# Fun4All Calorimeter Plots: Pion with corrected FHCal (Corrected plots)

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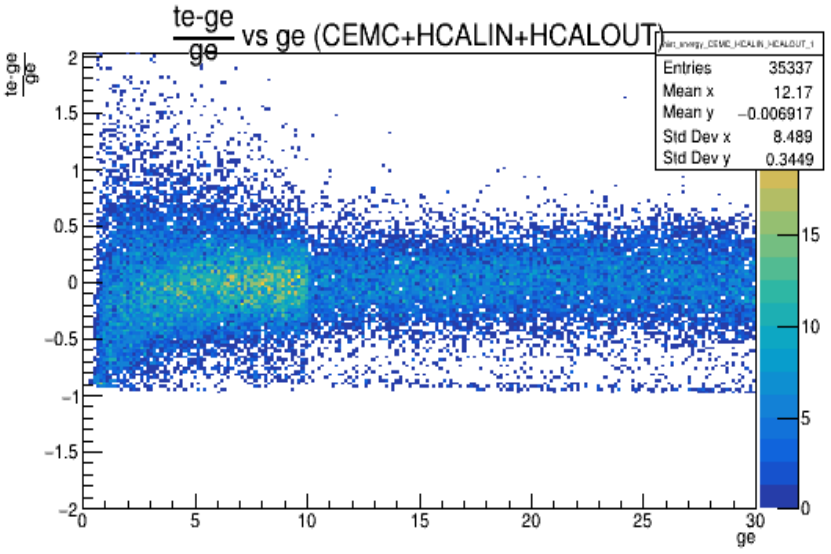
# Specifications:

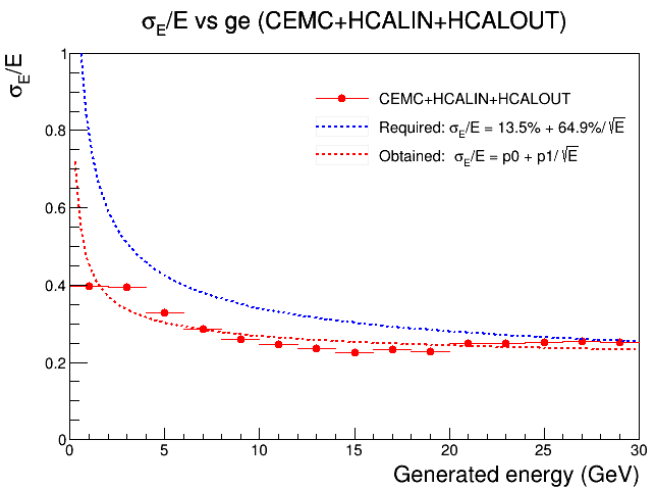
SIMULATION & ANALYSIS DETAILS FOR PION:

- Particles: pi-
- Events: 100000 (0-30 GeV), 50000(0-10GeV) [geta: -4 to 4]
- **Various Cuts used:**
  - **NEW** pseudorapidity cuts on calorimeters:
    - Pion:
      - CEMC, HCALIN, HCALOUT: $\eta$ = -0.98 to 0.99
      - FEMC, FHCAL: $\eta$ = 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
- Introduction of finer binning at lower energies: 0.5GeV bins from 0 to 2 GeV

