Subject: [FIXED] why is total energyloss always too small?
Posted by Prometeusz Jasinski on Mon, 29 Jul 2013 14:12:26 GMT
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We tried to stop electrons in Silicon active material. The total energyloss calculated by the PandaSDS classes for the mctracks gives always about 300 keV to less, regardless if only one process happened or several.

Momentum [MeV]	Eloss [MeV]
0.5	0.203
1	0.6119
2	1.553
3	2.532
4	3.521
5	4.515

Numbers are sharp, not distributed. What did I miss?

Neutrons are even not recognized.

The lower cut was already reduced in the corresponding macro.

Subject: Re: why is total energyloss always too small?
Posted by StefanoSpataro on Tue, 30 Jul 2013 07:49:51 GMT
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Could you please attach the code you used? So that it is possible to check.
Have you compared Geant3 and Geant4, and also to disable the special cuts?

Subject: Re: why is total energyloss always too small?
Posted by Prometeusz Jasinski on Tue, 30 Jul 2013 09:33:58 GMT
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Sure thing. So it is nothing obvious like momentum must not correspond to total energyloss, or so. I attached the code by my bachelor student.

As far as I remember Geant3 and Geant4 gave very similar results for protons. Electrons we did not test yet with Geant3.

How do I disable special cuts?

File Attachments
1) RadiationAnalysis.cxx, downloaded 356 times

Subject: Re: why is total energyloss always too small?
Posted by Prometeusz Jasinski on Tue, 30 Jul 2013 09:37:02 GMT
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And I just realized that he fills the histogram with "Eventeloss" for each eloss step and not each event. But at the end it is regardless, since we looked on the maximum bin entry only.

Subject: Re: why is total energyloss always too small?
Posted by Prometeusz Jasinski on Tue, 30 Jul 2013 11:48:52 GMT
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Ok, found my own thought mistake:

m**2 = E**2 - p**2

=> Edep = E - E_mass_at_rest = sqrt(m**2+p**2)-m

with all the c's missing, so inserting masses and energies in MeV directly.

Gives the missing value in Edep. Nether thought about this before.

Thanks for your time

Subject: Re: why is total energyloss always too small?
Posted by StefanoSpataro on Tue, 30 Jul 2013 13:33:42 GMT
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Hi,
I suppose the problem is fixed now.
However, if you check gconfig/g3Config.c g4Config.C you can disable SpecialCuts. In the file SetCuts.C you can change the selections.in the past electrons where producing different results with g3 and g4.
Now it should be fixed.

Subject: Re: why is total energyloss always too small?
Posted by Prometeusz Jasinski on Wed, 31 Jul 2013 06:16:51 GMT
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Yes, the mistake is found. Thank you for your efforts anyway.
