

v0.8 Lattice, newest noBIB and BIB samples

27 Feb 2025





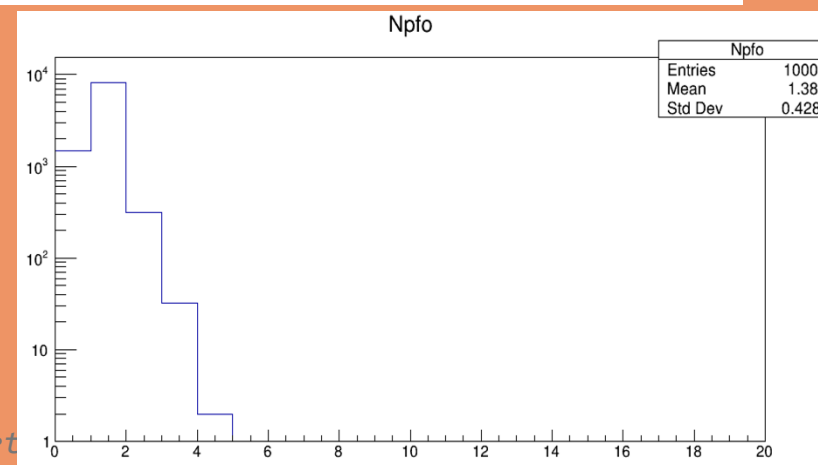
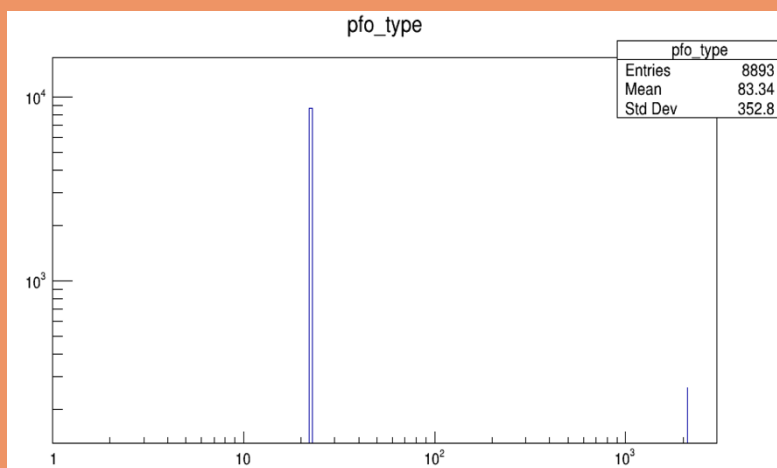
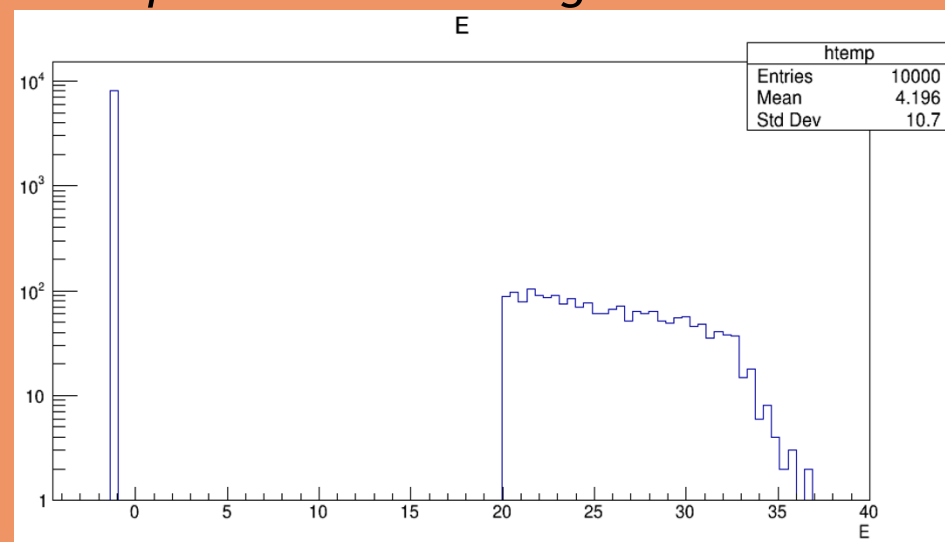
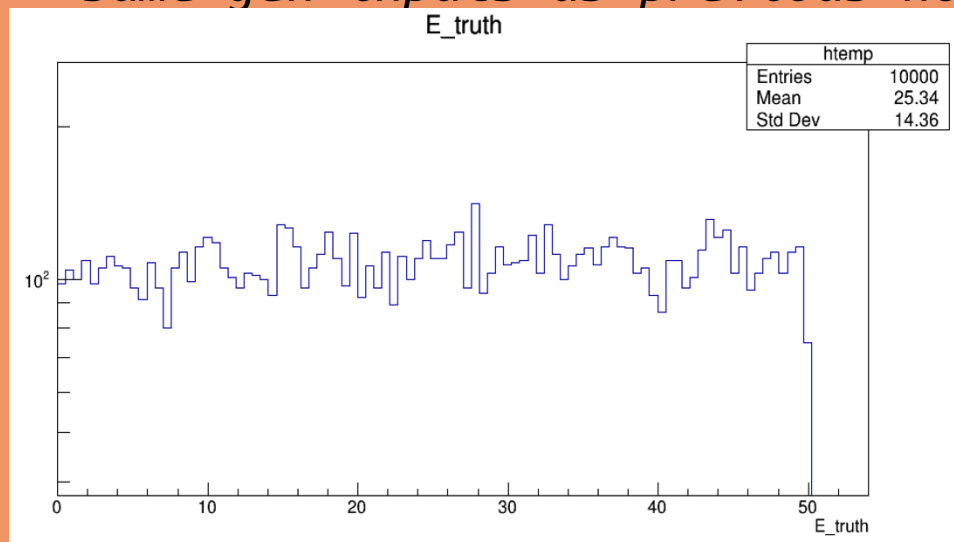
Updates from the past week

