



PandoraPFA: Software Compensation

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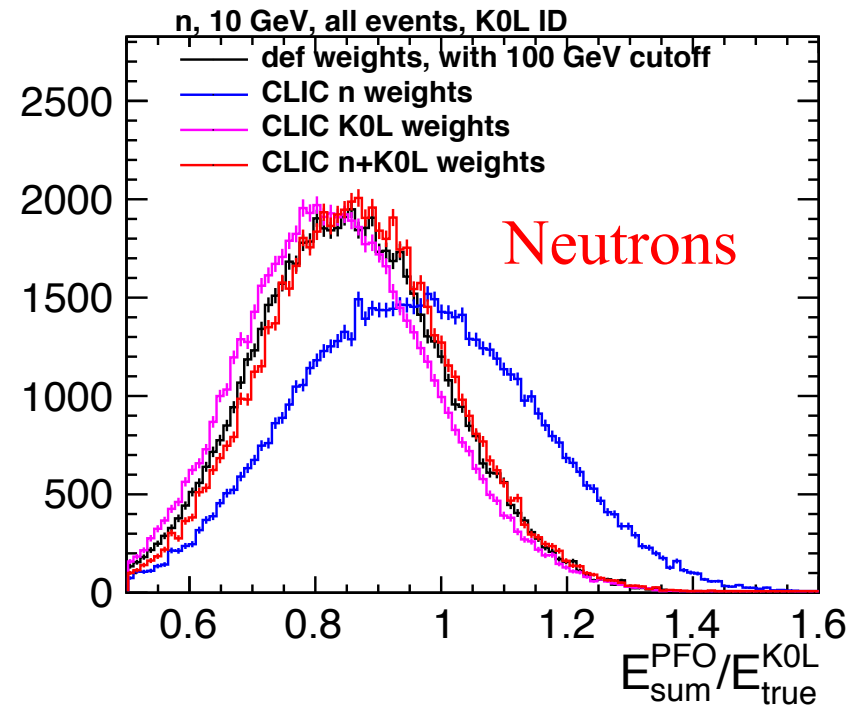
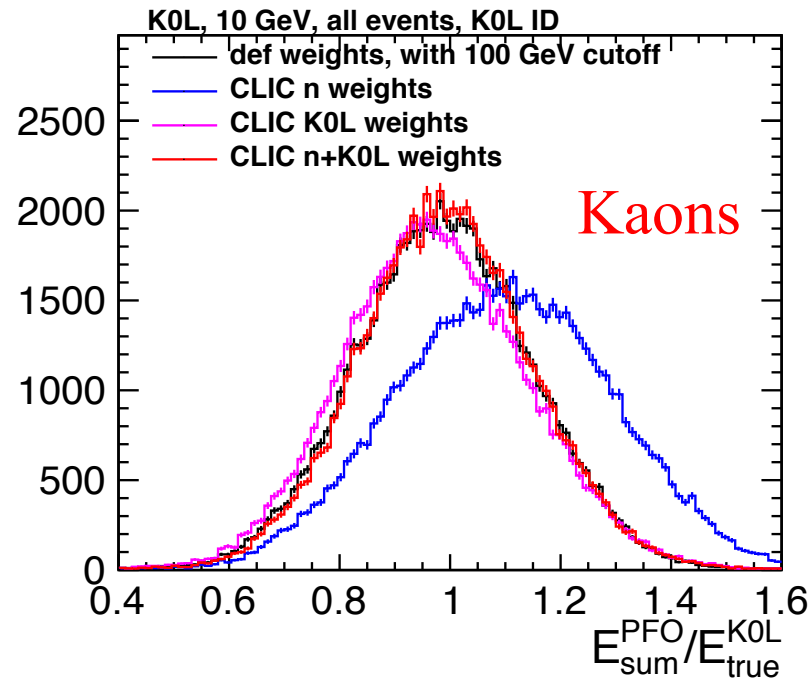
Single Hadron response closures: low energy Kaons and neutrons



