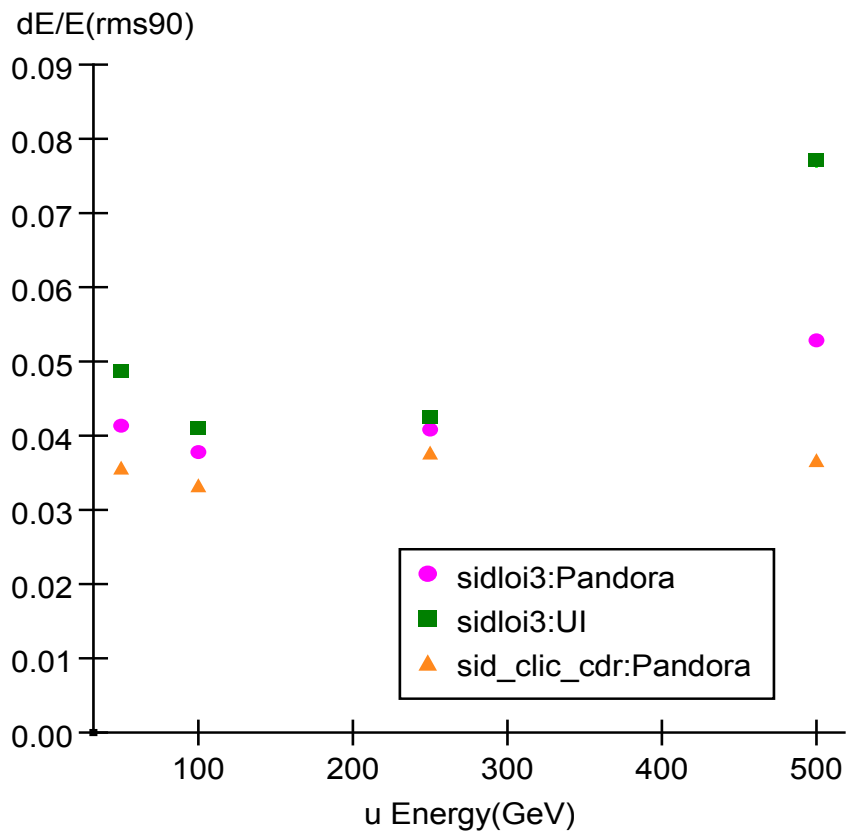
- Plot sum of energy of all ReconstructedParticles.

