Subject: Abnormal distribution
Posted by Jifeng Hu on Mon, 21 Jan 2013 17:45:17 GMT
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In this simulation, a box generator was used to shoot three 1GeV energy photons. Then their energy was reconstructed (E_{rec}, and compared to the energy in Monto Carlo truth (E_{truth}).

please see the plot in the attachment.

The X-axis shows the polar angle in unit rad, the Y axis shows the energy difference (E_{rec}-E_{truth}) in unit GeV.

We can find,
a) the Shashlyk calorimeter has a worse resolution, but a longer right-side tail, it implies a incorrect reconstruction in EMC cluster or bump.
b) for the intersection between forward calorimeter and shashlyk calorimeter, still a longer right-side tail exists.

c) barrel calorimeter looks good, a left-side tail arises from the energy leak in crystal and energy loss before hitting crystals.

d) for the intersection between barrel and backward, there exists a large gap, but abnormal reconstruction near theta value 2.5.

e) energy reconstruction near the edge of backward calorimeter need more correction.

What are your opinions?
The energy reconstruction determines the photon detection efficiency.

File Attachments

1) energy_vs_theta.eps, downloaded 667 times