10 GeV Kaons and neutrons:

Kaon response mean around 1 besides for neutron weights

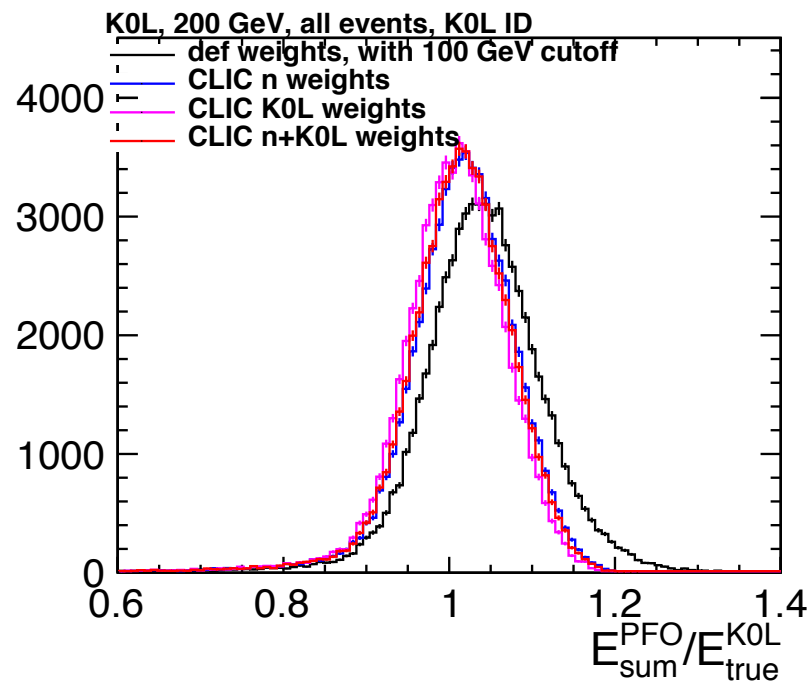
Neutron response mean the opposite: response only close to 1 for software compensation weights from neutrons (response difference between neutrons and Kaons expected)



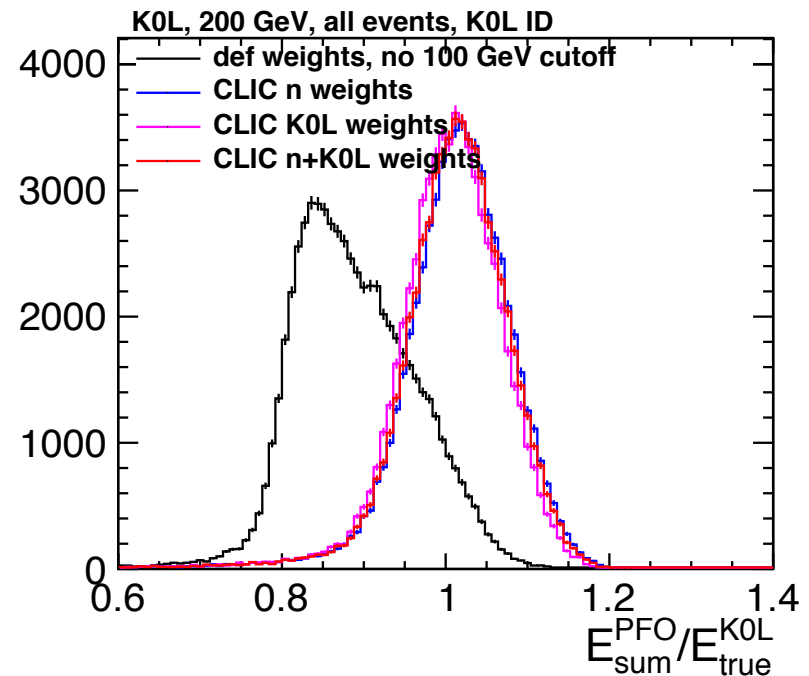
Single Hadron response closures: Kaons at 200 GeV



