Prad Calibration

PRad weekly meeting

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50 Calibration runs (snake scan runs)

[889 890 893 894 895 896 916 918 919 923]

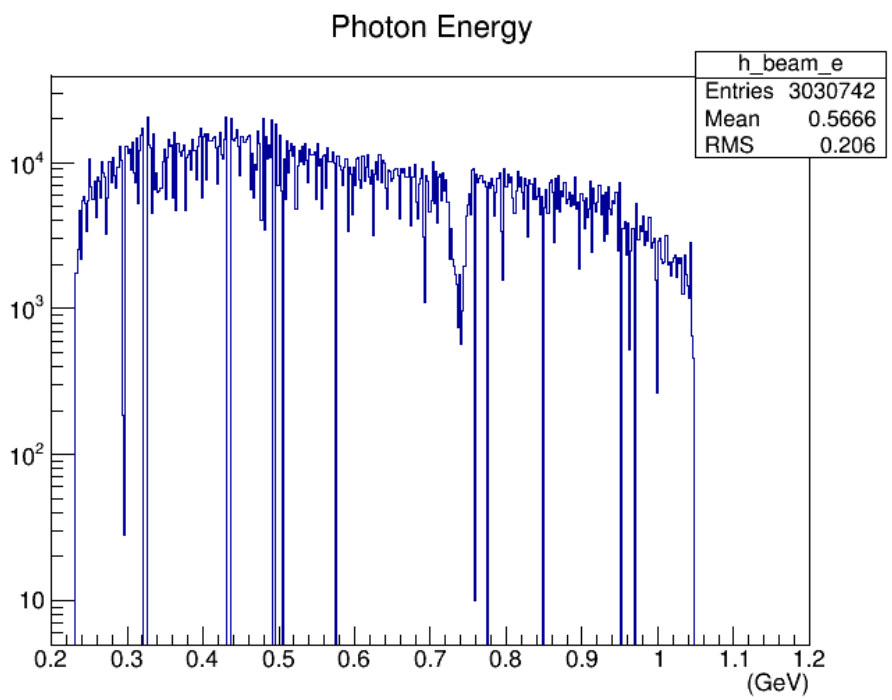
[924 925 926 927 928 929 932 933 934 935]

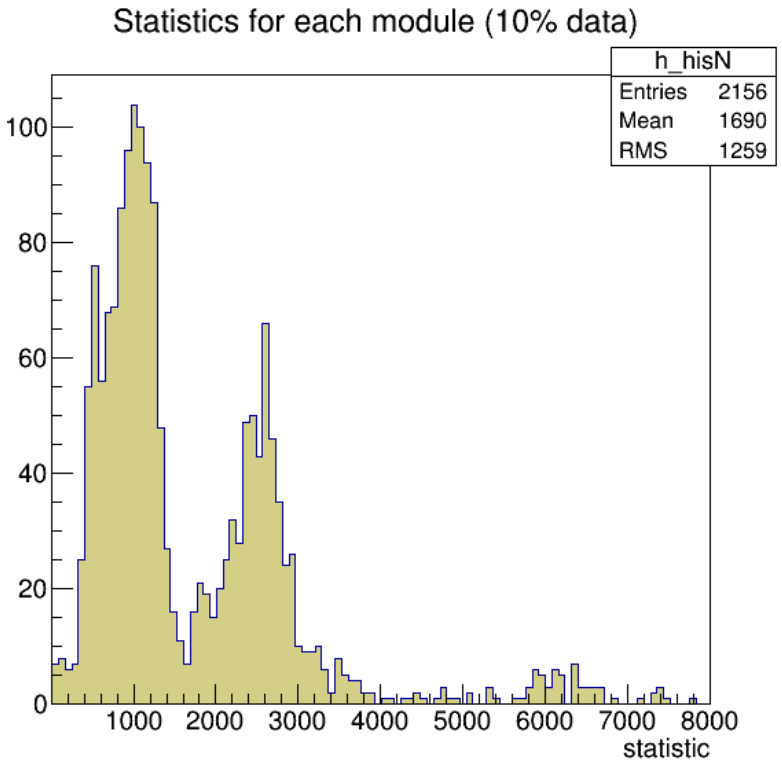
[946 947 948 949 950 951 952 953 955 956]

[957 958 960 961 962 965 966 967 968 969]

[970 971 972 973 974 975 976 977 978 979]