- *Fede has produced the latest noBIB samples for photon and neutron guns (thank you!!)*
- *Elise has taken a first look at neutron resolution and is working out some abnormalities*
- *On photon side, made a set of resolution and efficiency plots with the latest samples*
- *However, still some unanswered questions about degraded performance*



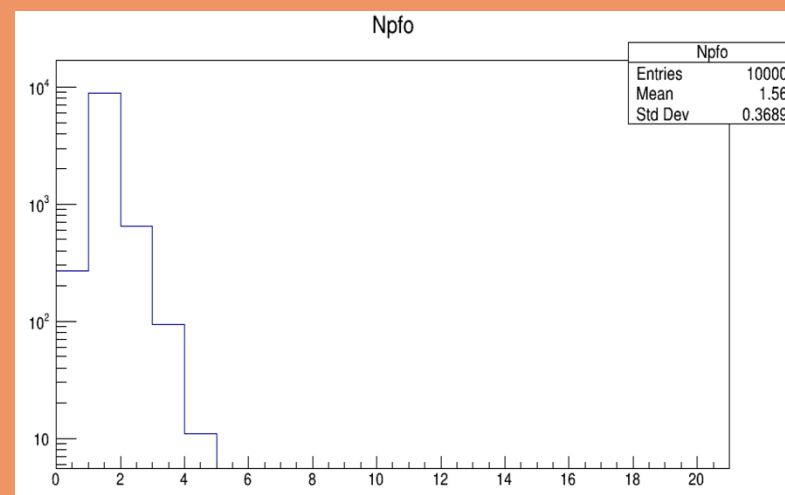
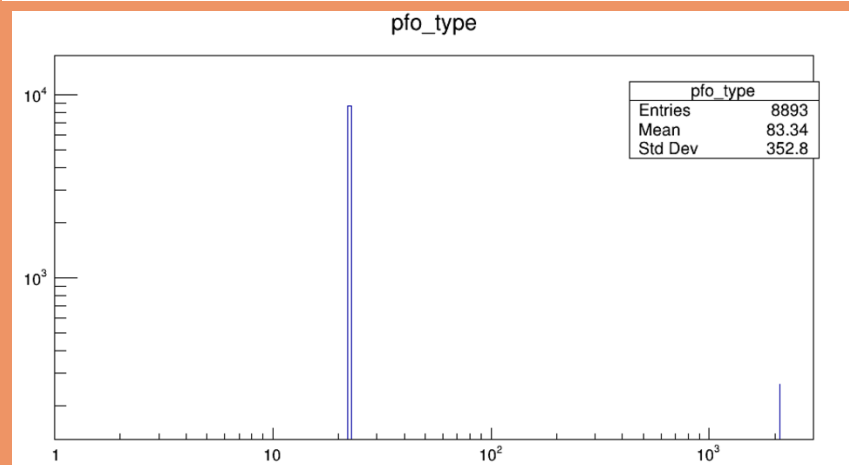
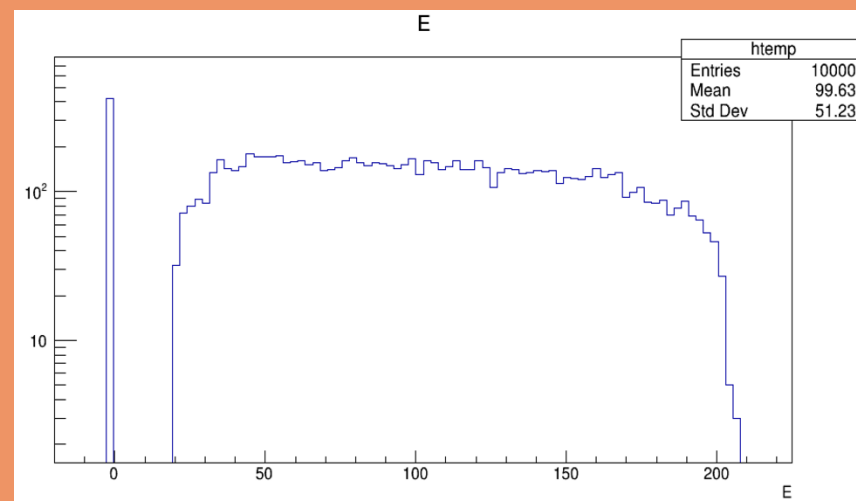
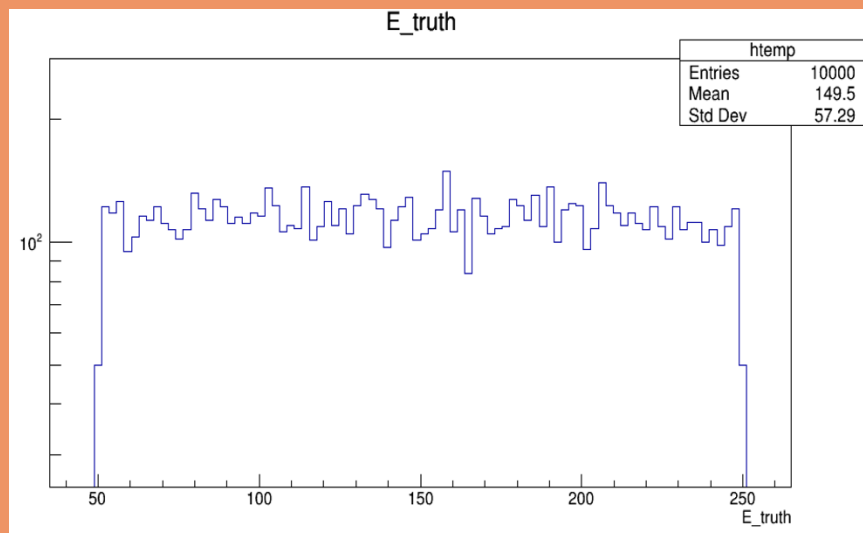
Basic Distributions for noBIB Sample