At this point per default the ILD derived weights are not applied anymore (application threshold at 100 GeV) → check performance if we increase this threshold to 1800 GeV



Default (black): no ILD weights applied



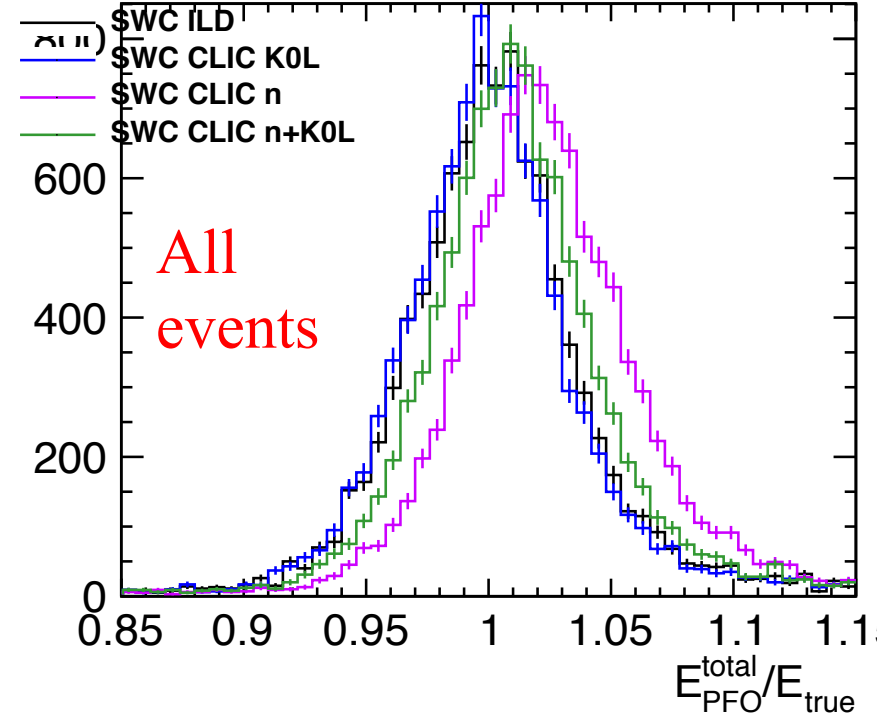
Black: ILD weights applied
Definitely a bad idea

