Subject: Energy correction for gammas
Posted by Dima Melnychuk on Fri, 28 Nov 2008 17:22:16 GMT
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Hi all,

I made an attempt to implement the energy correction in emc just porting correction from Panda Emc in Babar framework.

The results are not very promising.

I simply have taken parametrisation of energy correction from EmcCalibToo/EmcPhotonSimpleCalib.cc and implemented it as a method of PndEmcBump::GetEnergyCorrected().

The results are the following.

For the barrel emc, gamma with energy 1 GeV emitted in theta [25;135] degree, phi [0;360] degree.

The following plot is obtained with macro\emc\reco_analys4.C.
The top plot is without correction and bottom with correction.

So the correction is too large. It seems than that correction for 3 percent energy loss would be closer to generated energy.

For the shaslyk emc, gamma with energy 1 GeV emmited in theta [0;5] degree, phi [0;360] degree.

And correction is too small.

And I am really sorry but I do not have time at the moment to investigate the discrepancy (i.e. why this parametrisation of the energy correction works in Babar framework but not in pandaroot).

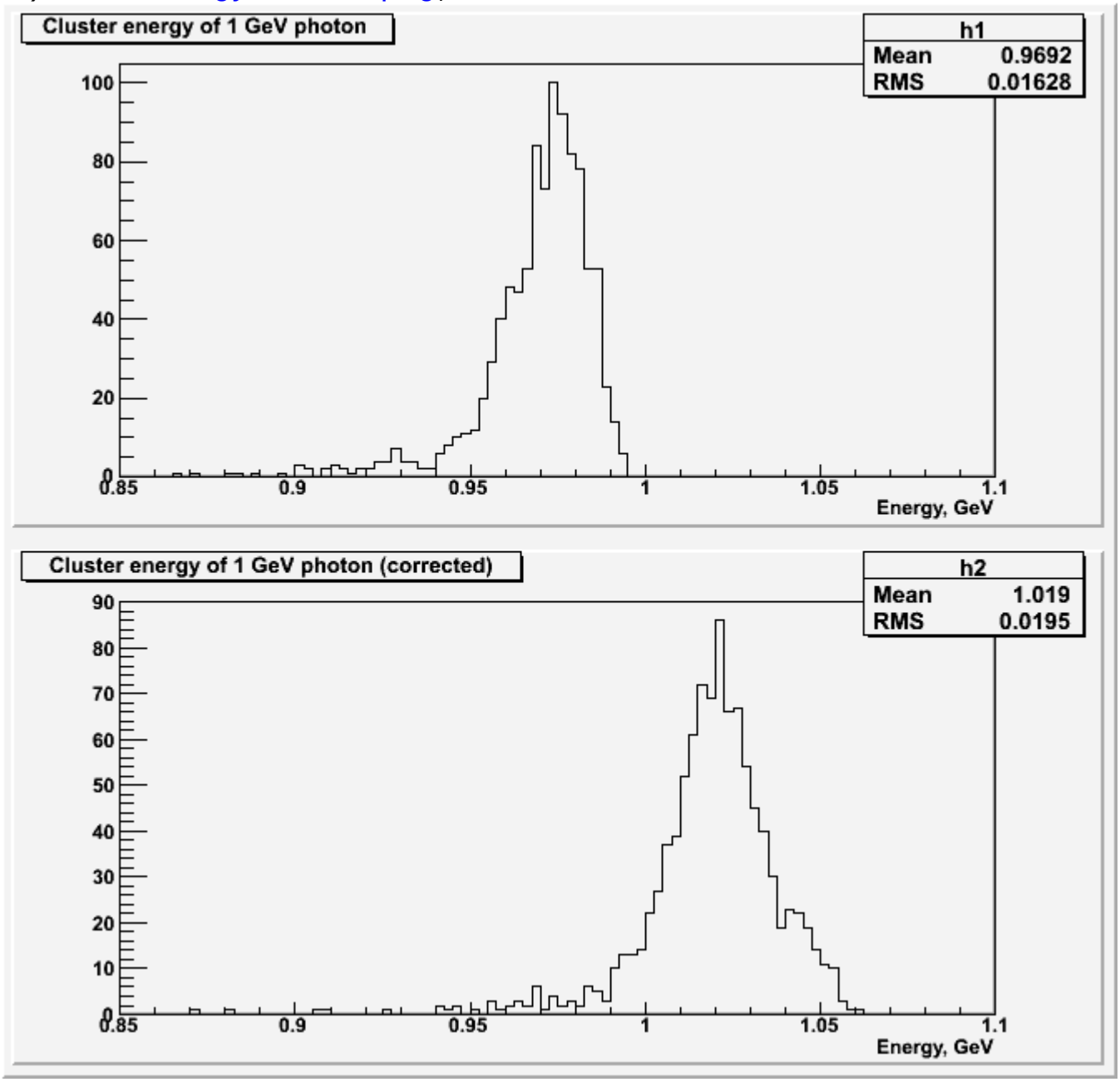
And one general remark how to implement energy correction in the proper way. Of course the EmcBump is not the proper place to apply energy correction. It should be applied at least after Cluster-Track matching to reject clusters produced by the charged particles.