# Barrel Resolution (CEMC+HCALIN+HCALOUT)

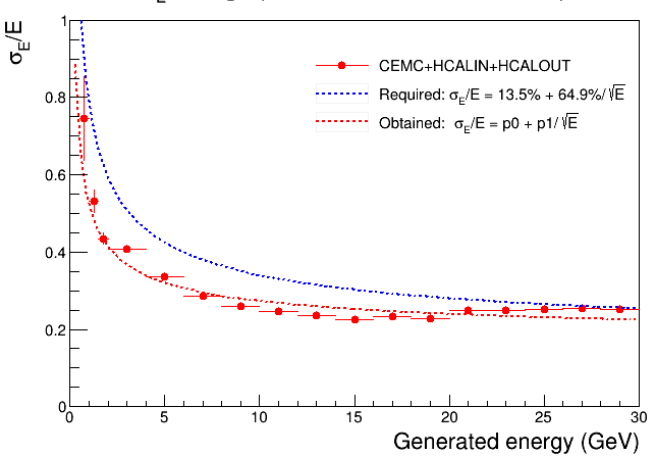



**0-2 GeV: 1 bin**




$\sigma_E/E = 18.3\% + 26.7\%/\sqrt{E}$

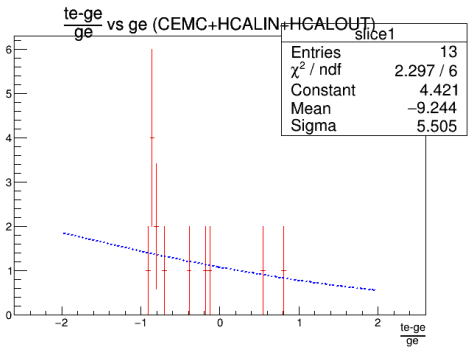
**0-2 GeV: 4 bins (500MeV each)**

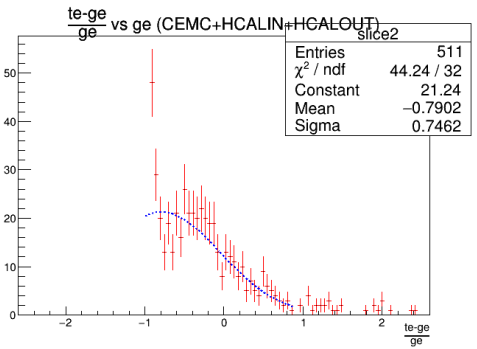


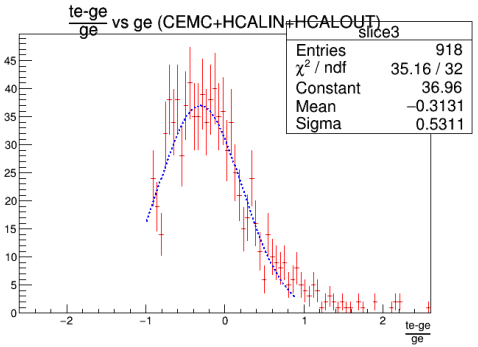

$\sigma_E/E = 15.79\% + 36.425\%/\sqrt{E}$

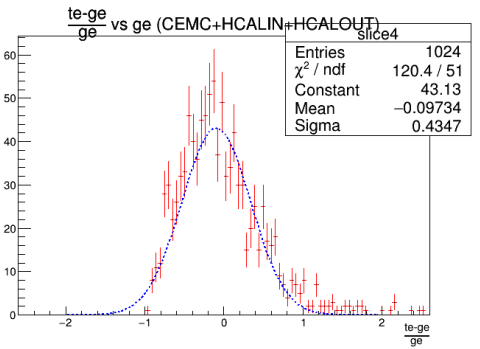