Jet Energy Resolution

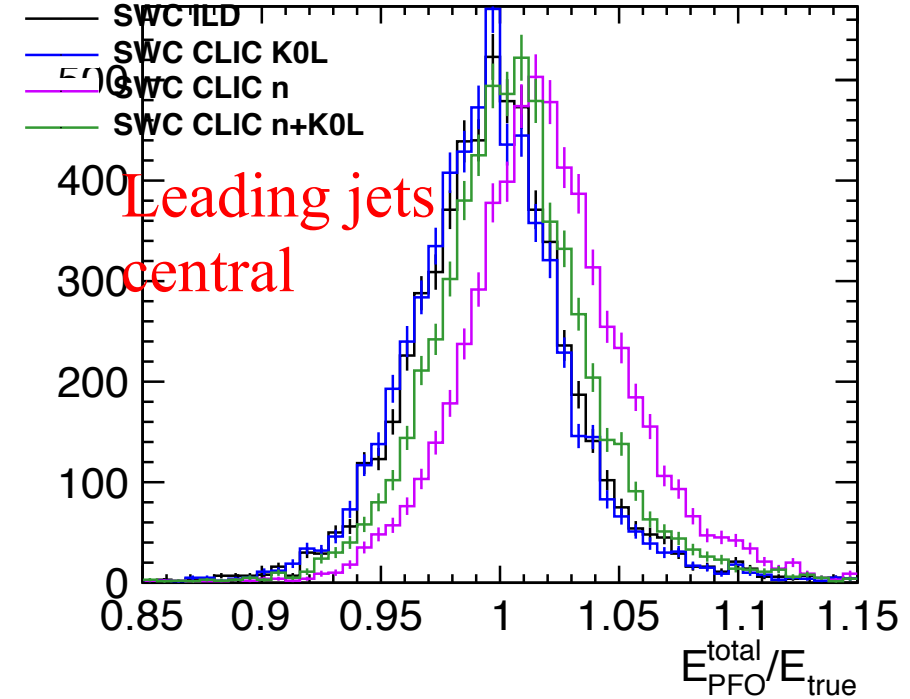
Z to u/d/s sample at 380 GeV



Z → uds, 380 GeV



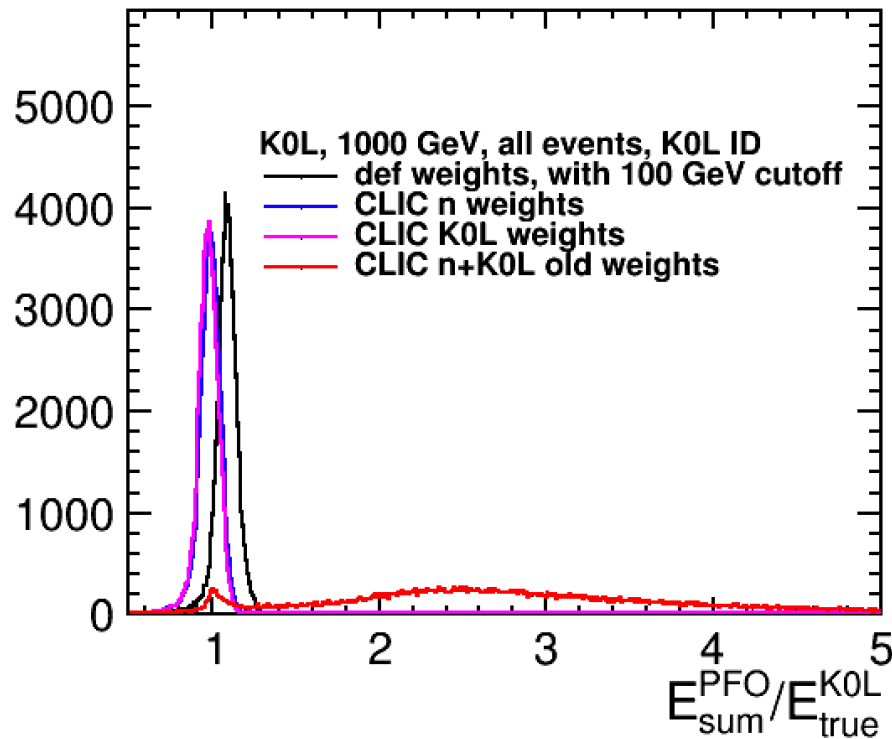
Z → uds, 380 GeV, $|\theta(j_1, j_2)| < 0.7$



