Subject: geometry check
Posted by Aleksandra Biegun on Wed, 16 May 2007 13:05:22 GMT
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Hello,

I have done 2 pictures for EMC with
- theta' and phi' angles of crystals (hits) and
- theta and phi calculated from X, Y and Z positions.

I noticed few small spaces for reconstructed
polar theta and azimuthal phi angles
(from X,Y and Z positions of crystals)
at about 75,85,95 and 105 degrees (emc_hits_th_phi_calculated.ps),
this is the range for the barrel part.
So, it means that that there are crystals missing?

Cheers,
Aleksandra.

File Attachments

1) emc_hits_get_theta_phi.ps, downloaded 386 times
2) emc_hits_th_phi_calculated.ps, downloaded 391 times

Subject: Re: geometry check
Posted by StefanoSpataro on Mon, 21 May 2007 12:20:06 GMT
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Hello,
the Hit information comes from the center of the crystal, so it can be that there are holes in this distribution.
But if you check the theta/phi of the points, then you will see there are no holes (maybe only some deep).

In the following plots you can see these distributions, in red for the forward module, in blue for the backward one.

EmcPoint.GetTheta() distribution, before the shift:

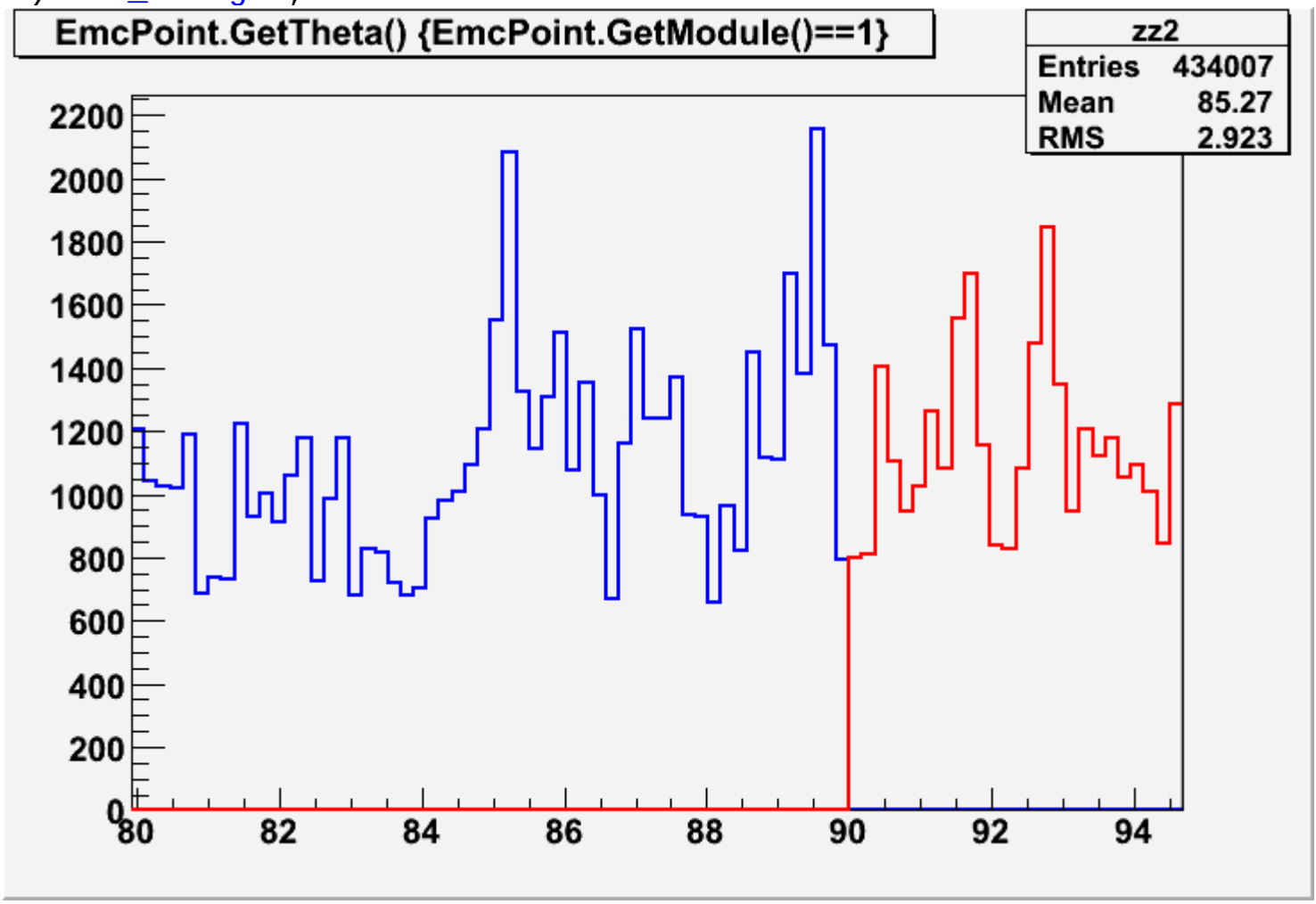
EmcPoint.GetTheta() distribution, after the shift:

The overlap region is now present, that means if one particle will go there, it will produce a signal in both the crystals, and not in one (or mabye in no one) of them.
The loss in counts I think should be adjusted by the calibration procedure, but this has to be

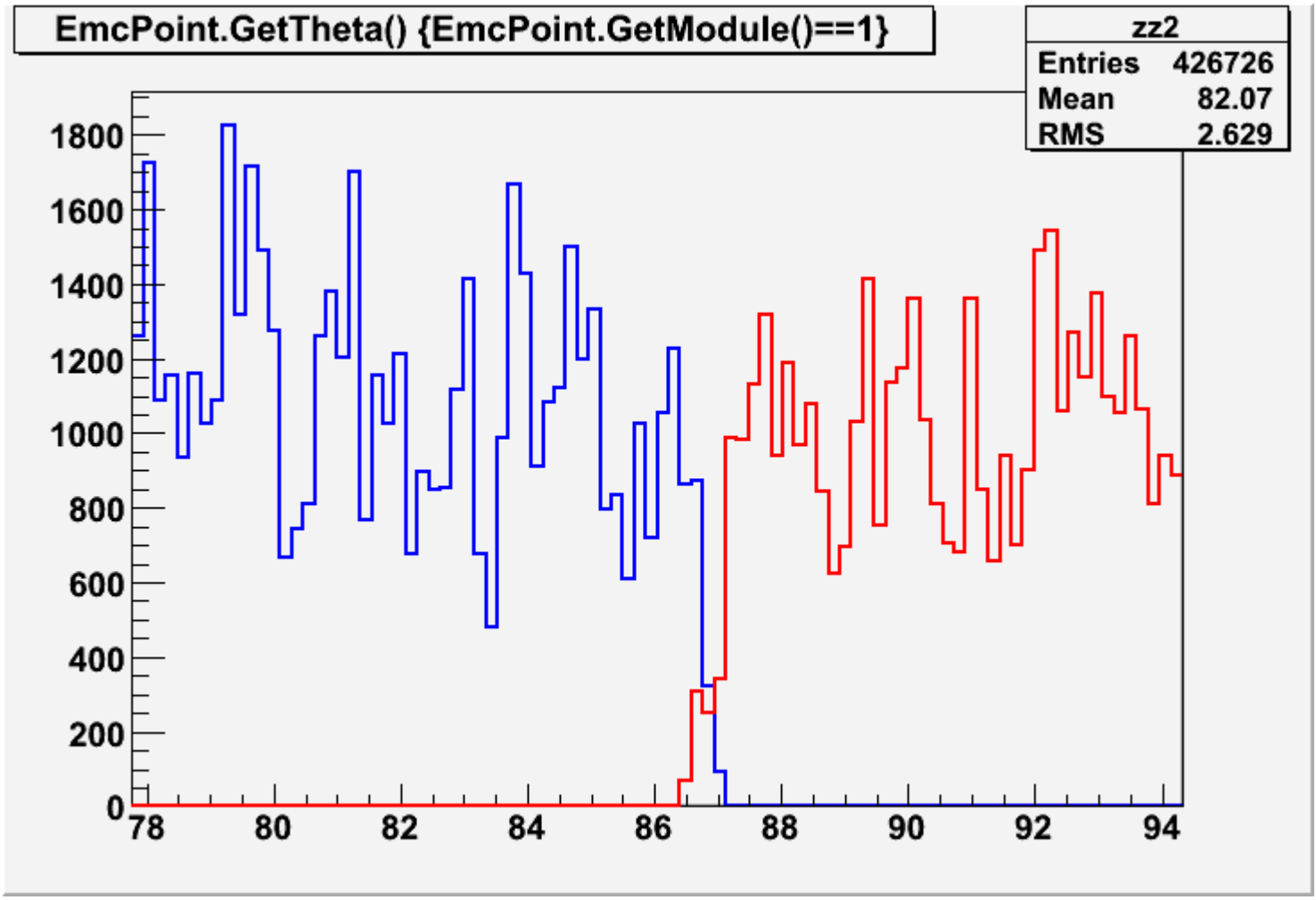
studied.

