

Fun4All Calorimeter Plots: Pion: Hcal Resolution Check with standalone simulations

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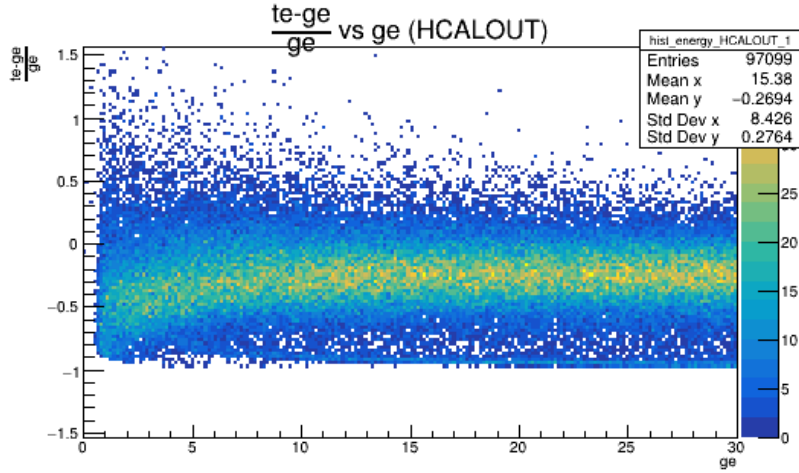
Specifications:

SIMULATION & ANALYSIS DETAILS FOR PION:

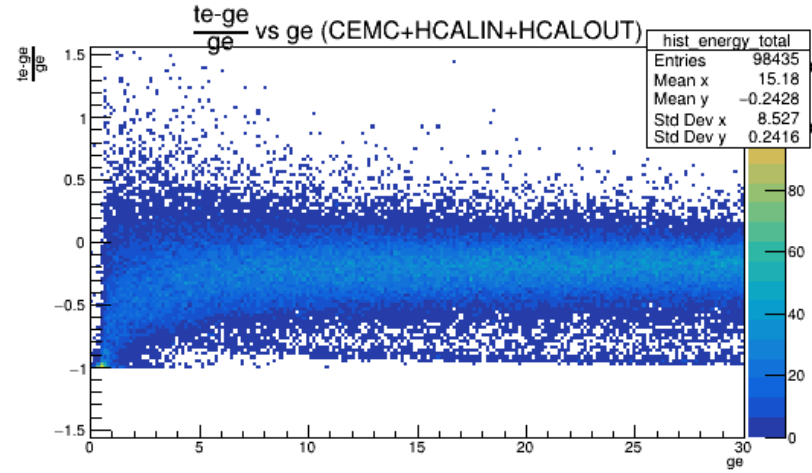
- Particles: pi-
- Four instances studied:
 - FHCAL alone
 - FHCAL with FEMC in front
 - HCALOUT alone
 - HCALOUT with HCALIN and CEMC in front
- Events: 100000 (0-30 GeV) for each case
- **Various Cuts used:**
 - **NEW** pseudorapidity cuts on calorimeters:
 - Pion:
 - Barrel Region: $\eta = -0.98$ to 0.99
 - Forward Region: $\eta = 1.32$ to 3.14
 - Clustering cut based on theta and phi values
 - Theta-dependent energy cut on individual tower energies
 - 0 cut on aggregated tower energies for each event
- **NO CALIBRATION APPLIED!**

Barrel Region:

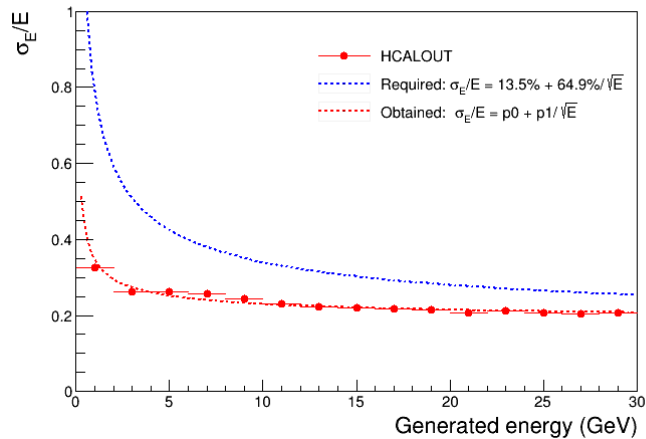
HCALOUT alone:



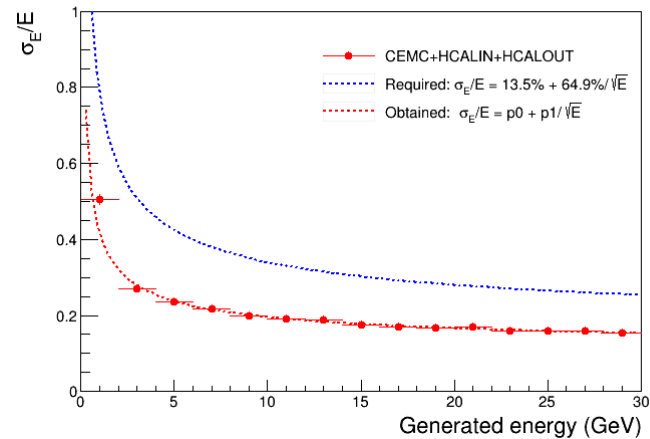
HCALOUT with HCALOUT & CEMC:



σ_E/E vs ge (HCALOUT)



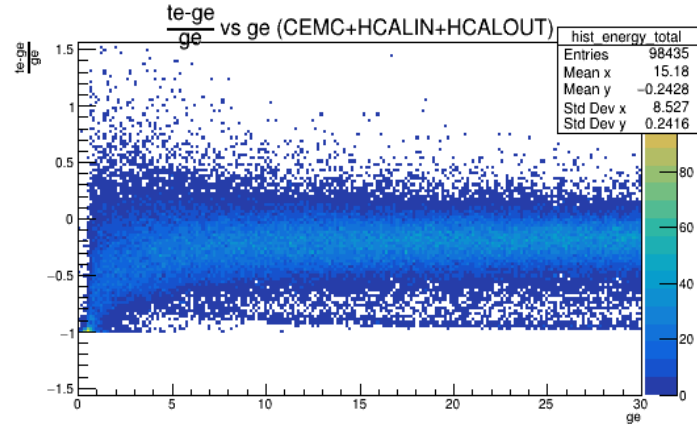
σ_E/E vs ge (CEMC+HCALIN+HCALOUT)



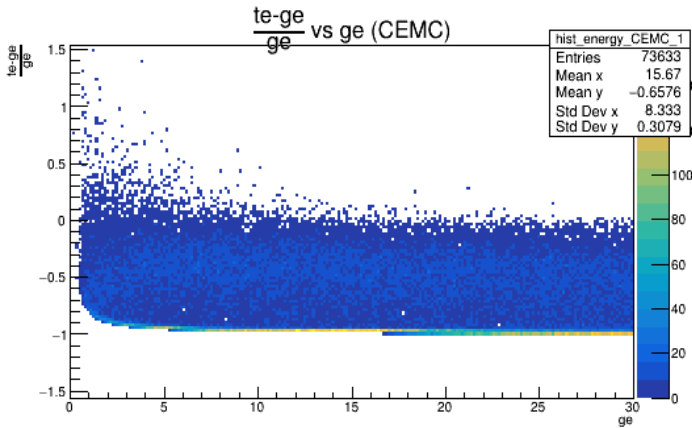
Better Resolution!

Barrel Region:

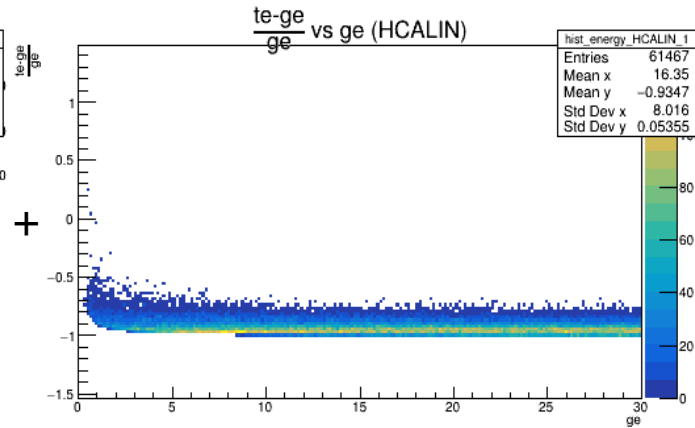
HCALOUT with HCALOUT & CEMC:



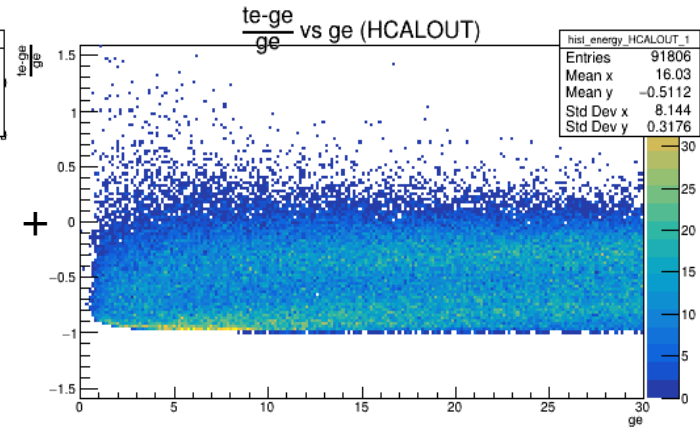
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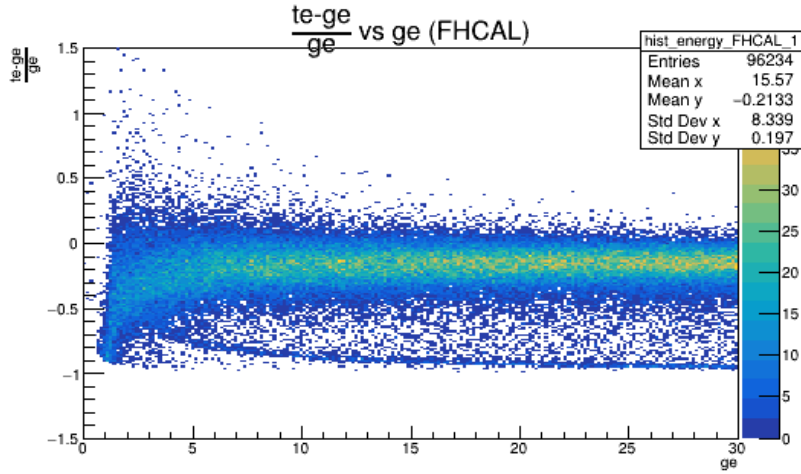


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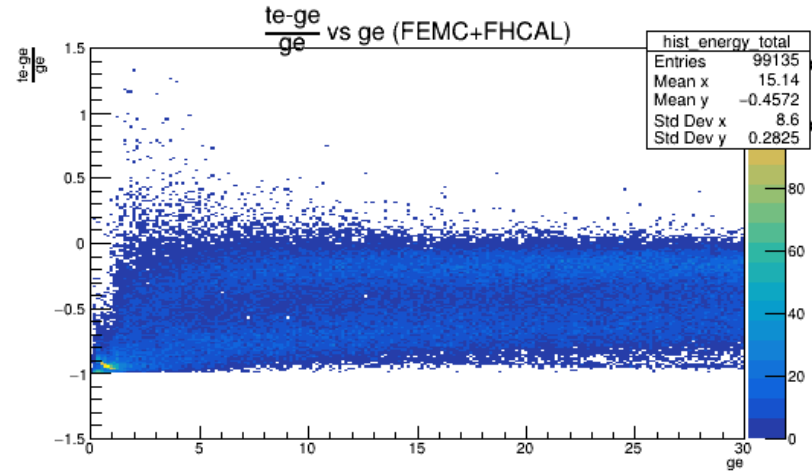


Forward Region:

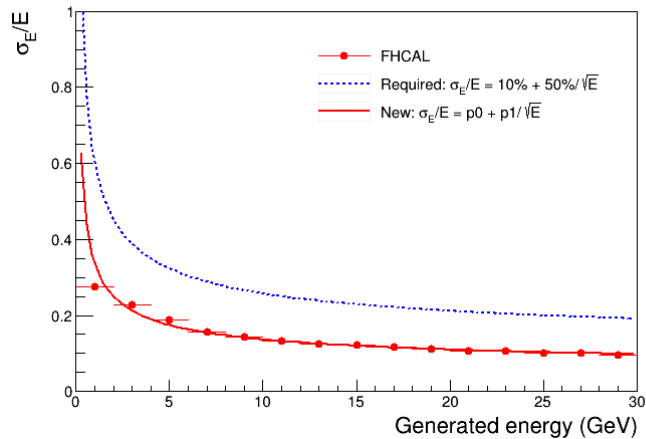
FHCAL alone:



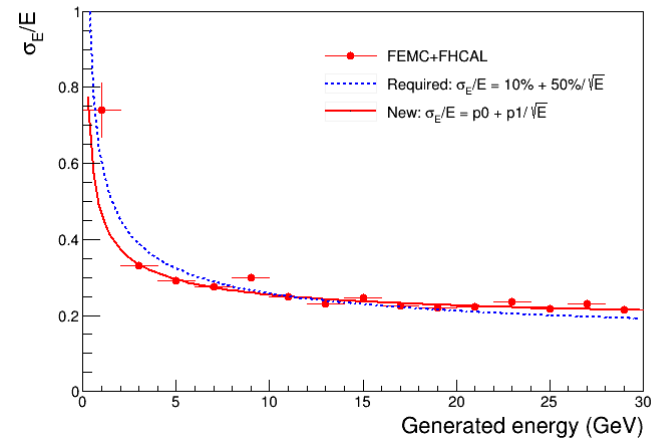
FHCAL with FEMC:



σ_E/E vs ge (FHCAL)

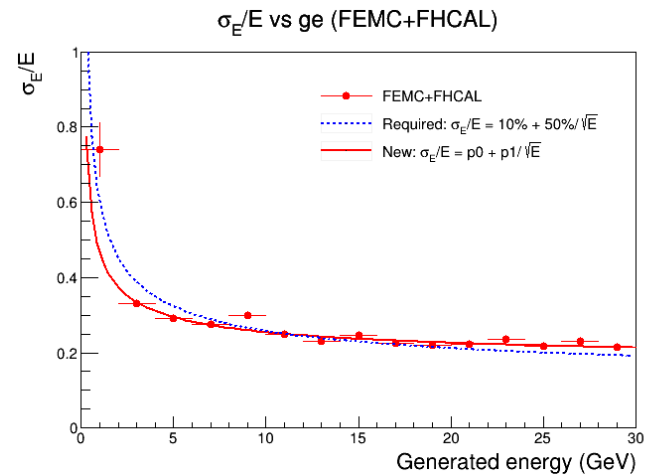


σ_E/E vs ge (FEMC+FHCAL)

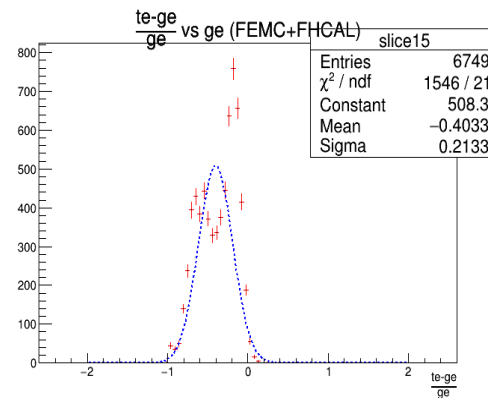
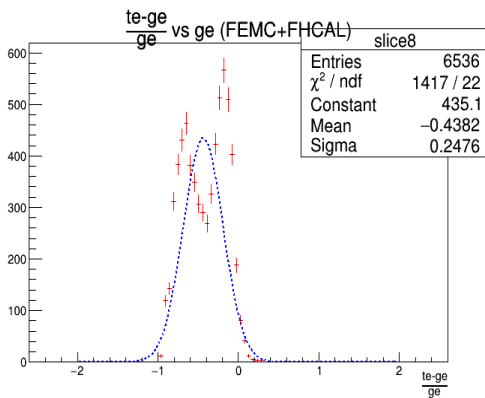
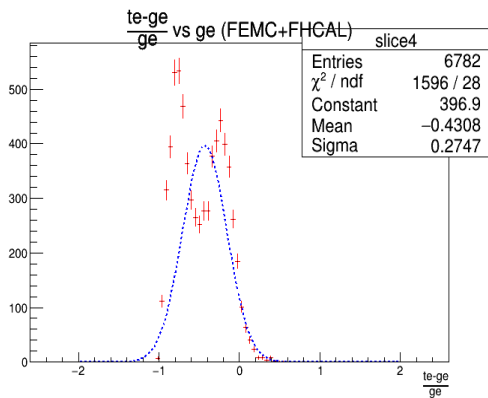
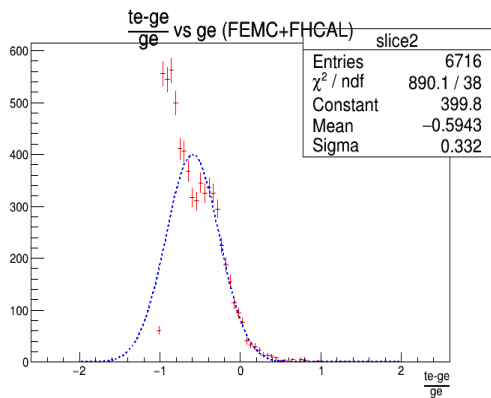


