Subject: Photons at low energies?
Posted by StefanoSpataro on Tue, 28 Aug 2007 15:19:40 GMT
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Hello,
Chris has found a particular behaviour of the cluster response for low energy photons...

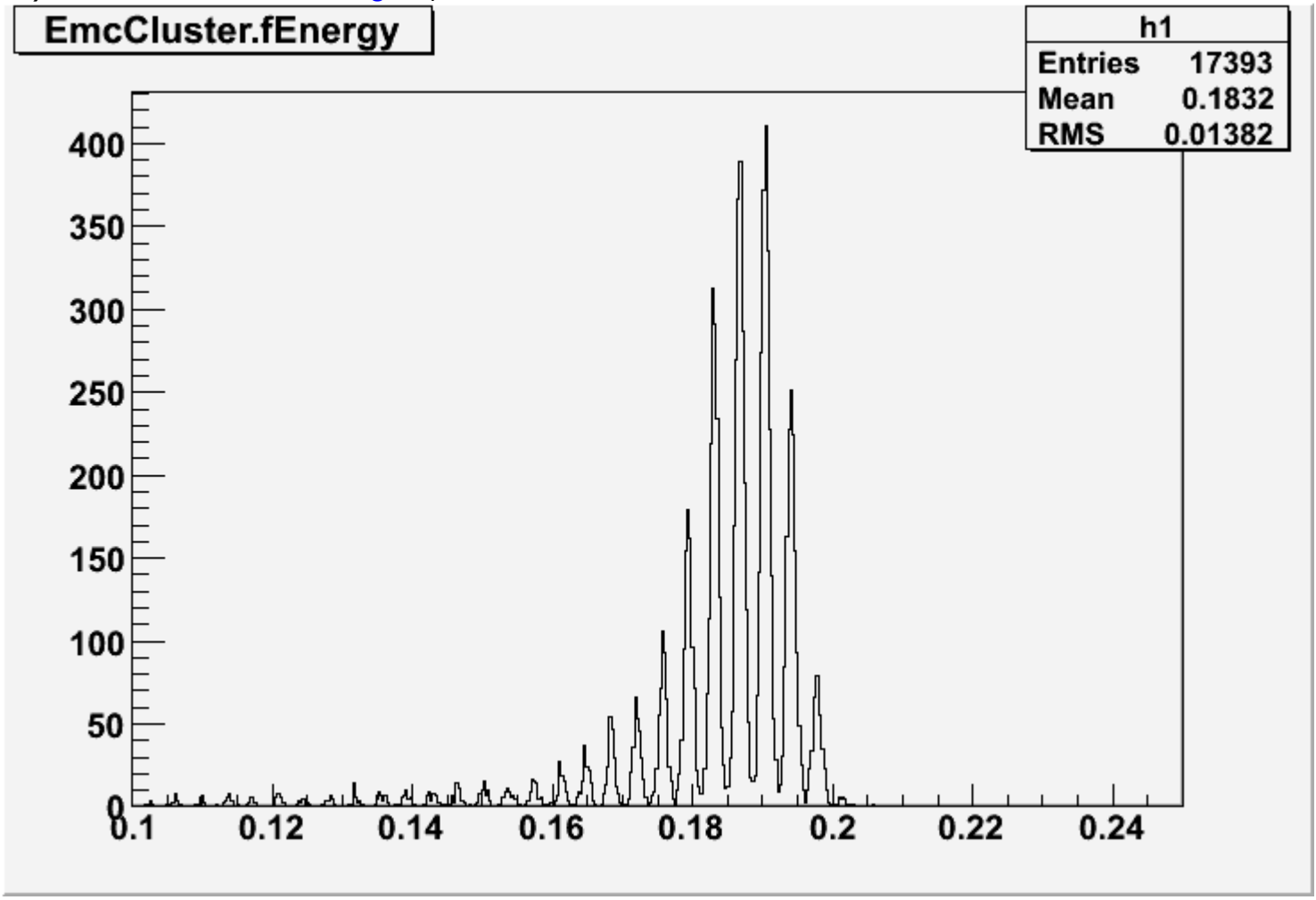
If you run the EMC simulation (G3) with photons at 200 MeV in the theta range of [40°-140°], and then you perform the full recontruction, this is the plot you get as cluster energy:

(the plot was made with 10k events, but even with 1k events you can see the same). I check with the stable version 1_0_0 and with the last svn update. It seems that the energy response is discrete, with an energy spacing of ~ 3 MeV. I checked with 400 MeV or higher energies but it seems it is not present there, neither increasing the binning (so it is not an effect of the histogram).

Maybe some problem with digitization?

File Attachments

1) emc_clu_200MeV.gif, downloaded 1083 times



Subject: Re: Photons at low energies?
Posted by Dima Melnychuk on Tue, 28 Aug 2007 16:25:45 GMT
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Hi,
This behaviour is really connected with digitization.

Now digitization is implemented in the way that energy range from 0 to 15 GeV digitized with 12 bits. I.e. with step 15000/2^12=3.7 MeV. And it results in such a discrete response.

May be this is not realy realistic and low energy will be digitied with higher precision.

I would propose to put at the moment 14 bits in emp.par file for NBits and update this number when final emc readout will be known in more details.

Dima