But it seems than it cannot be applied in exactly the same way as in Babar framework, since as I can see there it is strongly coupled with PID. At least correction is applied to the object which is produced after identification of the Bump/Cluster as Neutral Candidate. And in pandaroot the PID procedure is foreseen to be different and I do not see now how to couple energy correction with it at the moment. So it's a point for discussion.

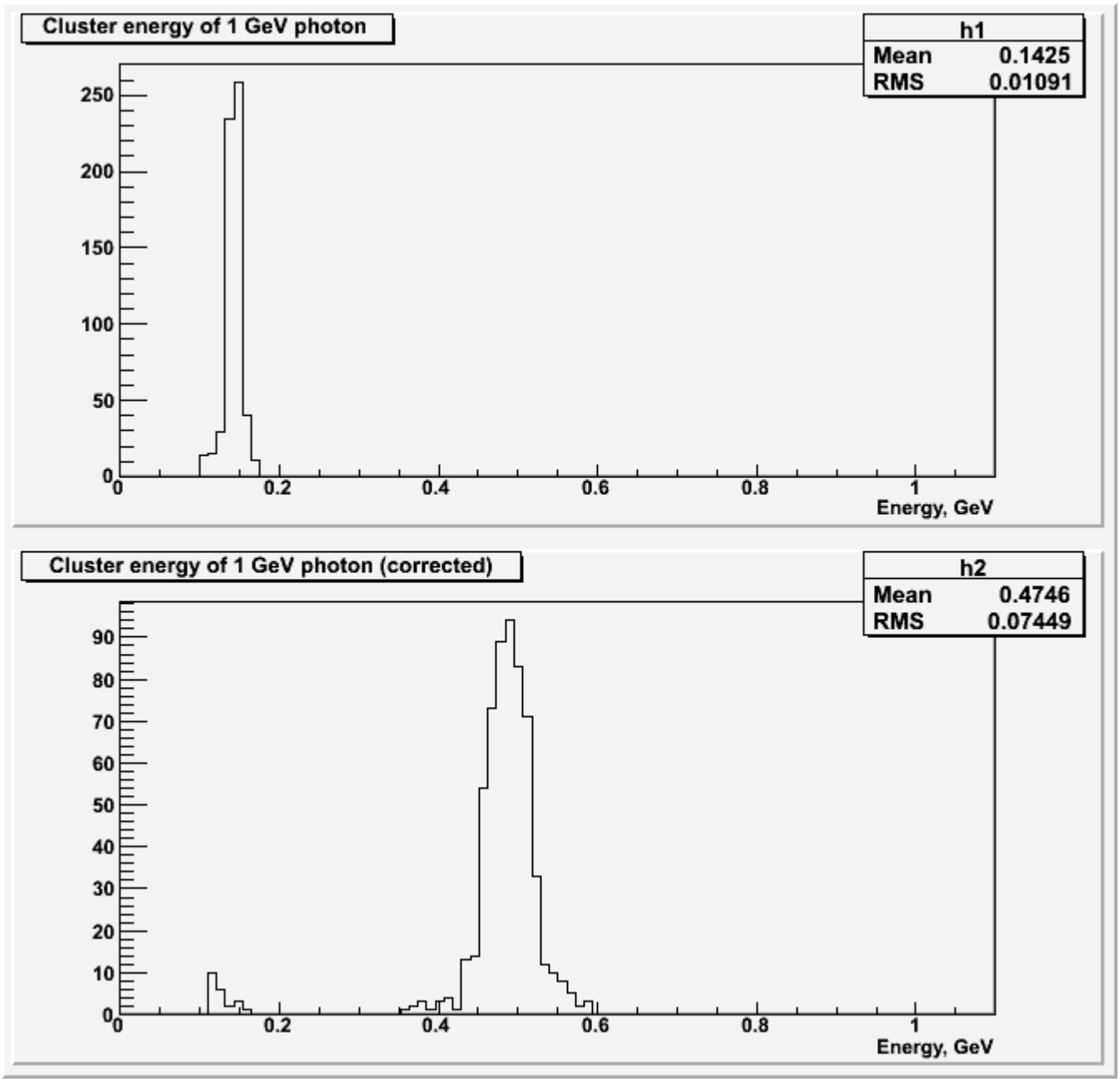
Best regards,
Dima

File Attachments

1) emc_energy_barel.png, downloaded 1558 times



2) emc_energy_shashlyk.png, downloaded 1592 times


Cluster energy of 1 GeV photon
h1
Mean 0.1425
RMS 0.01091
250
200
150
100
50
0
0
0.2
0.4
0.6
0.8
1
Energy, GeV
Cluster energy of 1 GeV photon (corrected)
h2
Mean 0.4746
RMS 0.07449
90
80
70
60
50
40
30
20
10
0
0
0.2
0.4
0.6
0.8
1
Energy, GeV