- Use distribution $(\text{rms90}/\text{mean90})$

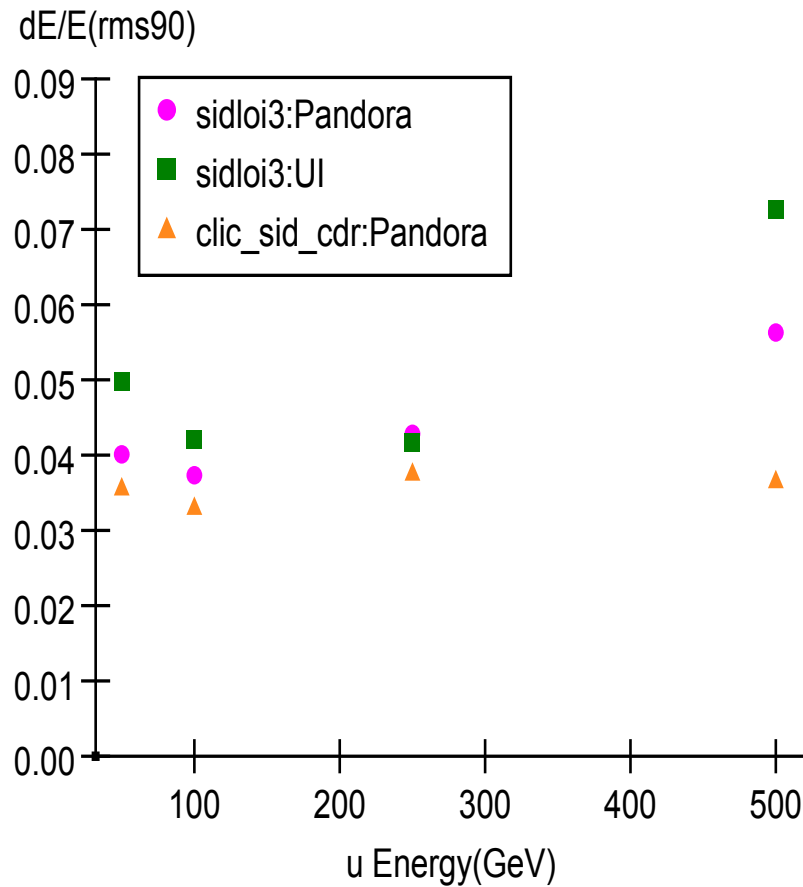
Single u quarks

- Apply cut $\cos\Theta < 0.95$
- For barrel only, $\cos\Theta < 0.8$

Single u: $\cos\Theta < 0.8$



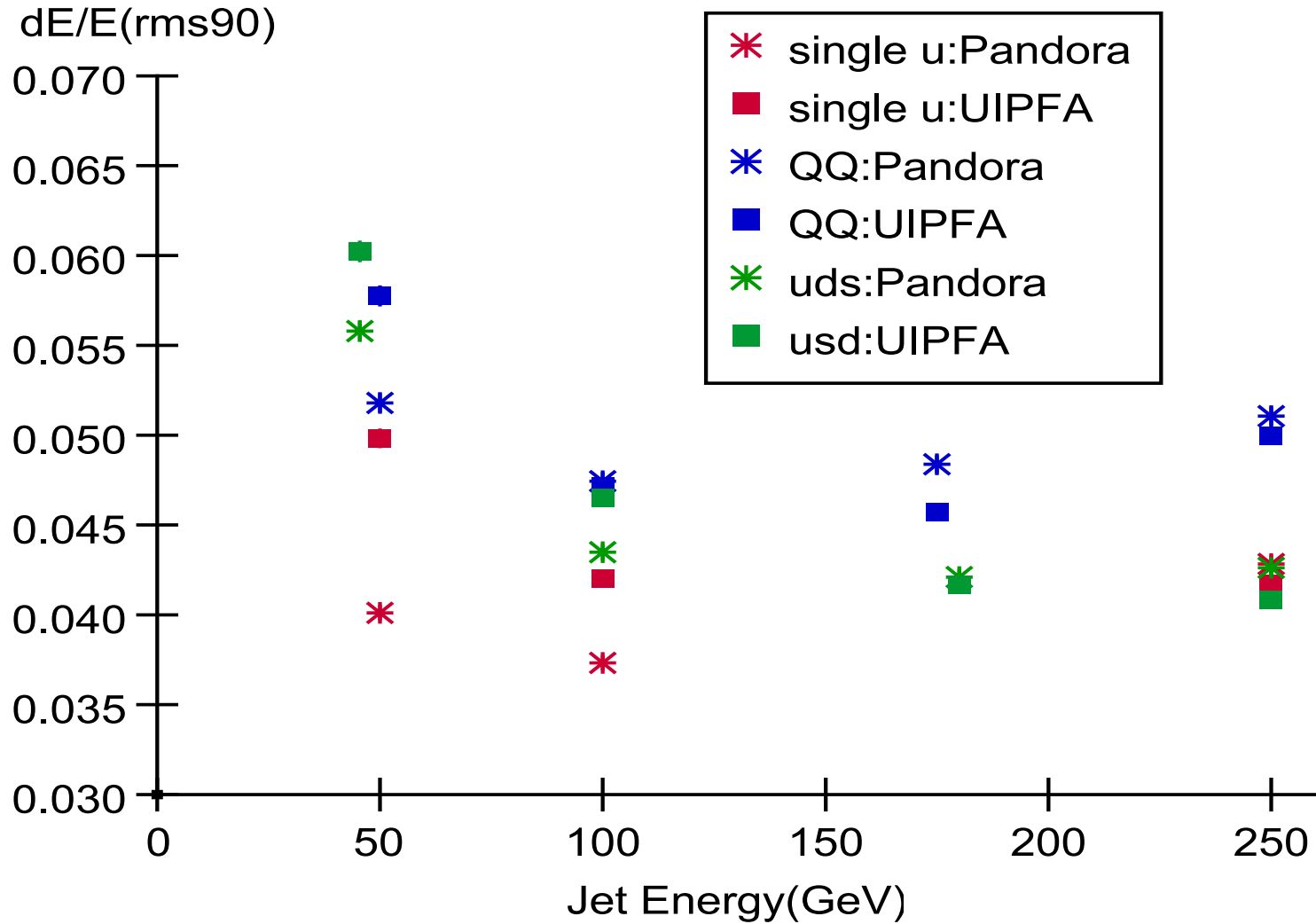
Single u: $\cos\Theta < 0.95$



