Subject: Cluster energy overestimated
Posted by donghee on Tue, 04 Aug 2009 11:00:18 GMT
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Dear EMC experts,

I have seen that estimated energy with finding cluster in EMC is slightly overestimated.
You find related 3 plots in attached files.

MC true and reconstructed energy are compared in theta and momentum bin.
You can clearly see the overestimated energy in energy resolution 2D plot.

EMC_g_mom_the_distribution.eps (red=MC, blue=reconstructed)
EMC_g_energy_resolution_2D.eps
EMC_g_theta_resolution_2D.eps

If I have a look for electron case, same amount of energy is also shifted.
I'm wondering how the calibration have been done. and how do we can correct wrongly reconstructed energy in EMC.

Best regards,
Donghee

File Attachments

1) EMC_g_mom_the_distribution.eps, downloaded 444 times
2) EMC_g_energy_resolution_2D.eps, downloaded 397 times
3) EMC_g_theta_resolution_2D.eps, downloaded 447 times

Subject: Re: Cluster energy overestimated
Posted by mpeliz on Wed, 05 Aug 2009 12:07:01 GMT
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Hi Donghee,

the applied calibration method is described in the EMC TDR.
We calibrate on the mean value of the asymmetric distribution of the reconstructed energy, not on it's maximum value. Therefore the "shift" you observed in your resolution plot.
The broad spread for a few events in your plot could come from split offs or photons going to the edge barrel/endcap or forward/Shashlyk.

However, the parameters of the calibration were taken from the Babar-like software which uses a different Geant version then the actual one used by PandaROOT. Therefore -at least- some fine tuning is necessary and we are looking for volunteers.

Sincerely,
Marc

Subject: Re: Cluster energy overestimated
Posted by donghee on Wed, 05 Aug 2009 13:08:00 GMT
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Dear Marc Pelizaeus,

Thank you for your kind explanation.

Best wishes,
Donghee