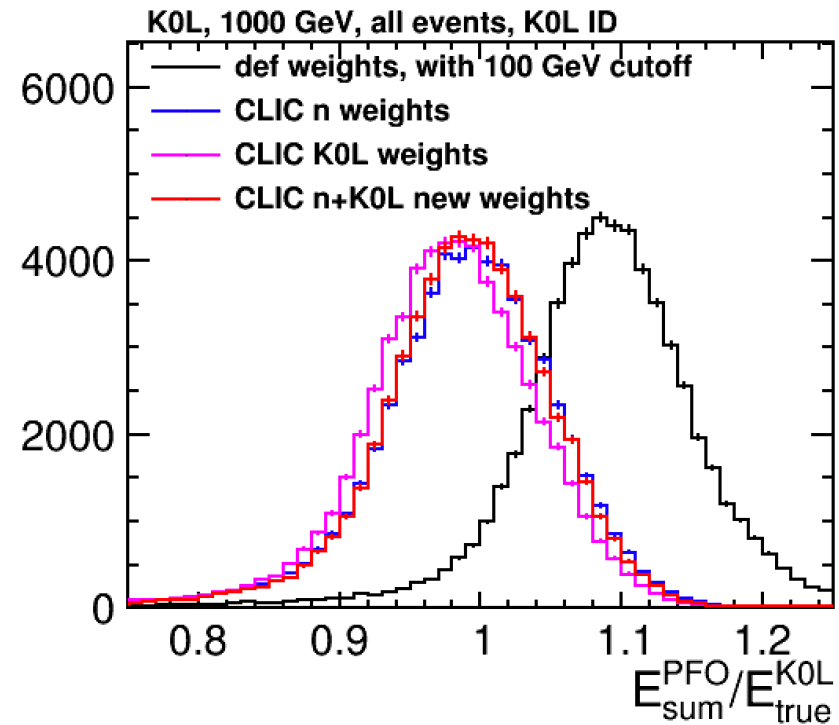
For neutron derived weights response larger than desired, asymmetric tail to larger energies for ILD setting

mean/RMS ILD 1.00267/0.0383557
 mean/RMS K0L 1.00055/0.0380975
 mean/RMS n 1.02361/0.0381131
 mean/RMS K0L+n 1.01078/0.0378763

Issue at high energies for n&K0L combined sample SWC weights



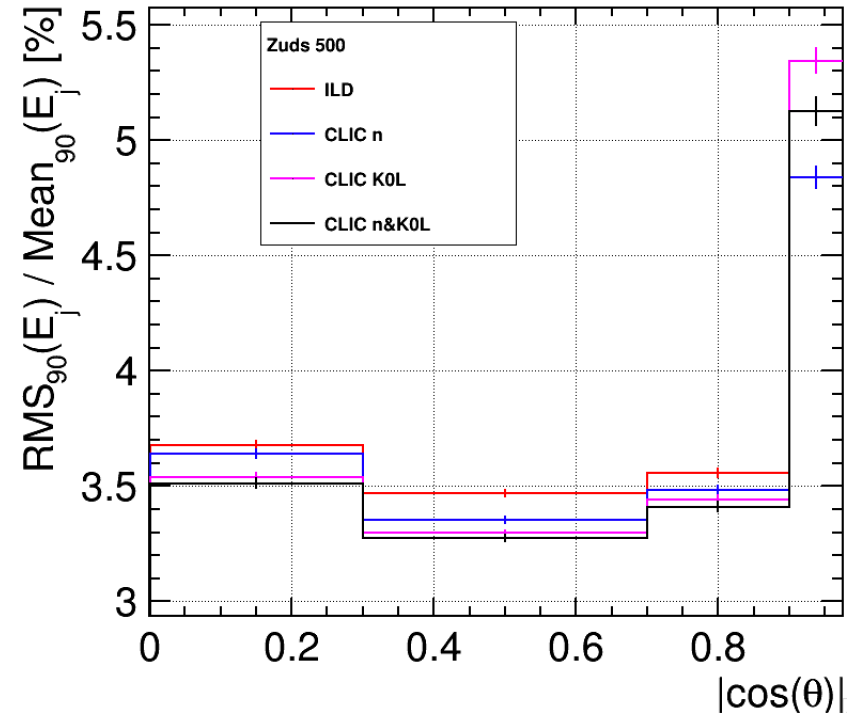
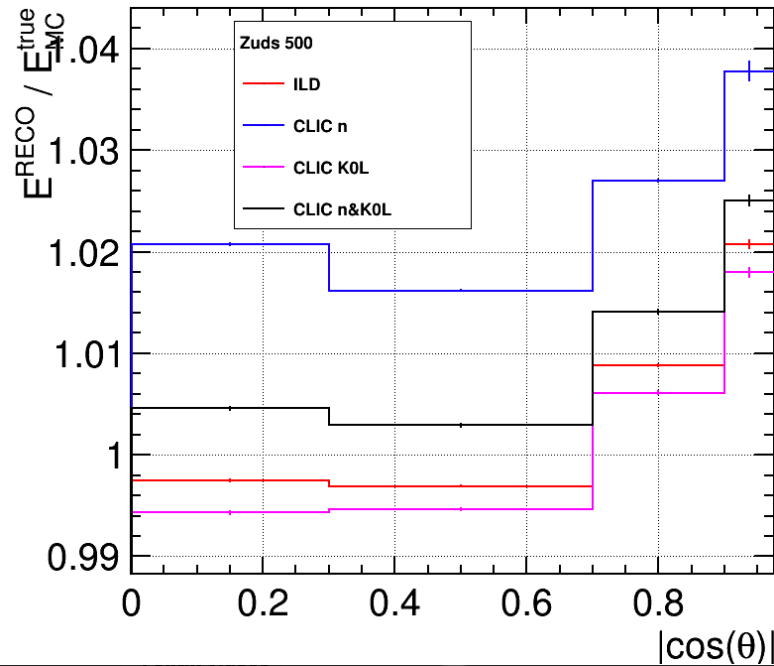
Tuned only up to 400 GeV neutral hadrons, works perfectly fine for 500 GeV hadron dataset, fails catastrophically for 1000 GeV hadrons