Jet E resolution

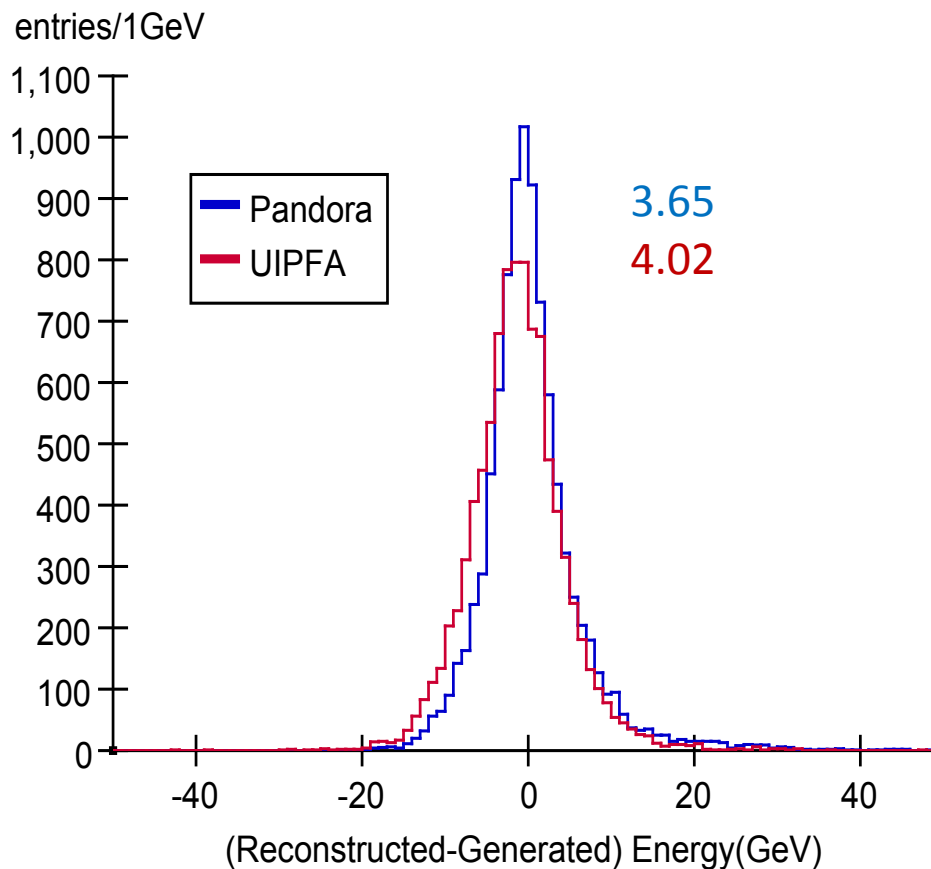
- For QQ and uds data sets, event energy resolution is measured, and multiplied by $\sqrt{2}$ (2 identical jets) for jet E resolution.
- For single u, jet E resolution measured directly
- Difference in results shown on next page