CEMC+HCALIN+HCALOUT: Gaussian fits

**First four bins with fine binning:**

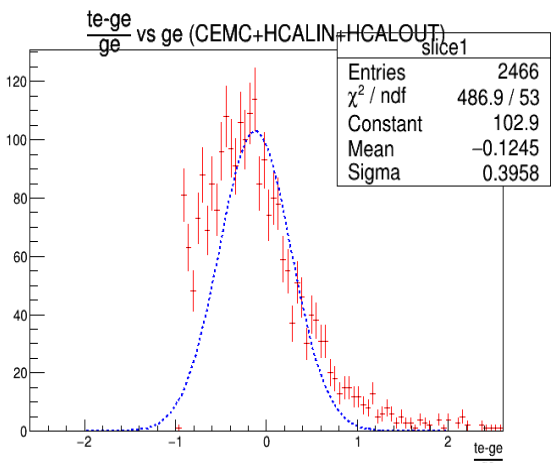


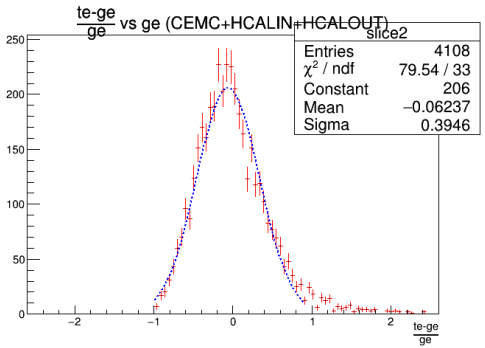



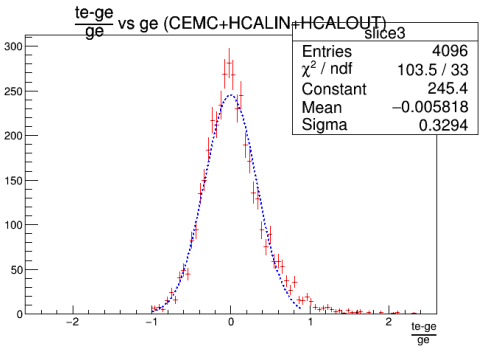



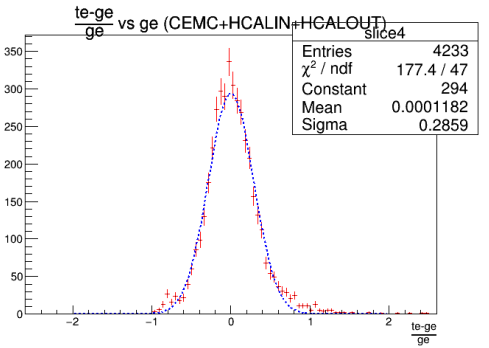

**First four bins combined into one bin:**

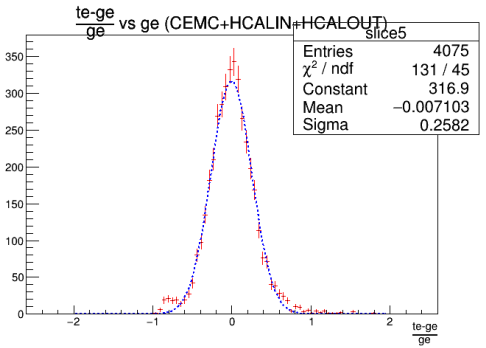


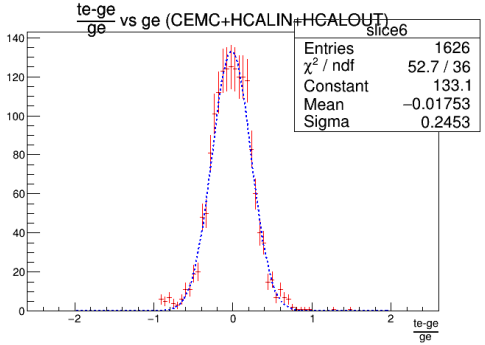