Considerable improvement using 1000 GeV sample for tuning

Jet Energy Resolution

Z to u/d/s sample at 500 GeV

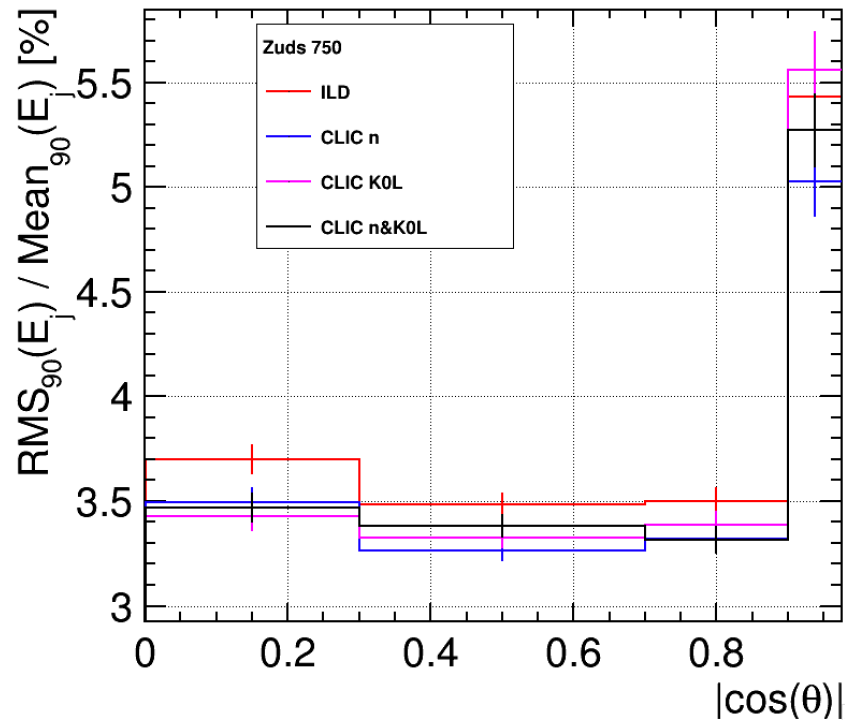


Mean of energy best for K0L case, with neutron derived SWC mean slightly too high

Considerable improvement in jet energy resolution compared to old SWC weights → new weights from n+K0L have been used