Jet energy resolution: $\cos\Theta < 0.95$

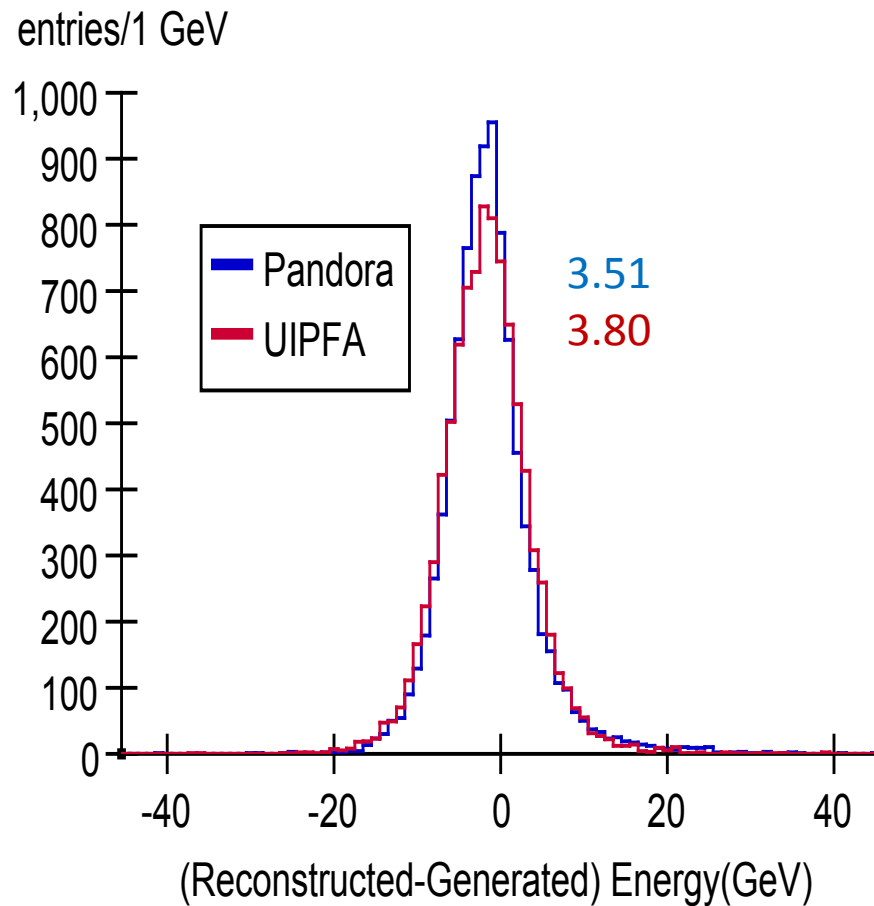


Backups

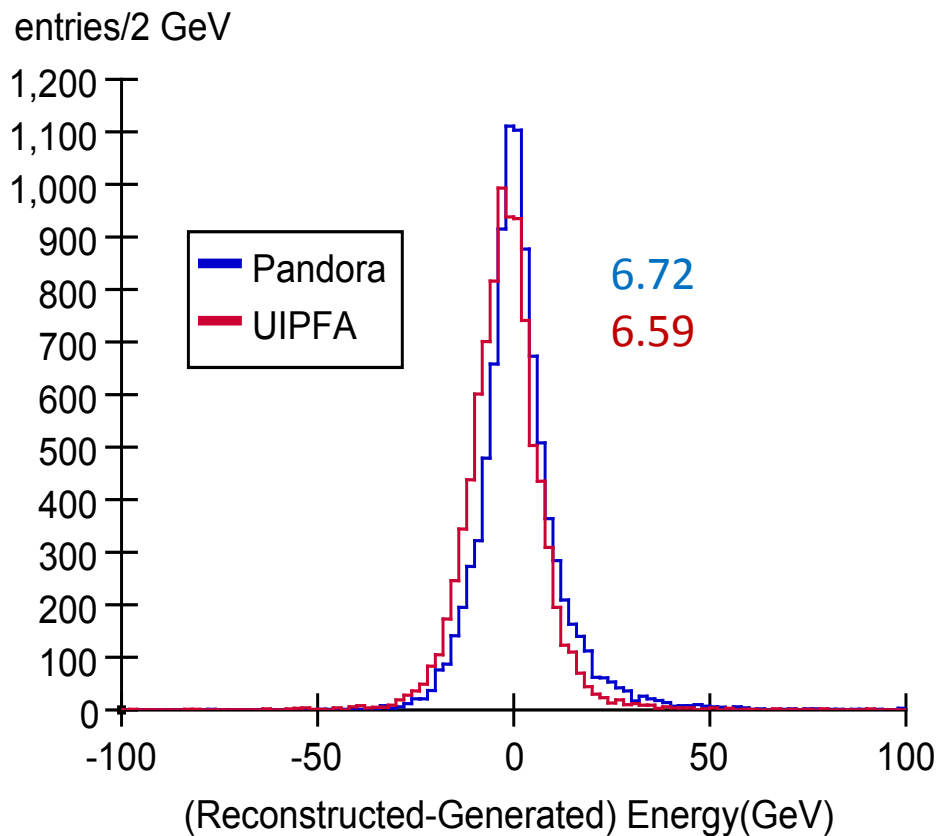