# CEMC+HCALIN+HCALOUT: Gaussian fits

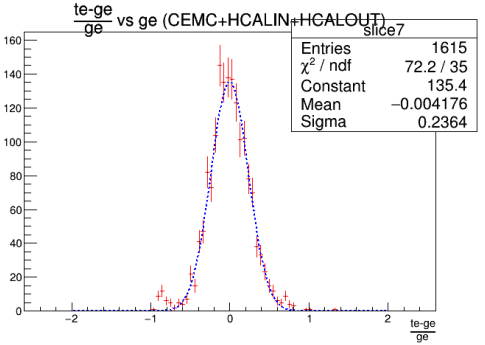


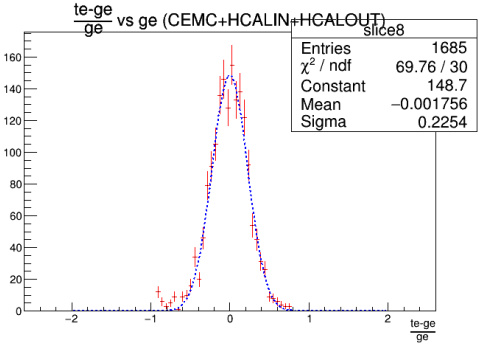



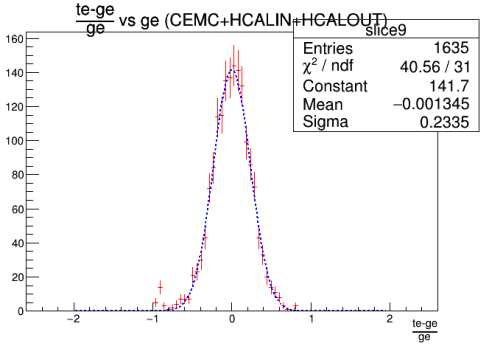



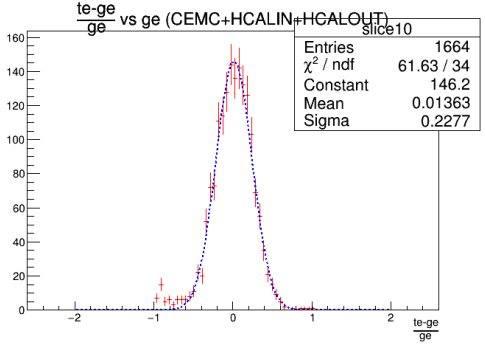



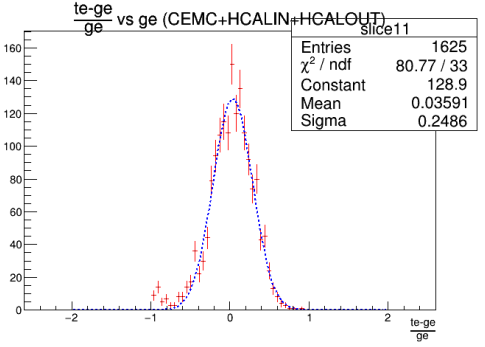



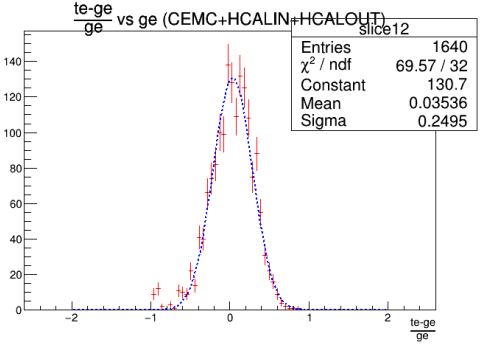



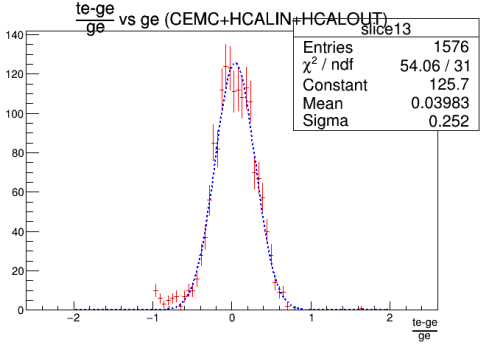



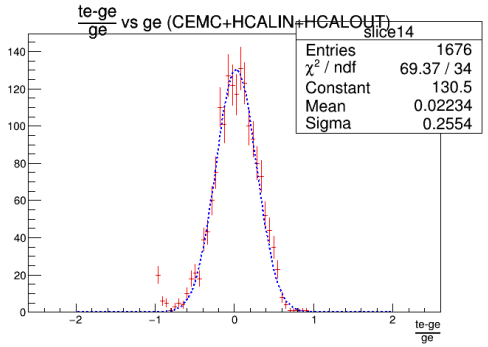