- Generated with the same thresholds as the latest BIB samples and the same gen inputs as previous noBIB samples – starting with $0 < E < 50$ GeV



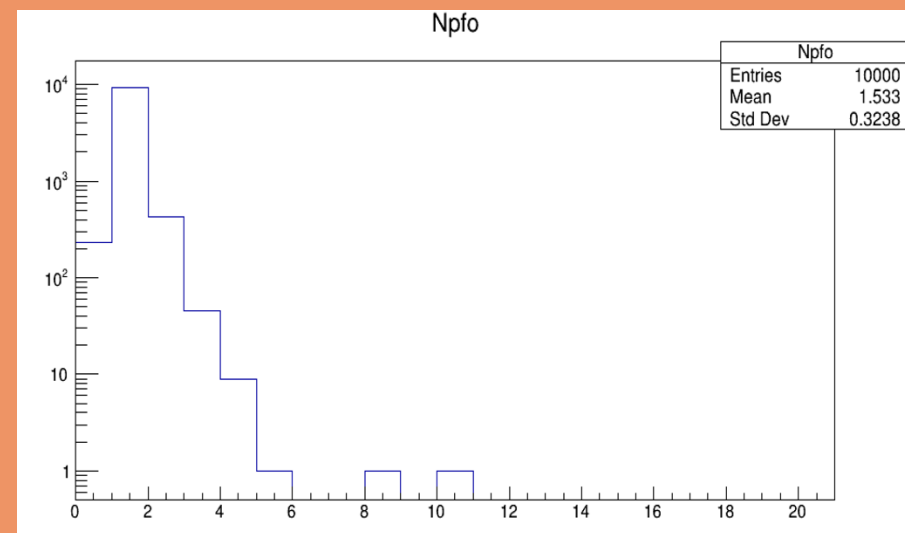
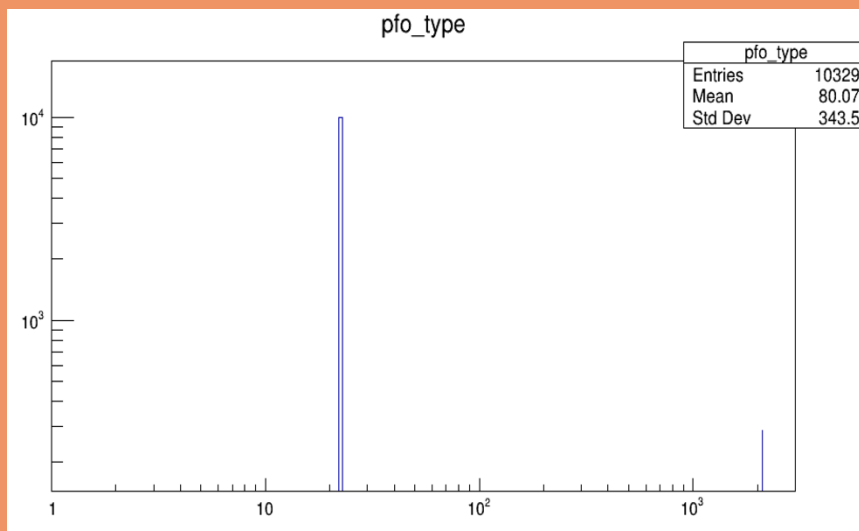
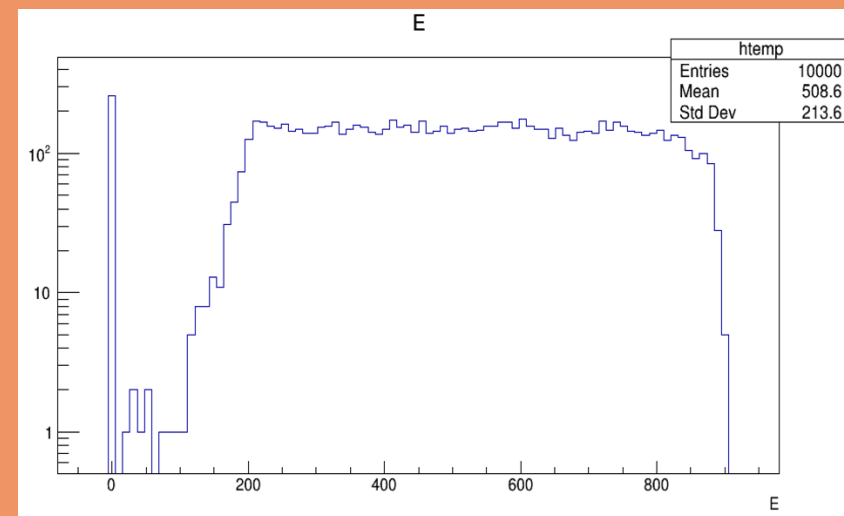
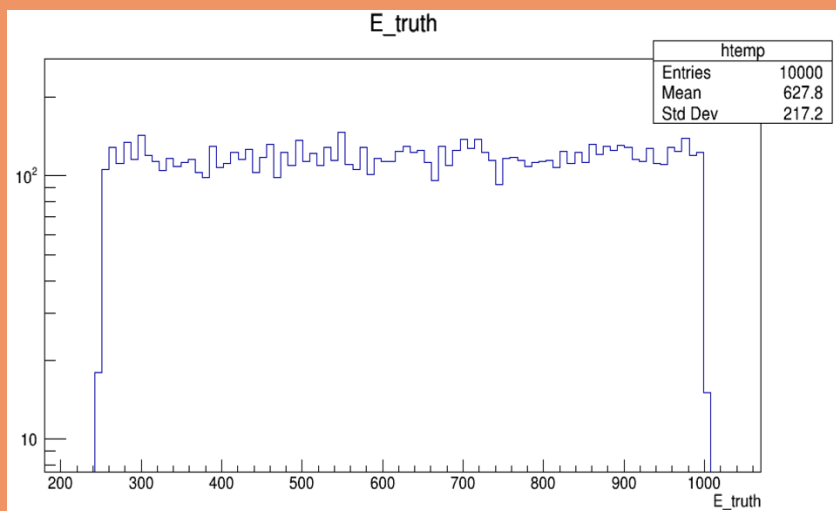


