Subject: Re: back-propagation with GEANE
Posted by Lia Lavezzi on Mon, 24 May 2010 16:13:13 GMT
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Hi Anastasia,
let me ask some questions: you are simulating antiprotons from the IP (0, 0, 0) which travel inside the beam pipe, where there is vacuum. Which is the starting momentum (also the direction)?
The luminosity monitor is positioned at some distance in z direction (how far?), downstream, around the beam pipe, but very close to it, right?

Quote:About "significant":
First of all I'm interesting in knowledge of angle resolution,
so under "significant" I meant differences between simulated and reconstructed values of angles. I don't know how to correct compare them, but I see, that these differences much more bigger, then uncertainties, for example, due to multiple scattering in luminosity monitor. And also I can not explain shape of these differences (for example in angle phi).

In absence of magnetic field I expected differences between simulated and reconstructed values of angles equal to zero. Because I simulated tracks in vacuum inside beam pipe, so there is no any material and I expected obtain PCA equal to (0,0,0).
... actually we see very small differences in your plots
For example: 0.05 x 10^-6 in phi and 10^-9 in theta... These are round off errors.
Are we misunderstanding something? You say the differences are bigger than what expected from multiple scattering in the luminosity monitor: what is the expected value?

Quote:But you right if I compare differences between coordinates of PCA and momentum coordinates with GEANE errors for these variables it seems everything is fine (with the exception of case with zero errors). I would like to know what is the nature of this non-zero errors in absence of magnetic field? Is it only computing uncertainties?
To be detected, the antiprotons must exit the beam pipe and enter the luminosity monitor, so they undergo both multiple scattering and energy loss, even if they have travelled for a large part of their path in vacuum and even without magnetic field.

GEANE errors are calculated summing up three different contributions:
1) errors due to the initial error in direction (present even without magnetic field) propagated during tracking;
2) errors propagated by magnetic field during tracking;
3) random effects errors, added at each step.

In your case:
1) you don' t have magnetic field, so no type 2 errors.
2) If you put starting errors equal to 0, you will neither have errors of type 1. (Did you put again the starting error to 0 or did you put there some value?)
3) Concerning the random effects, (dedx and multiple scattering), they contribute to the error of type 3.

If we are saying something wrong, please correct us!
Cheers,
Lia and Alberto.