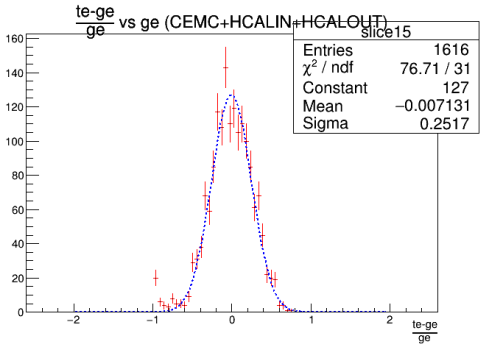



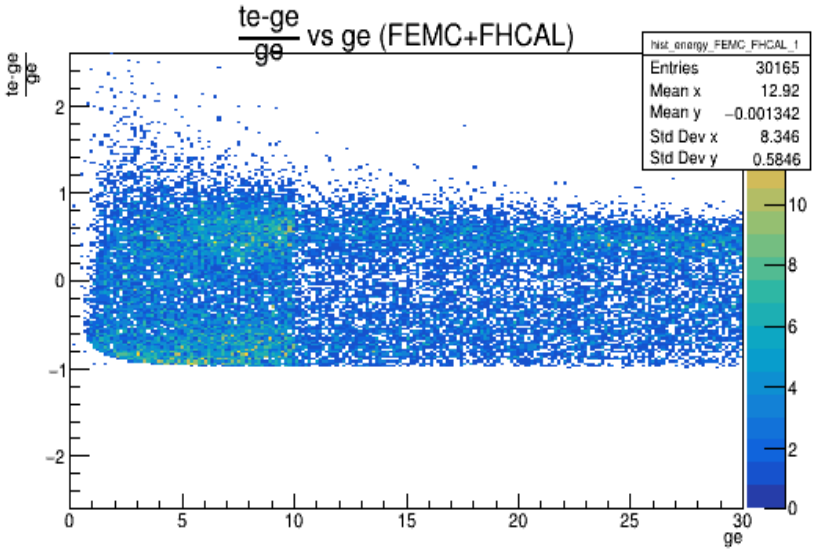



# CEMC+HCALIN+HCALOUT: gaussian fits

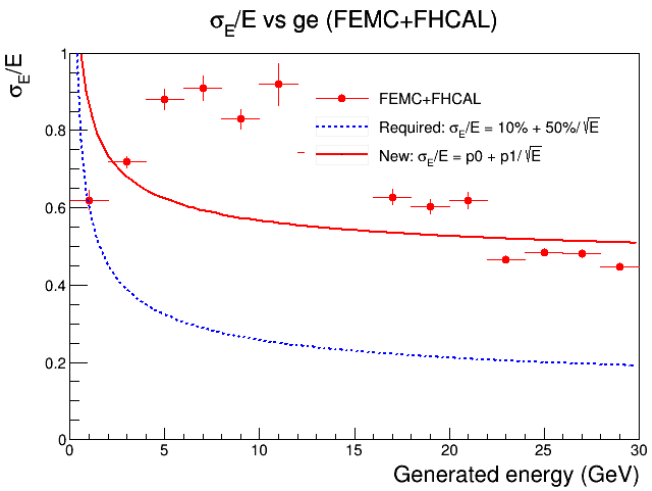


# Forward Resolution (FEMC+FHCAL)

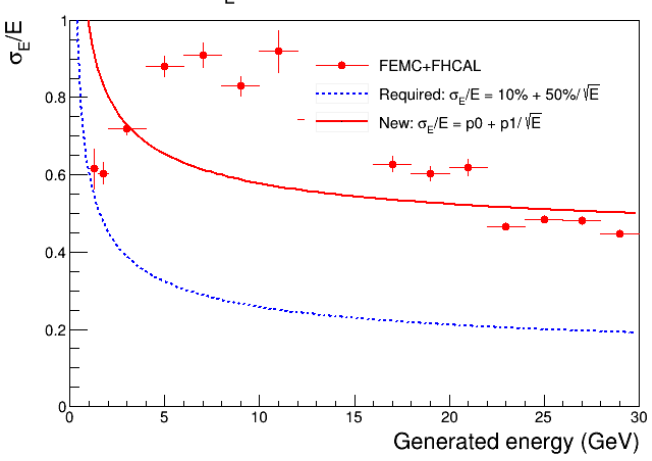



**0-2 GeV: 1 bin**



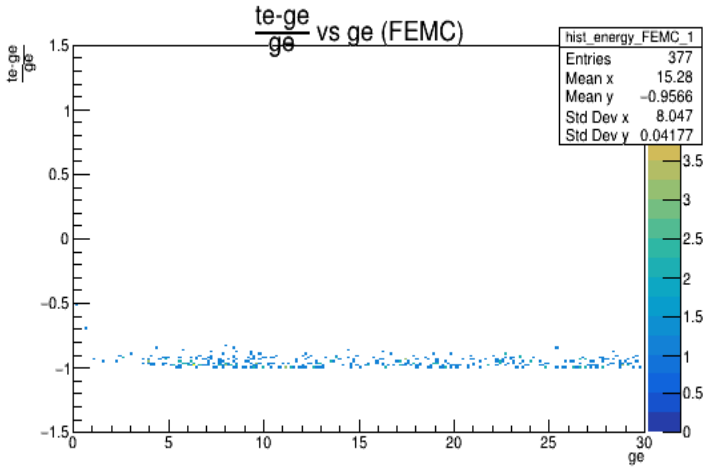

$\sigma_E/E = 42.94\% + 43.49\%/\sqrt{E}$

**0-2 GeV: 4 bins (500MeV each)**




$\sigma_E/E = 39.412\% + 58.1\%/\sqrt{E}$