Basic Distributions, cont. 50-250 GeV



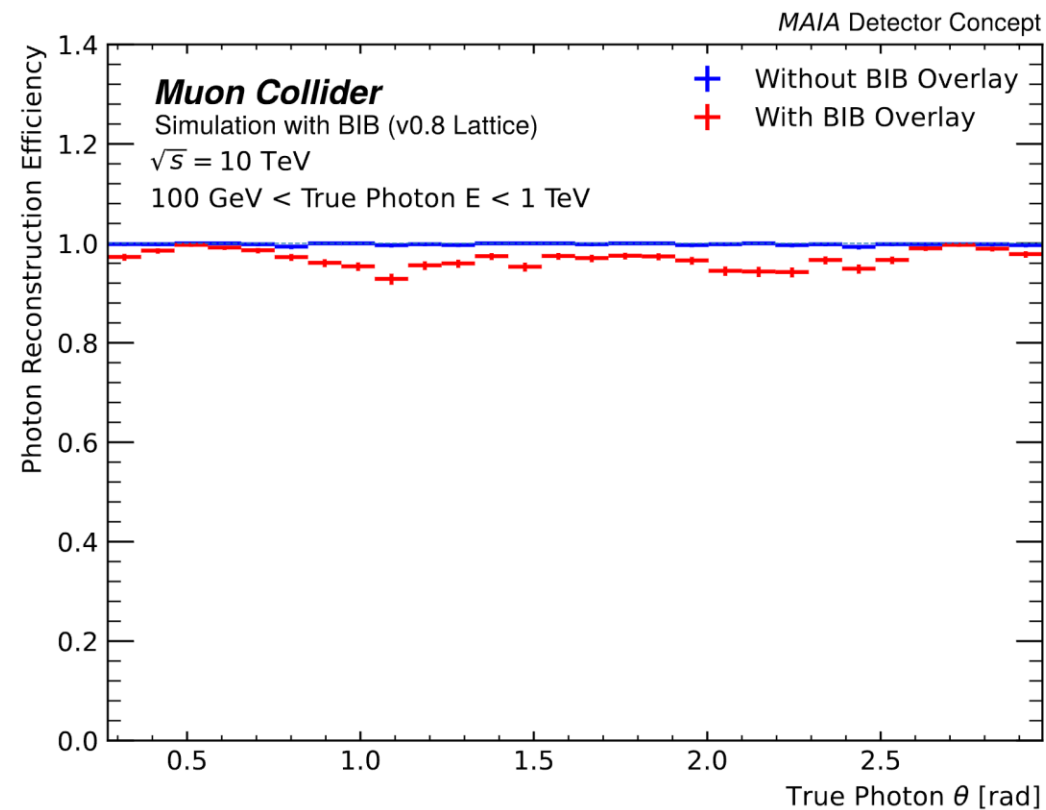
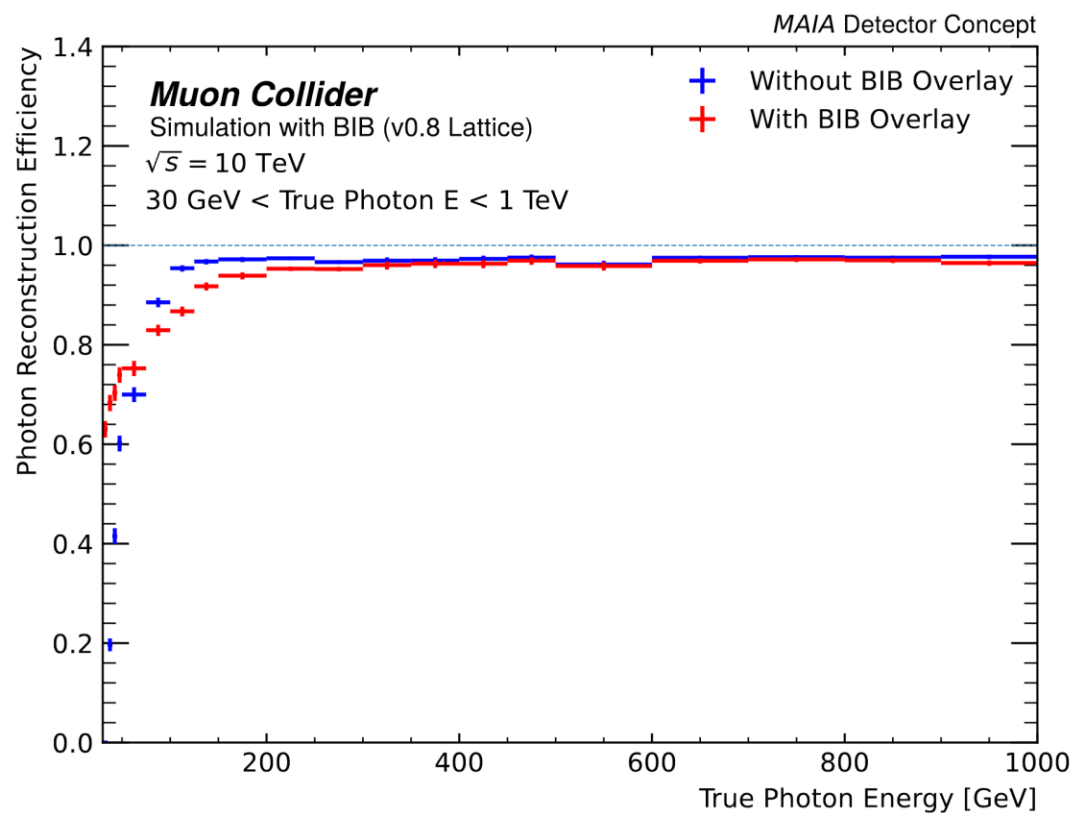