QQ_sidloi3:Ecm=100GeV



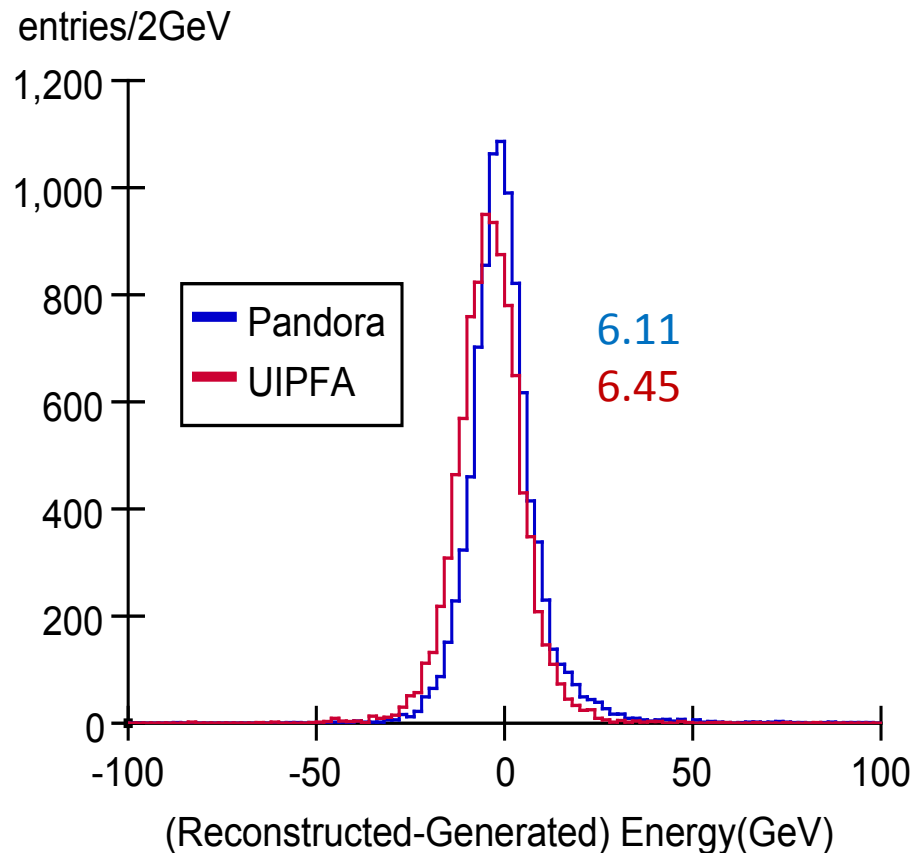
uds_sidloi3:Ecm=91