# Forward Resolution (FEMC+FHCAL)

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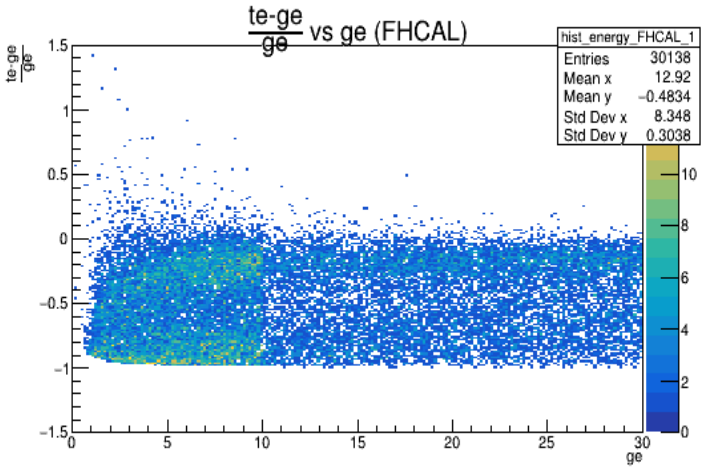
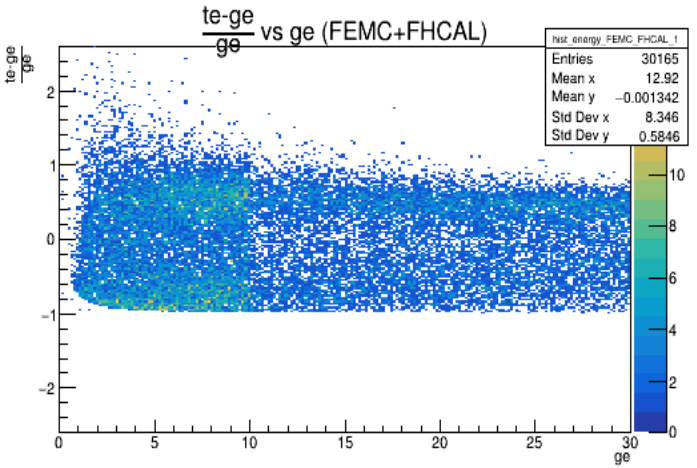



**FEMC energies missing!**

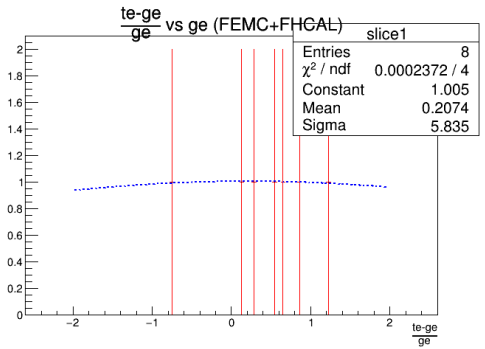
=

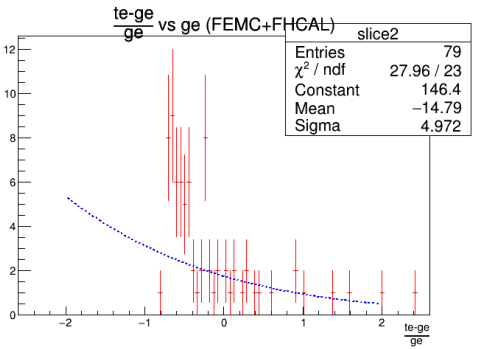


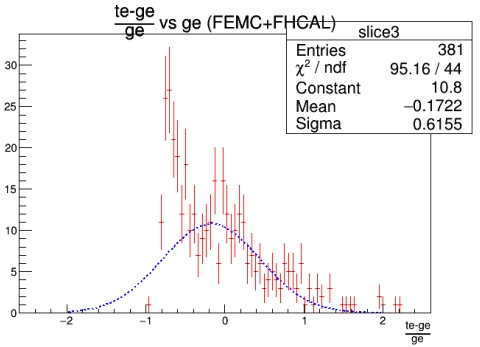

(after calibration)