Electron beam energy 1.1 GeV photon beam energy 0.22GeV ~ 1.05GeV

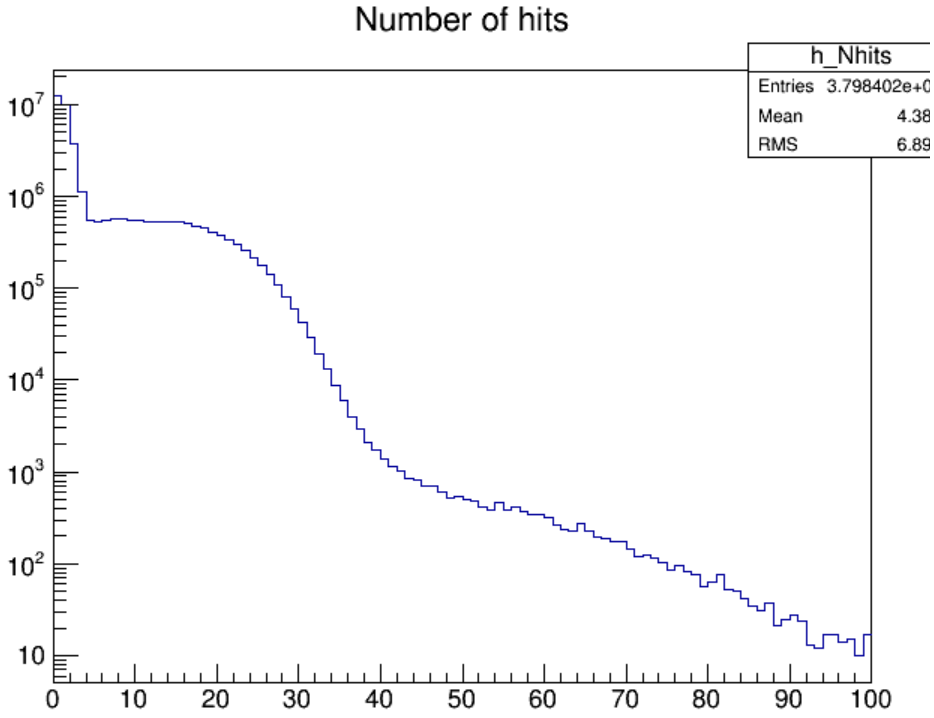


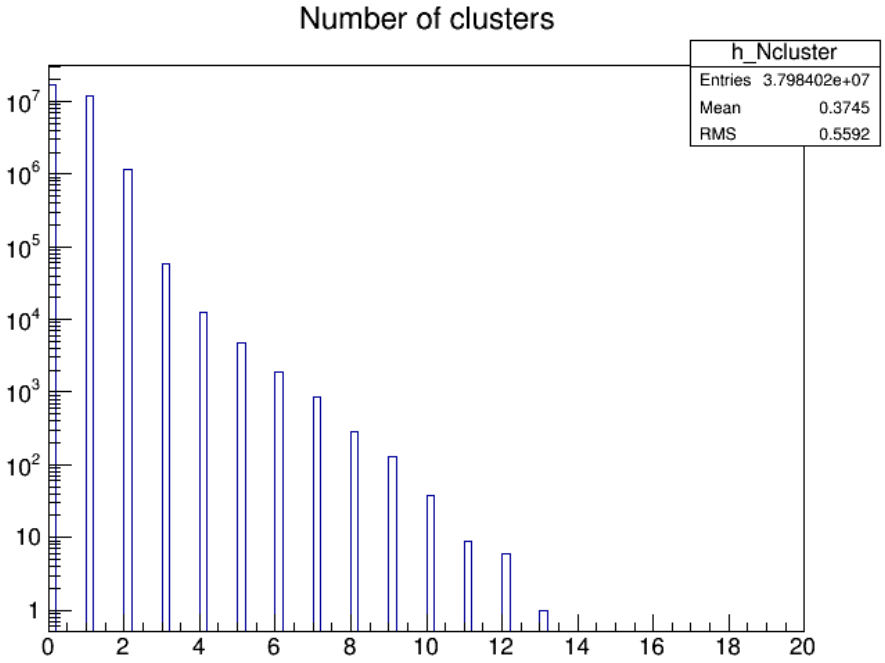


Cuts used :