File Attachments

1) emc_old.gif, downloaded 662 times



2) emc_new.gif, downloaded 603 times



Subject: Re: geometry check
Posted by Aleksandra Biegun on Tue, 22 May 2007 11:20:09 GMT
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Hi Stefano,

thanks for the answer.

So,

from your 2nd picture (after shift module 1 and module 2 about 37mm) I understand that now we do not have overlaps in theta' (theta' - is theta angle for cryctal) angle at 90 degrees and we have some "space" around 87 degrees, which I can guess we should not have, correct?

I have done the same 2 pictures like last time, but with the 37 mm shift of module 1 and 2. Pictures looks very similar (holes are shifted in theta). But, I have also done picture with theta'=f(phi') for Points, and there is only hole between barrel and backward endcap which I am going to remove by shifting backward endcap to the target. But the structure is a little bit strange. I run 1000 event for range of theta 5-175 degree and full range of phi angle and I expected to have some homogeneous ditribution of points, but I see that only some of detectors give signals, but maybe it is ok, maybe for only 1000 events it is possible. What do you think?

Ciao,
Ola.

File Attachments

1) emc_points_th_phi_mod12_shifted37mm.ps, downloaded 399 times

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Subject: Re: geometry check
Posted by StefanoSpataro on Tue, 22 May 2007 13:21:42 GMT
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Hello,

Aleksandra Biegun wrote on Tue, 22 May 2007 13:20
from your 2nd picture (after shift module 1 and module 2 about 37mm) I understand that now we do not have overlaps in theta' (theta' - is theta angle for cryctal) angle at 90 degrees and we have some "space" around 87 degrees, which I can guess we should not have, correct?

Well, it is exactly the contrary.
In the 2nd picture we have overlap between module 1 and module 2 in the 87° region -> one photon at 87° hit both the modules. So if you sum all the counts, you will not see any holes there.
Before, if a particle was emitted exactly at 90°, if you look at the first plot, it could go in between the two modules (between red and blu), hitting no crystals at all (the dead region between crystals) -> no signal.

Aleksandra Biegun wrote on Tue, 22 May 2007 13:20
I have done the same 2 pictures like last time, but with the 37 mm shift of module 1 and 2. Pictures looks very similar (holes are shifted in theta). But, I have also done picture with theta'=f(phi') for Points, and there is only hole between barrel and backward endcap which I am going to remove by shifting backward endcap to the target. But the structure is a little bit strange. I run 1000 event for range of theta 5-175 degree and full range of phi angle and I expected to have some homogeneous ditribution of points, but I see that only some of detectors give signals, but maybe it is ok, maybe for only 1000 events it is possible. What do you think?

First of all, I would suggest to save pictures as gif/jpg instead of ps, in order to avoid to have 6Mb files with scatter plots

Second, probably 1000 photons are not enough for 2D plots. I would suggest to check with the same statystics only 1D distribution -> Theta, in order to not see the single spots of the crystals. The structure is connected to small showers, I think.
So everything normal there