Basic Distributions, cont. 250-1000 GeV



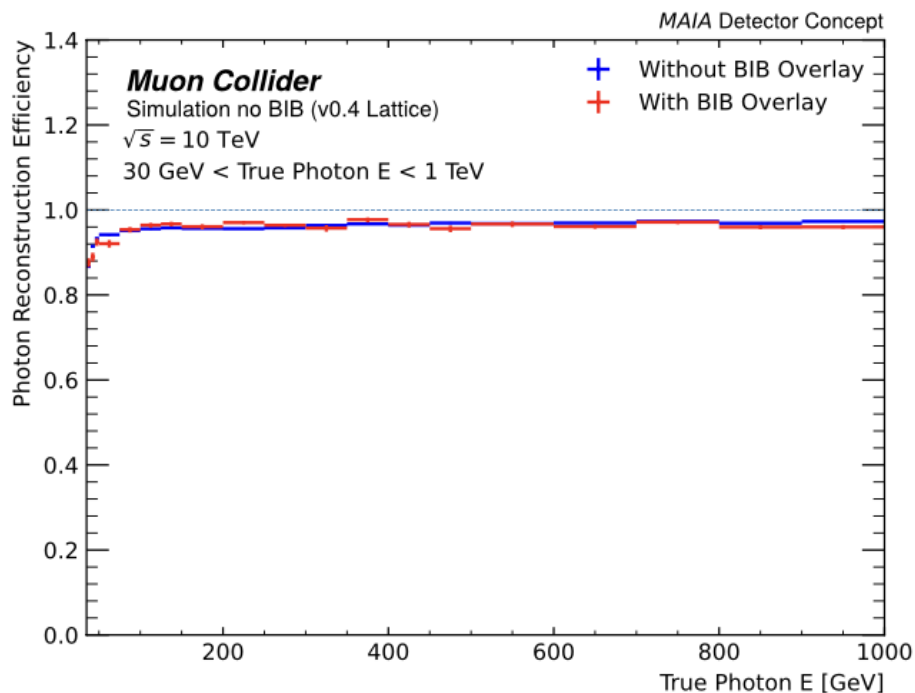


Efficiency

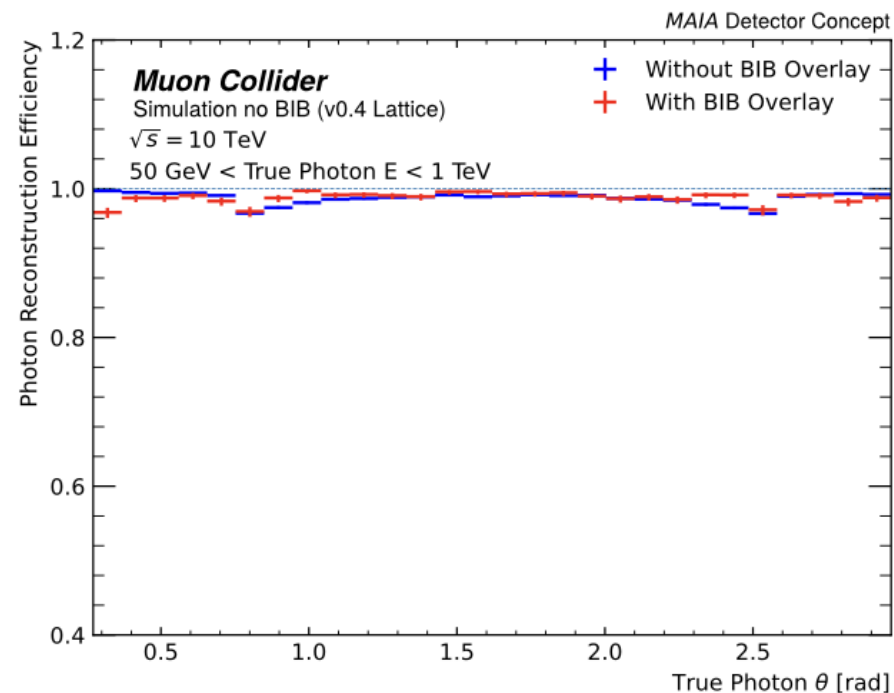




Comparing to v0.4 efficiencies