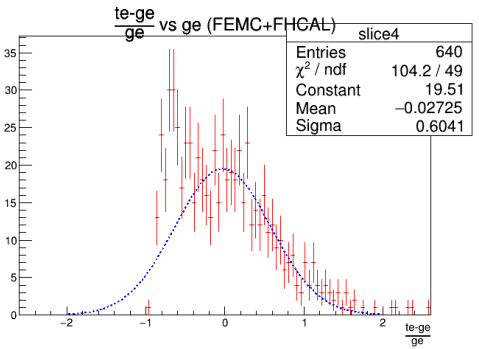
FEMC+FHCAL: Gaussian fits

**First four bins with fine binning:**

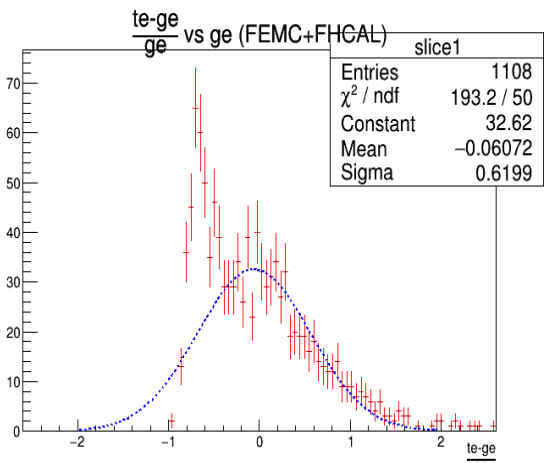


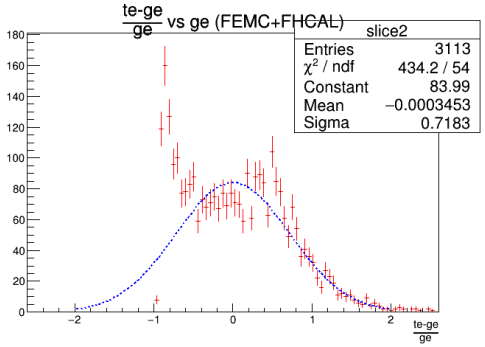



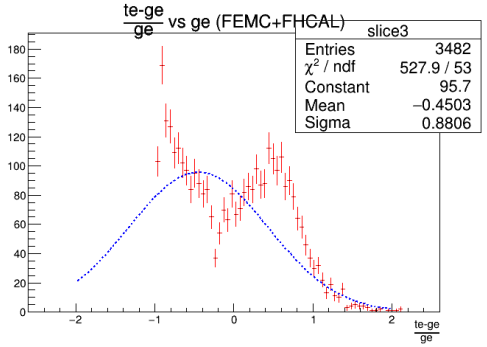



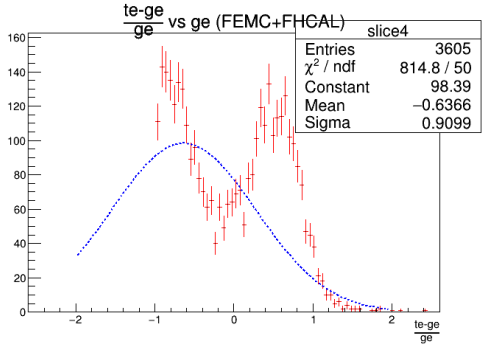

**First three bins combined into one bin:**

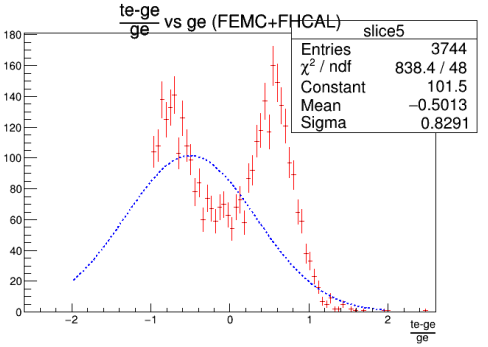


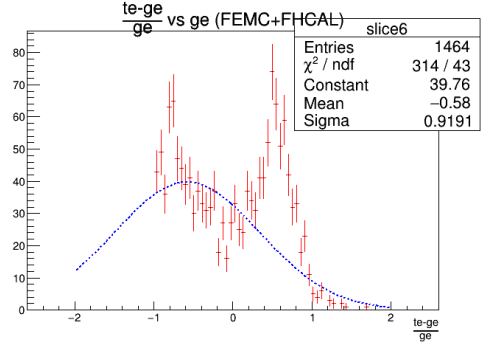