Nhits > 100

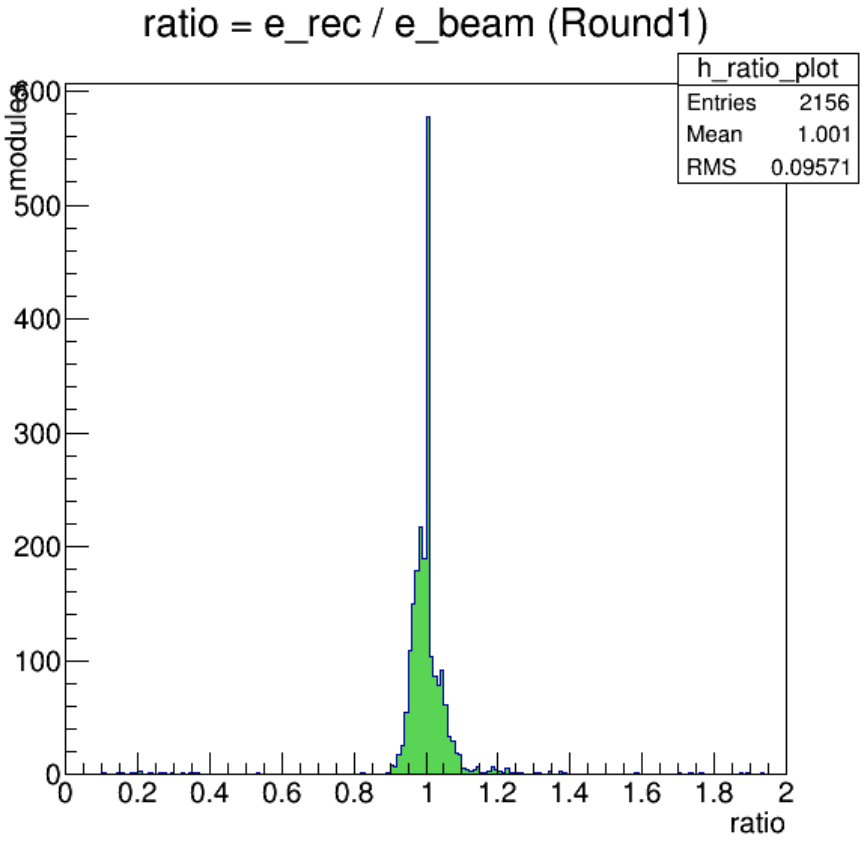
Ncluster > 3

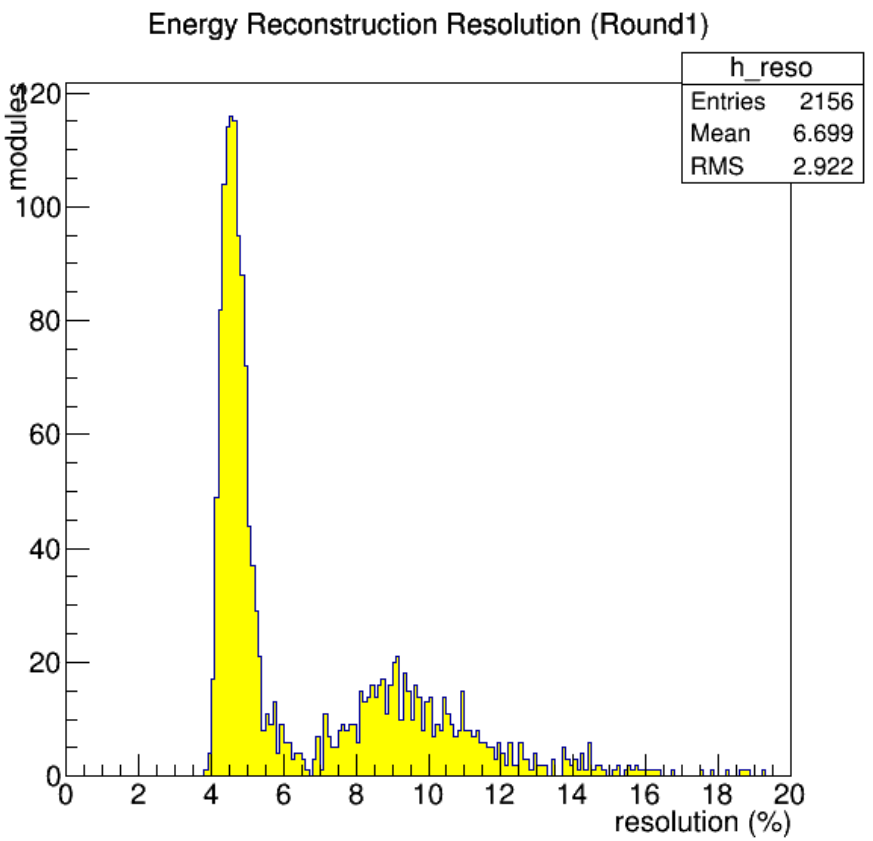


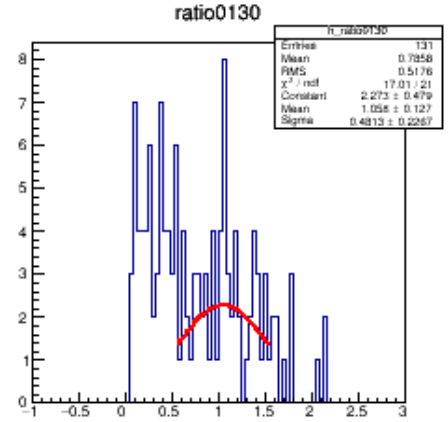


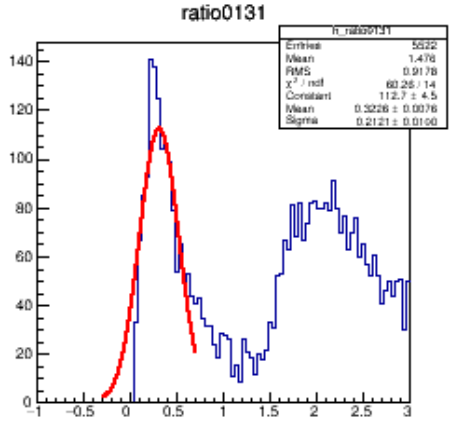
Start with 10% data (only read event.id%10 = 0)

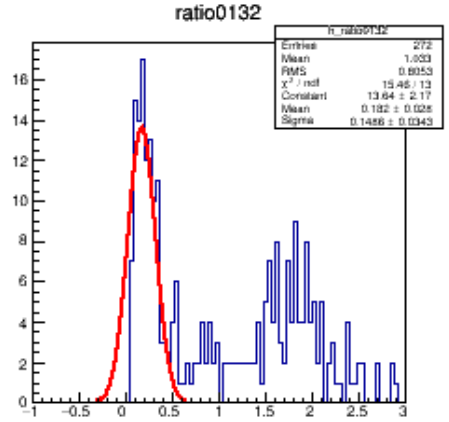