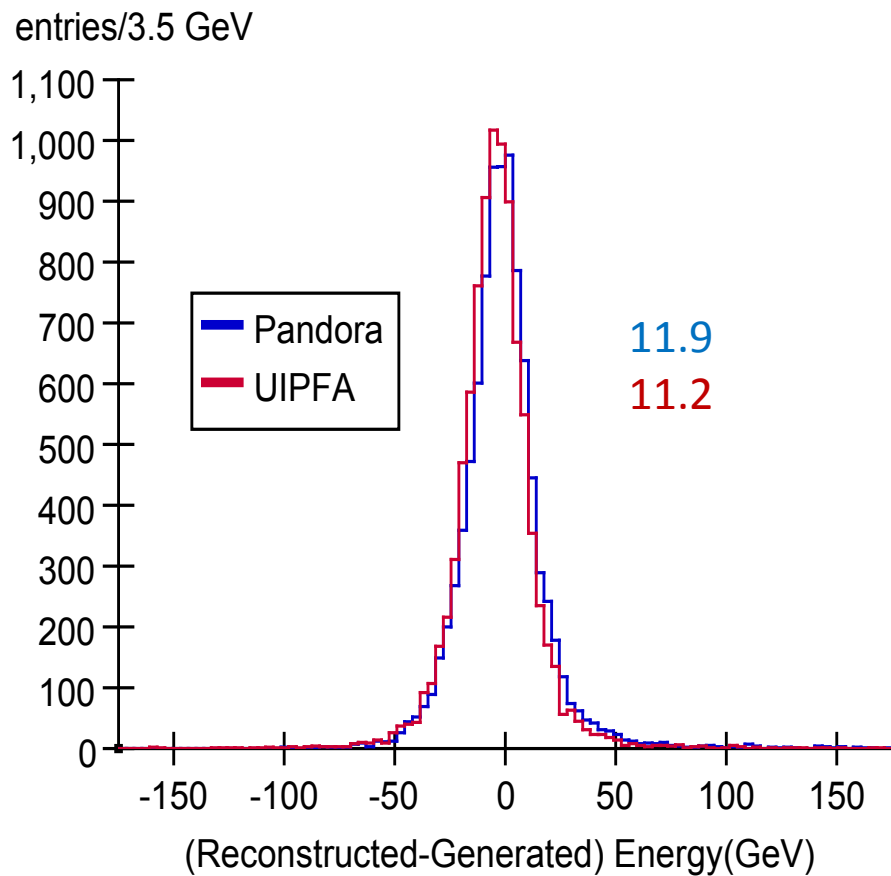
QQ_sidloi3:Ecm=200



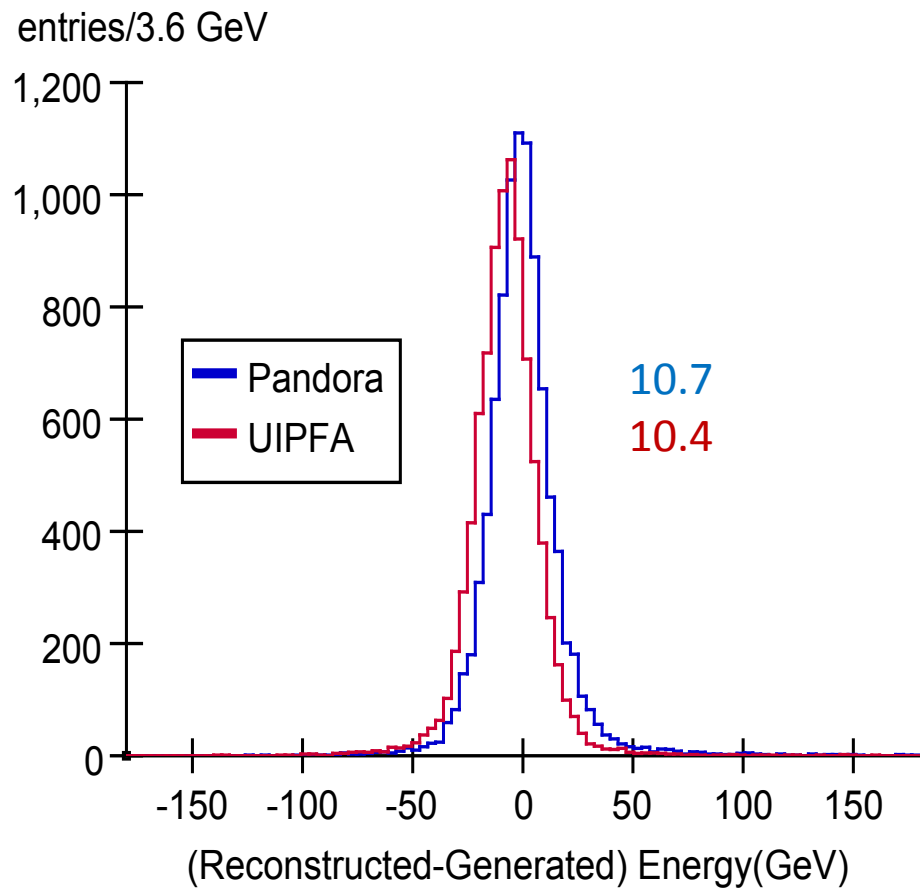
uds_sidloi3:Ecm=200