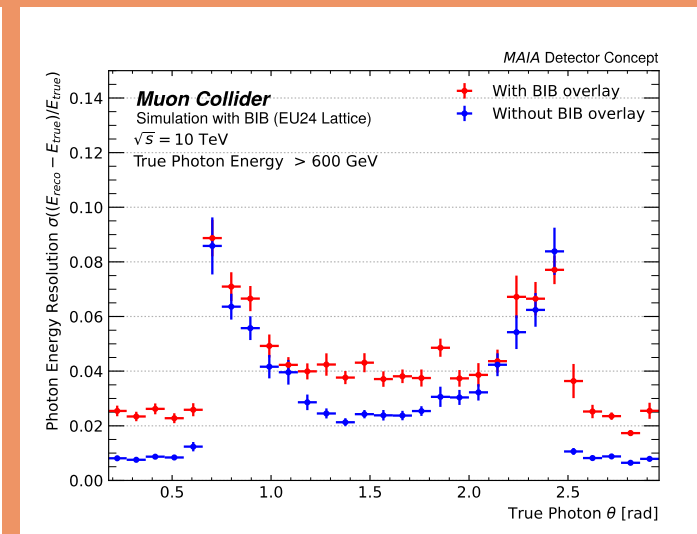
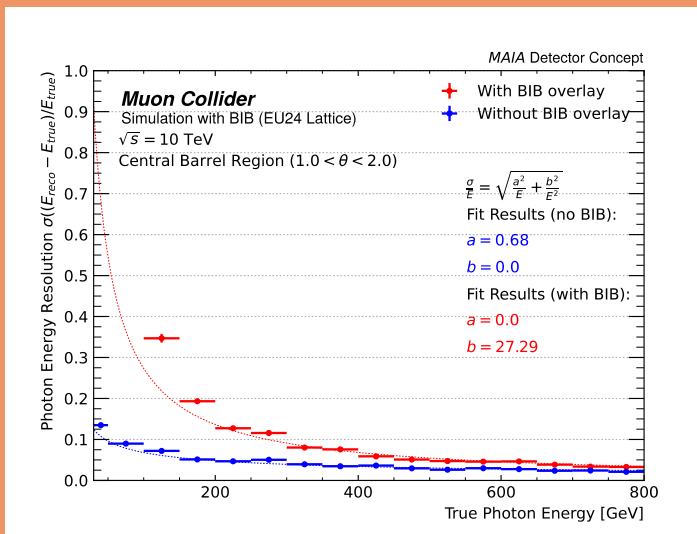
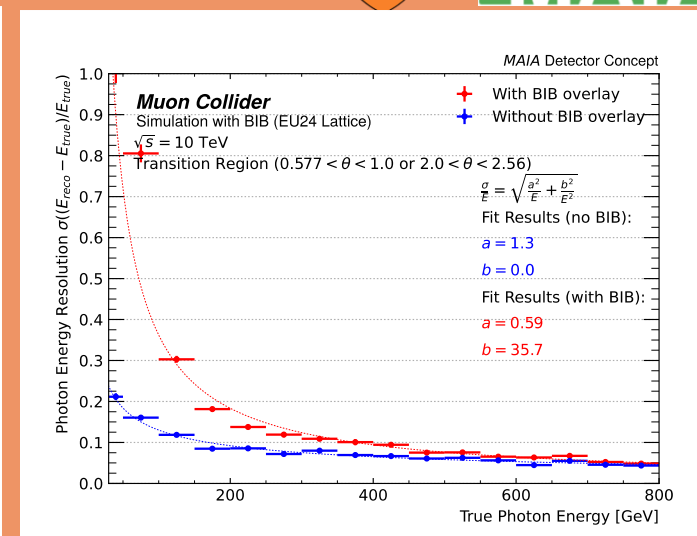
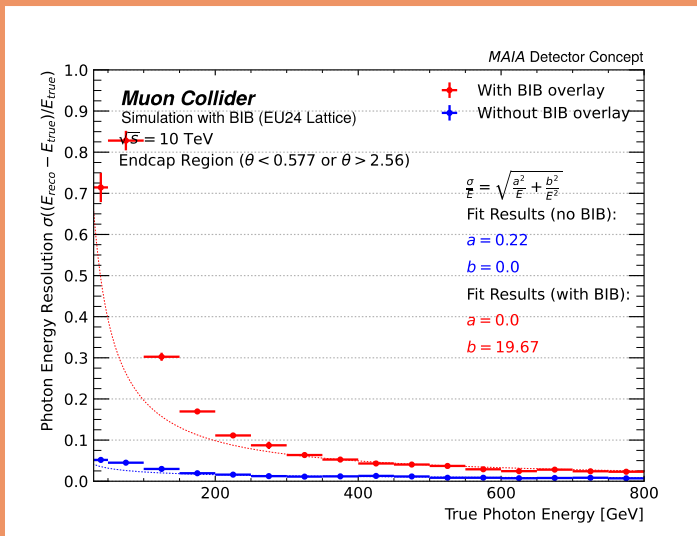
(a) Photon efficiency vs true energy



