
Subject: Re: back-propagation with GEANE

Posted by [Anastasia Karavdina](#) on Wed, 23 Jun 2010 09:31:52 GMT

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Hi Lia!

Finally I understood source of our problem!

It's rounding accuracy!

For example without magnetic field I don't need to rotate the luminosity monitor and middle of the first plane always in 1100 cm. The thickness of plane 150 mkm, so position of first surface of first plane should be always in 1099.9925 cm. But we use TVector3 for store hit information (and I think it use double to store each coordinate), so z coordinate is not exactly 1099.9925 it is 1099.992554. Then GEANE takes this number and it's rounded to 1099.9926. And for GEANE it means that this point placed inside silicon plane (after 1 mkm of silicon), so GEANE calculate energy loss and so on. Without magnetic field z coordinate of first hit always the same (1099.992554) and I always have energy loss, because GEANE round it to 1099.9926. With magnetic field I have to rotate my planes, so z coordinate of hit on the first plane depends from x coordinate. For GEANE number 1099.99254 and 1099.99255 are not the same, because it is rounded in 1099.9925(outside Lumi) and 1099.9926(inside Lumi) respectively. What's why in half of events I have energy loss and in half of events I haven't. It doesn't depend from particle direction and other things it's only statistics.

This is log file:

StartPos:

TVector3 A 3D physics vector (x,y,z) = (3.455978,-5.988487,1099.992554)

StartMom:

TVector3 A 3D physics vector (x,y,z) =(0.027962,-0.048452,8.899824)

=====> starting GEANE tracking for ANTIPROTON NEPRED = 1 with options : BLE

X	Y	Z	R	NAME	NUMBER	SLENG	STEP	DESTEP	GEKIN
MECHANISMS									
3.4560	-5.9885	1099.9926	6.9142	LumA	0	0.0000	0.0000	0.0 eV	8.011 GeV
NULL									
3.4560	-5.9885	1099.9871	6.9141	LumA	0	0.0056	0.0056	19.5 keV	8.011 GeV
NEXT NEXT LOSS									
3.4560	-5.9885	1099.9871	6.9141	cave	1	0.0056	0.0000	0.0 eV	8.011 GeV
NULL									
2.3716	-4.1094	754.8403	4.7447	cave	1	345.1591	345.1536	0.0 eV	8.011 GeV
FIEL									
1.2872	-2.2304	409.6935	2.5752	cave	1	690.3127	345.1536	0.0 eV	8.011 GeV
FIEL									
0.2028	-0.3514	64.5467	0.4057	cave	1	1035.4663	345.1536	0.0 eV	8.011 GeV
FIEL									
-0.8816	1.5276	-280.6001	1.7638	cave	1	1380.6199	345.1536	0.0 eV	8.011 GeV
FIEL									
-1.9660	3.4066	-625.7469	3.9332	cave	1	1725.7734	345.1536	0.0 eV	8.011 GeV
FIEL									
-3.0504	5.2857	-970.8937	6.1027	cave	1	2070.9270	345.1536	0.0 eV	8.011 GeV
FIEL									
-3.4560	5.9885	-1099.9927	6.9142	cave	1	2200.0286	129.1016	0.0 eV	8.011 GeV
FIEL PRED									

Is it possible to improve accuracy of input for GEANE? (and using for instance 1099.992554

instead of 1099.9926)

Cheers,
Anastasia.