Calculate ratio = e_rec / e_photonbeam .

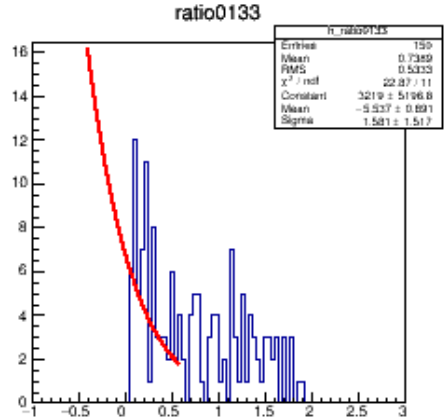


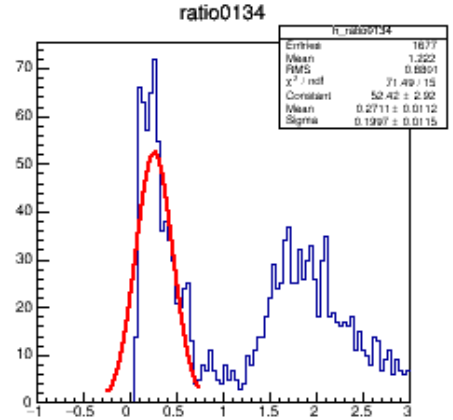


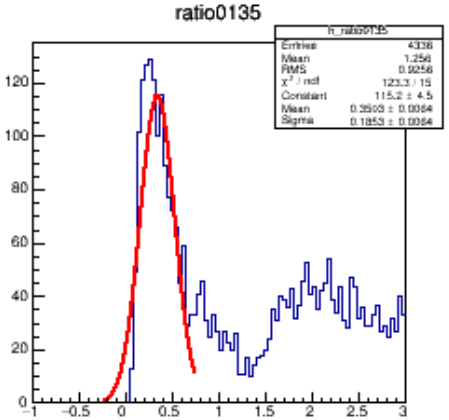

ratio0130
h_ratio0130
Entries 131
Mean 0.7858
RMS 0.5176
χ² / ndf 17.01 / 21
Constant 2.273 ± 0.479
Mean 1.058 ± 0.127
Sigma 0.4813 ± 0.2267