# FEMC+FHCAL: Gaussian fits

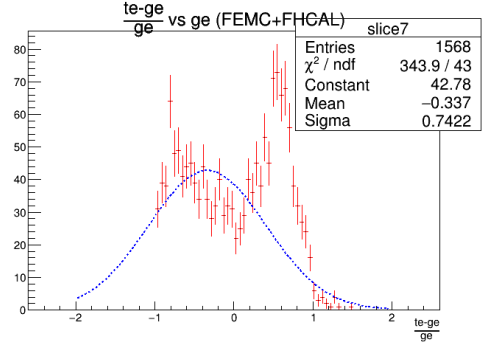


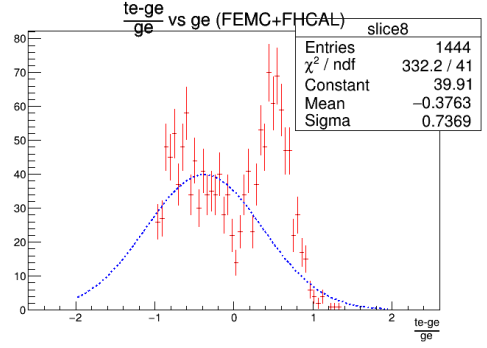



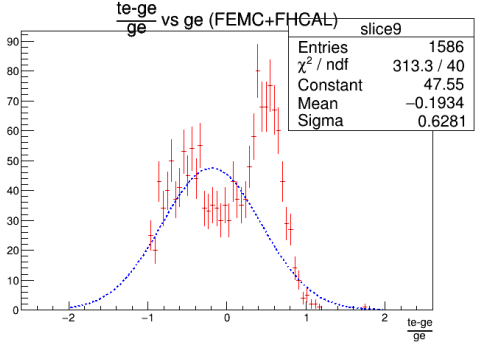



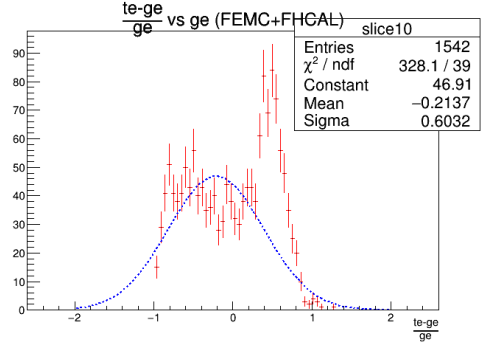



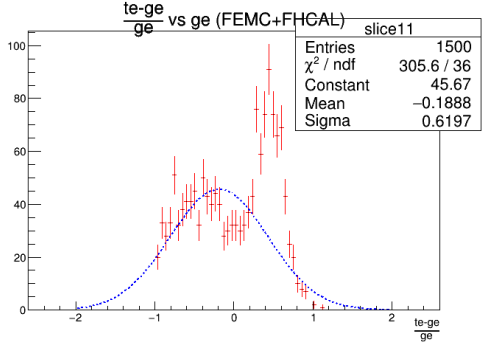



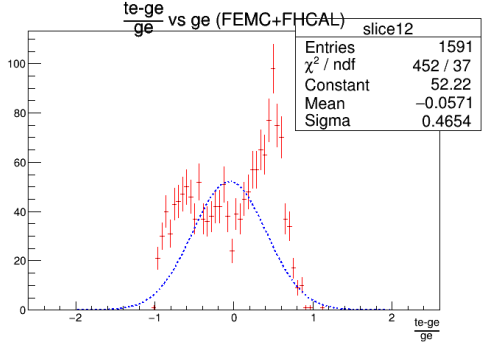



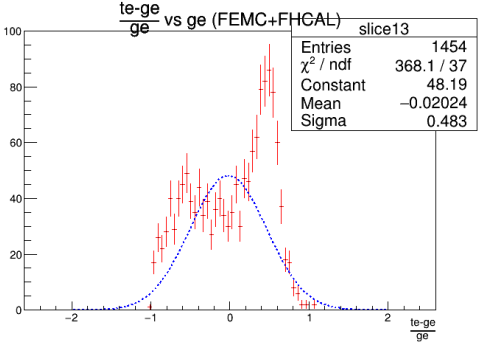



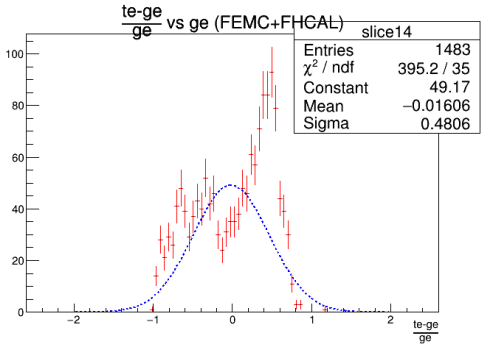



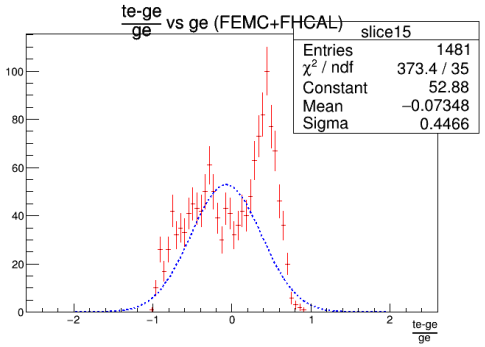



# FEMC+FHCAL: Gaussian fits



# THANKS!