Subject: Dipole and transcient B field effect
Posted by Tsitohaina Randriamalala on Tue, 19 May 2009 15:50:01 GMT
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Dear all,

I have performed simulations just to check if the B fields (especially for the dipole and the transition region) are as well implemented in pandaroot as how they are described in the Magnet Technical Design Report (MTDR).
5000 events with single antiproton propagated from the IP at different momenta (1.5 , 4.06 , 8.9 , 11.91 , 15 GeV/c) were run. At z=10m is placed an active plane. No subdetector, including the beam pipe was used.
The projection on x-axis of the hit positions are plotted (see attached files) for these values of momenta.
According to the MTDR, at z=10m, the distance that separates the two extreme antiproton beams trajectories is 0.4mm. Here I got about 1 cm wide. Too wide!!!
I think the field maps need to be treated with more accuracy!
Otherwise the scattered particles by the beam pipe will create a high level of background for some forward subdetectors (for the luminosity monitor, for instance).

Thank you.
Cheers,

File Attachments
1) Dipole_effect_X.ps, downloaded 560 times

Subject: Re: Dipole and transcient B field effect
Posted by StefanoSpataro on Tue, 19 May 2009 16:49:50 GMT
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Have you also changed the BeamMomentum in fRun?

Subject: Re: Dipole and transcient B field effect
Posted by Tsitohaina Randriamalala on Wed, 20 May 2009 10:34:38 GMT
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Hi,

I add fRun->SetBeamMom(BeamMomentum) in my macro. So if so I did!

Subject: Re: Dipole and transcient B field effect
Posted by Tsitohaina Randriamalala on Wed, 20 May 2009 14:24:42 GMT
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I plotted here the field components variation along z-axis.

The shifts at the low values of x, at the momenta 4.6 GeV/c and 11.91GeV/c of the antiproton beam in the histogram (in the first mail), may be related to the existing cut at z ~ 600 cm of the y component of B.

And similarly the presence of a jump on By at z~600cm may be the cause of the shift at the high values of x for the case of 8.9 GeV/c beam momentum.

File Attachments

1) Bcomp_0150.ps, downloaded 488 times
2) Bcomp_0406.ps, downloaded 487 times
3) Bcomp_0890.ps, downloaded 473 times
4) Bcomp_1191.ps, downloaded 502 times
5) Bcomp_1500.ps, downloaded 458 times

Subject: Re: Dipole and transcient B field effect
Posted by Jost Lühning on Tue, 18 Aug 2009 12:53:43 GMT
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Has the problem been solved meanwhile?

In the plots the maximum of the magnetic field in the dipole should be about 0.27 T for 4.06 GeV/c, 0.6 T for 4.06 GeV/c, 0.8 T for 11.91 GeV/c, and 1.0 T for 15 GeV/c.

Subject: Re: Dipole and transcient B field effect
Posted by Mohammad Al-Turany on Fri, 04 Sep 2009 23:15:18 GMT
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Hallo,

Sorry for the delay in solving this trivial problem! any way it is now solved please check and let me know.

regards

Mohammad

Subject: Re: Dipole and transcient B field effect
Posted by Mohammad Al-Turany on Fri, 04 Sep 2009 23:31:16 GMT
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Hallo,

The corrected maps are also now in the stable branch of pandaroot (-r 6422)

regards