Misleading!

Forward Region:

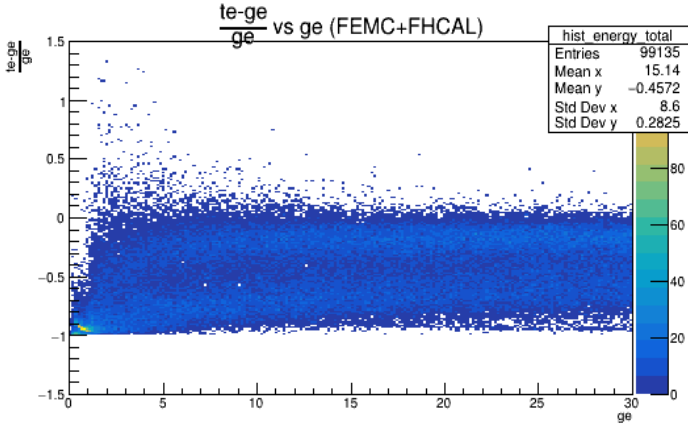


Misleading!

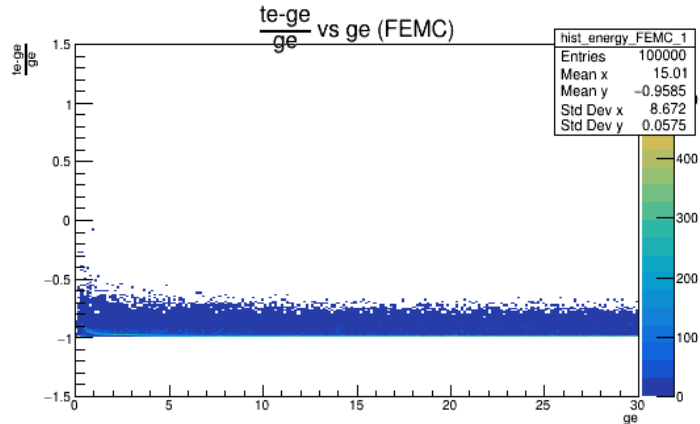


Forward Region:

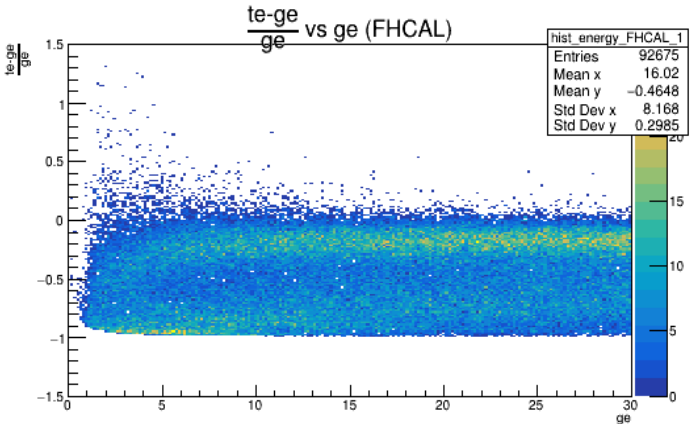
FHCAL with FEMC:



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THANKS!