Subject: Re: Momentum resolution and reconstruction efficiency of LHE tracking
Posted by Alberto Rotondi on Thu, 11 Feb 2010 17:51:24 GMT
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Hi Christian,

the physics contained in GEANE is the following:

Mean values: dE/dx is the same of GEANT3, that is valid down to 10 keV (Bethe Bloch, Tables and Bremmstrahlung). Multiple scattering has zero mean value. Magnetic field works for any energy. However, spiralization could create problems, depending on the particular geometry. This is, in my experience, the main problem, because the user has to manage missing planes, missing volumes and so on.

Errors: multiple scattering sigma should work for any energy.
At low energy the shape deviates from Gaussian, but only on the tails, and the effect should be small.
dE/dx sigma is calculated with the standard formula sigma^2=csi*Emax*(1-beta^2/2)
which works very well at low energy.

In conclusion, I think that the main problem is spiralization.
I do not exclude the existence of problems due to the
robusteness of the program in dealing with a complicated track
geometry, but this should be verified in practice.

Best regards
Alberto