Jet Energy Resolution

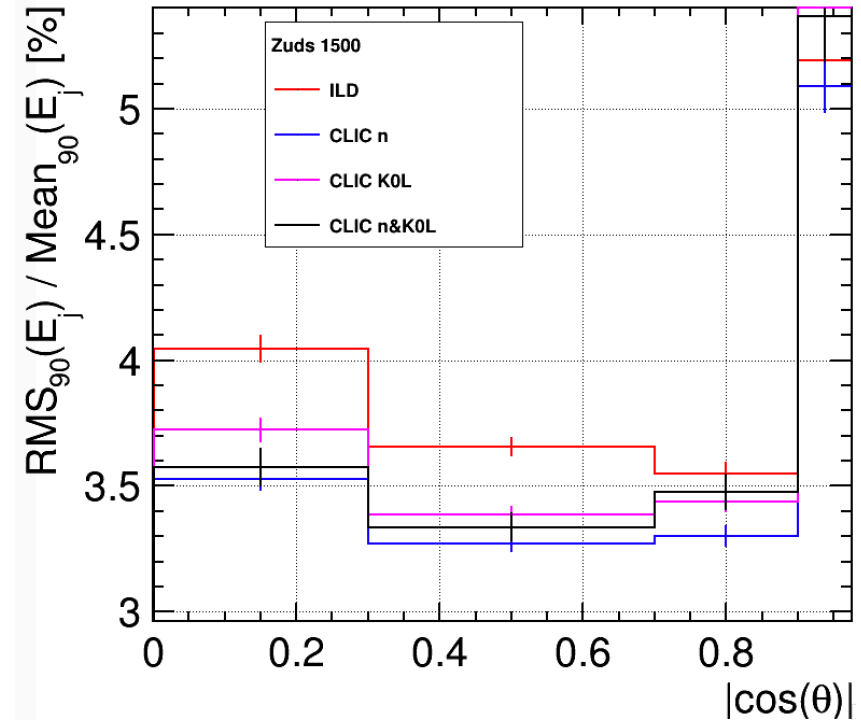
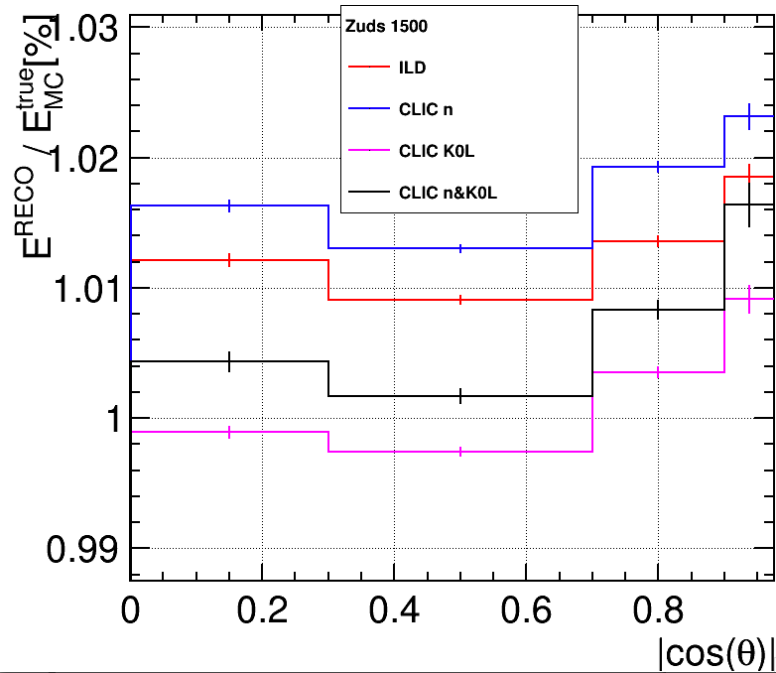
Z to u/d/s sample at 750 GeV



Considerable improvement in jet energy resolution compared to old SWC weights

Jet Energy Resolution

Z to u/d/s sample at 1500 GeV



Mean of energy best for K0L case, with neutron derived SWC mean slightly too high

Considerable improvement in jet energy resolution compared to old SWC weights → new weights from n+K0L have been used