(b) Photon efficiency vs true theta, with
low-energy photons suppressed

Resolution Curves

- No-BIB is roughly the same for endcap, about $\sim 1.5x$ worse for barrel and transition
- BIB resolution ranges from 2 to 3x worse
- Fit curves not optimized for BIB
- Degradation may be attributed to the higher cell thresholds used for BIB reco and the increased occupancy due to the new nozzle geometry

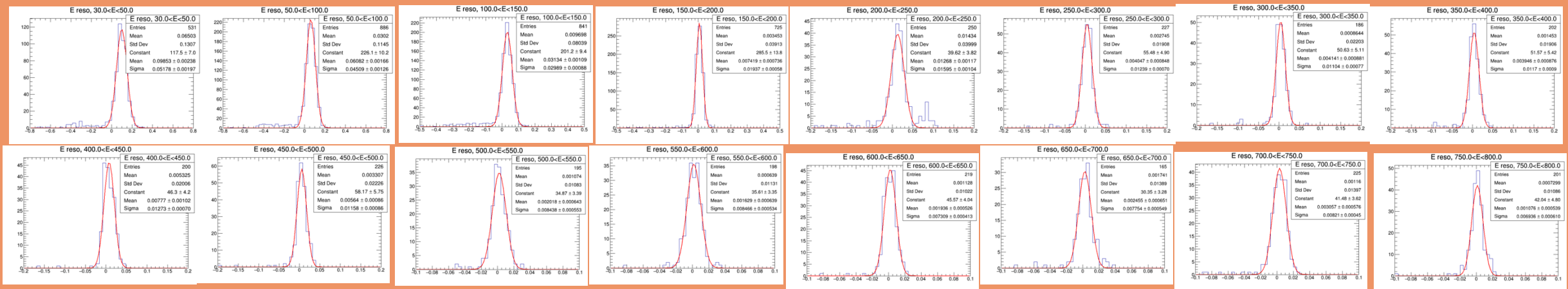
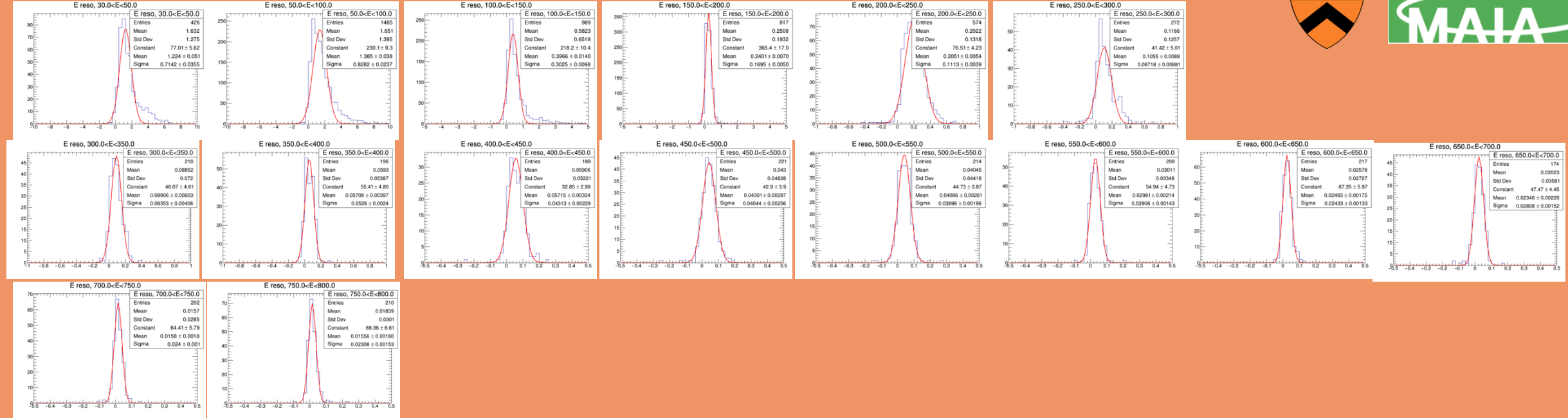




