Subject: Lumi position in x-y plane
Posted by donghee on Wed, 29 Jul 2009 20:10:12 GMT
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Dear Lumi experts,

What about x and y position of Lumi?
and is the location of lumi considered dipole bending magnet
in MC simulation?

I'm tryting to find scattered particle in the range of 20 - 70 mrad at Lumi station.

Could you give me some number of the limitation for theta angle when Lumi is installed at 10m downstream?

Thank you,
Donghee

Subject: Re: Lumi position in x-y plane
Posted by donghee on Thu, 30 Jul 2009 07:42:33 GMT
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Dear Colleagues,

I have tested the possible detection rate of Lumi-monitor.
Some box generator produced anti-proton particle with following condition
Quote:

```
      boxGen->SetPRange(14, 15);
 boxGen->SetPhiRange(0.,360.);
 boxGen->SetThetaRange(0.001, 1.0);
```

I required coincidance hits in each 4 station at Lumi as suggested in Lumi macro.
And I have scan the three different theta range with 0.001-0.2, 0.2-0.4, 0.4-0.6 degree. Finally I have got the number of reconstructed event in Lumi.

Set 1. (0.001-0.2 degree) 652(reconstructed in Lumi) / 10000(generated)
Set 2. (0.2 - 0.4 degree) 1425(reconstructed in Lumi) / 10000(generated)
Set 3. (0.4 - 0.6 degree) 72(reconstructed in Lumi) / 10000(generated)

This number shows us that the Lumi-monitor detection rate is quite poor and not so efficient in current setup!
And allowing theta acceptance is less then 0.4 degree! (need more fine bin to see precise limit)
Delta theta(MC-reco) plot is attached for data set2.

I found that Lumi is located x=0, y=0, z=10.5-12.5m without considering bending magent, therefore it has x=0, y=0 position now, and beam pipe is also designed as straight line.
This is not realistic position, if you want to test lumi with forward bending magnet. Is the

geometry and location updated during last 2-3 weeks?

If you have some comment, would be helpful!
Thank you,
Donghee

File Attachments

1) z_2.eps, downloaded 349 times

Subject: Re: Lumi position in x-y plane
Posted by Tsitohaina Randriamalala on Thu, 30 Jul 2009 09:58:03 GMT
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The theta range for the lumi monitor setting is 3mrad-8mrad (0.17degree-0.45degree). This is based on what is described in http://www-panda.gsi.de/auto/_home.htm (see lumi section).

Since the beampipe does not show any bend till now in pandaroot, the lumi sensors seat parallel to xy plane. And to shift and to rotate it according to the bend due to the dipole is not really a big deal afterwards.

Thanks
