Subject: B field scaling for PANDA
Posted by Aleksandra Wronska on Thu, 29 Jan 2009 08:48:55 GMT
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Dear all,

I am now trying to set up simulations for tracking TDR and have my first problems with it. It concerns scaling of the B-field.

The current default for PANDA FS is the so-called chicane option, which requires that B-field of the dipole scales with the beam momentum, reaching its max. value of 1 T at pbeam=15 GeV/c.
For realistic simulations, I load three field maps:

1) SolenoidMap - for which scaling factor should be always 1, because this field does not affect beam direction

2) DipoleMap - which should scale with pbeam to keep the beam on the same position

3) TransMap - with which I have actually a problem, because this is a summed up fringe field of the dipole (which scales) and the solenoid (which is constant). Thus, the best solution that I see here is to have several maps for this region generated for different beam momenta (i.e. different dipole fields) such, that one can make reasonable interpolation between them to the simulated beam momentum.

Another issue is who and where should take care of that scaling stuff in the simulation macro. As I see it, the user should define one parameter of CbmRun, namely beam momentum, and the rest could be done for him/her in the CbmRun->SetField() function or a similar place. It should be possible everywhere in the code (also in the detector- and tracking-specific tasks) to ask the current run what its beam momentum is.

Write me (a.s.a.p. because of TDR time pressure) what you (in particular Mohammad) think about it. Perhaps some of the features are already there, just that I have not found them.

Thanks in advance,
ola