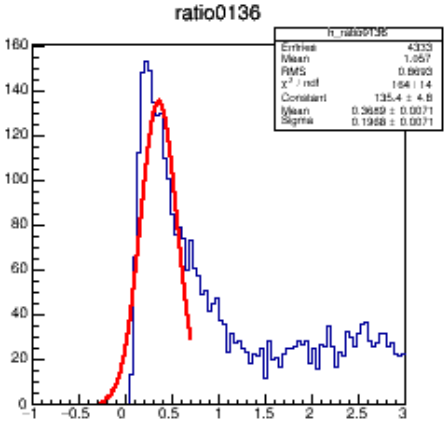

ratio0131
h_ratio0131
Entries 5522
Mean 1.476
RMS 0.9178
χ² / ndf 60.26 / 14
Constant 112.7 ± 4.5
Mean 0.3226 ± 0.0076
Sigma 0.2121 ± 0.0100

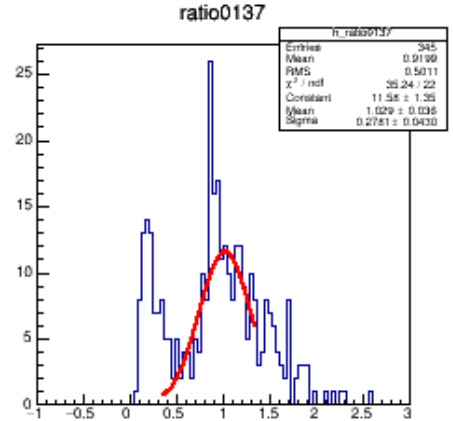

ratio0132
h_ratio0132
Entries 272
Mean 1.033
RMS 0.8053
χ² / ndf 15.46 / 13
Constant 13.64 ± 2.17
Mean 0.132 ± 0.025
Sigma 0.1486 ± 0.0343

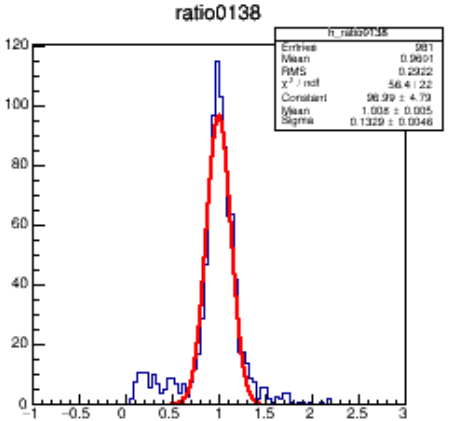

ratio0133
h_ratio0133
Entries 159
Mean 0.7389
RMS 0.5333
χ² / ndf 22.87 / 11
Constant 3219 ± 5196.8
Mean −5.537 ± 0.891
Sigma 1.581 ± 1.517


ratio0134
h_ratio0134
Entries 1677
Mean 1.222
RMS 0.8801
χ² / ndf 71.49 / 15
Constant 52.42 ± 2.92
Mean 0.2711 ± 0.0112
Sigma 0.1997 ± 0.0115


ratio0135
h_ratio0135
Entries 4336
Mean 1.256
RMS 0.9256
χ² / ndf 123.3 / 15
Constant 115.2 ± 4.5
Mean 0.3503 ± 0.0064
Sigma 0.1853 ± 0.0064


ratio0136
h_ratio0136
Entries 4333
Mean 1.057
RMS 0.8923
χ² / ndf 184 / 14
Constant 135.4 ± 4.8
Mean 0.3659 ± 0.0071
Sigma 0.1988 ± 0.0071


ratio0137
h_ratio0137
Entries 345
Mean 0.9199
RMS 0.5011
χ² / ndf 35.24 / 22
Constant 11.55 ± 1.35
Mean 1.029 ± 0.035
Sigma 0.2781 ± 0.0430


ratio0138
h_ratio0138
Entries 981
Mean 0.9601
RMS 0.2922
χ² / ndf 56.4 / 22
Constant 98.99 ± 4.79
Mean 1.005 ± 0.005
Sigma 0.1329 ± 0.0046

Find mean value of ratio for each module:

ratio_val[i], where i=module.id

new_gain[i] = old_gain[i]/ratio_val[i].

Then next round …

Till good enough then do different energy bins get :

ratio[ebin][i] → new_gain[ebin][i] → fit → gain function
(gain[e] = a * e + b)