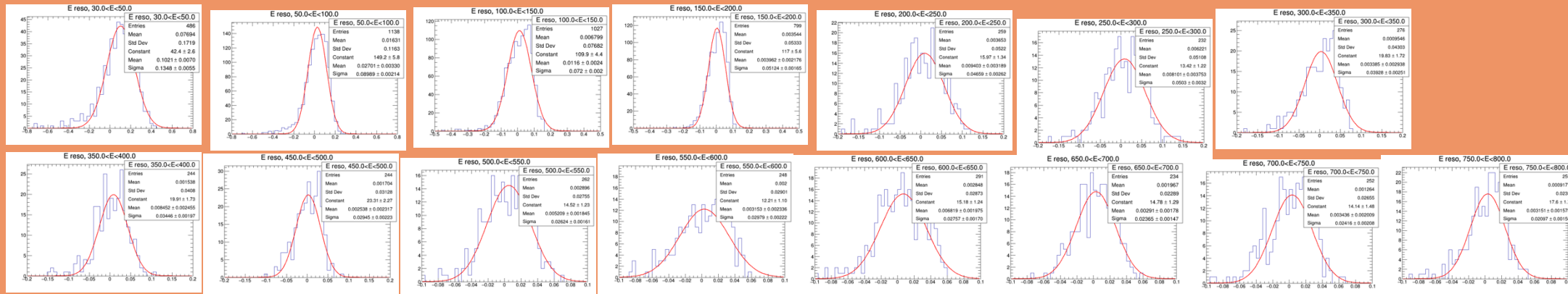
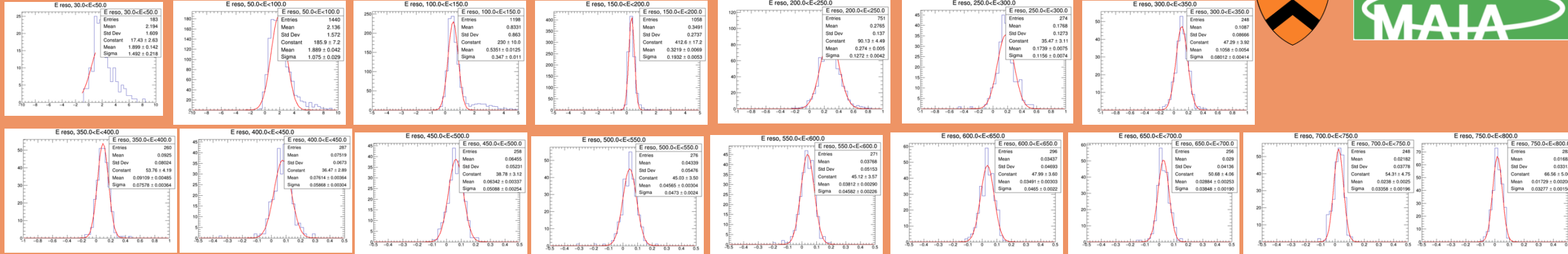
Manual clustering?

- *Fede also suggested I attempt to form a photon object from the calo hits in a cone of $dR \sim 0.05$ around the truth photon*
- *No calo collections saved for the noBIB sample, so I attempted this with the BIB, which does have ECalHitCollections*
- *However, the hit positions unavailable due to an LCIO bug*
 - *All position components saved as 0*
- *Fede + Thomas working to resolve the bug*

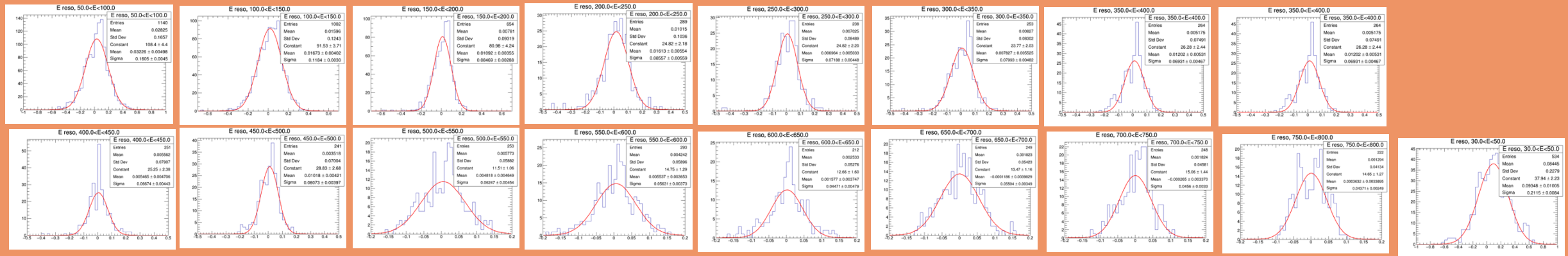
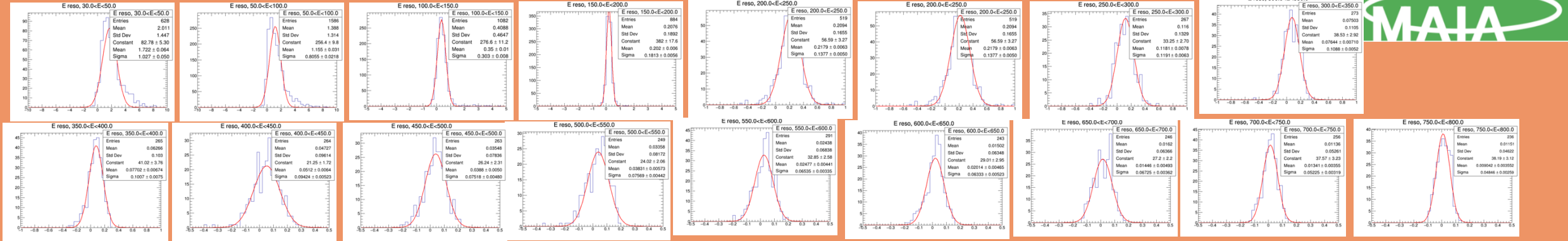
Backup – Gaussians (Endcaps) (BIB above, noBIB below)



Backup – Gaussians (Barrel) (BIB above, noBIB below)



Backup – Gaussians (Transition) (BIB above, noBIB below)



Backup – Gaussians (Theta) (BIB above, noBIB below)