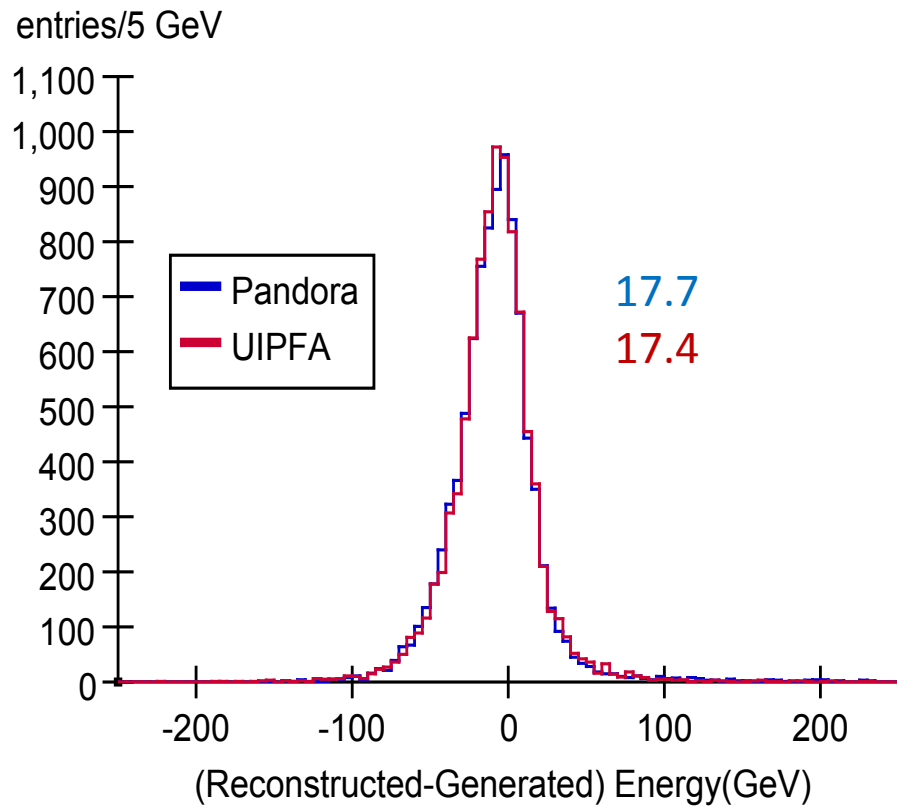
QQ_sidloi3:Ecm=350



uds_sidloi3:Ecm=360



QQ_sidloi3:Ecm=500



uds_sidloi3:Ecm=500

