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Subject: Bug in Geane?

Posted by [Anonymous Poster](#) on Thu, 01 May 2008 21:30:23 GMT

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Hi,

I have encountered strange behaviour in geane, which is keeping me from continuing my work on genfit. I would be grateful, if someone could look at this and try to find out, where it goes wrong.

Here is how you can reproduce the bug:

- update trackrep and genfit
- include genfit/pocaTest in your global CMakeLists.txt
- make install
- run the macro genfit/pocaTest/runTest.C (runs task POCAtestTask4.cxx)

This does one extrapolation, which goes wrong. It should be simple. Here is the output of the testTask:

DetPlane: O(0.1,0.2,0) u(-0.8165,0.4082,0.4082) v(0,-0.7071,0.7071) n(0.5774,0.5774,0.5774)

TVector3 A 3D physics vector (x,y,z)=(0.100000,0.200000,0.000000)

(rho,theta,phi)=(0.223607,90.000000,63.434949)

TVector3 A 3D physics vector (x,y,z)=(1.154701,1.154701,1.154701)

(rho,theta,phi)=(2.000000,54.735610,45.000000)

DetPlane: O(1.255,1.355,1.155) u(-0.8165,0.4082,0.4082) v(0,-0.7071,0.7071)

n(0.5774,0.5774,0.5774)

5x1 matrix is as follows

		0	
0		-0.5	
1		0	
2		0	
3		0	
4		0	

CbmGeaneUtil::FromSDToMars-1

CbmGeaneUtil::FromSDToMars-1

5x1 matrix is as follows

		0	
0		-0.5011	
1		0.6446	
2		-0.2032	
3		559.7	
4		828.4	

#####

The two prints at the end are the state vector before and after the extrapolation. Please have a look into the task though.

I really want to point out that we made quite a lot of progress. There are these mean bugs which we have to chase. But the basics are coming together for real tracking, more and more.

Oh, here is one more thought, what might be suspicious: In the GeaneTrackRep ctor, there is something like "protect against x,y=0,0" or so. Well the way we initialize the track rep now, this always occurs. Please have a look and a thought about this problem.

Thanks you very much!

Bye, Christian

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Subject: Re: Bug in Geane?

Posted by [Lia Lavezzi](#) on Mon, 05 May 2008 15:53:53 GMT

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Hi Christian,

the problem can be solved defining your own step size.

You have to define a "vacuum2" material in the geometry/media\_pnd.geo file after AUTONULL, setting your own values, for example:

```
vacuum2      1 1.e-16 1.e-16 1.e-16
              0 1 30. .001
              0.1 0.05 0.0001 0.00001
```

0

with a maximum angle due to the field of 0.1 degree and a maximum step = 0.05. (obviously you can change and tune these values, this is just an example that should work).

With these values, re-running also the simulation, after runTest.C it results:

```
|  0  |
-----
0 |  -0.5
1 |  0.004244
2 | -0.00244
3 |  0.004343
4 | -0.002343
```

which seems reasonable.

This happens because with manual stepping you force GEANE to make small steps. On the contrary, if you don't fix manual stepping, GEANE makes very large steps in vacuum and it "does not find" the plane: this happens since you are using a "virtual" plane, not a physical one. If you want you can also try leaving the automatic steps and creating a physical detector plane with the same geometry (same origin, same orientation in space) of your virtual plane: in that case everything works fine because geant is forced to do a step on the plane, where the track enters the new material (I tried it with Susanna this morning and it works )...

Anyway, the correct solution is the choice of manual stepping, so please tell us if it works for you...

Ciao,  
Lia & Susanna.

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Subject: Re: Bug in Geane?

Posted by [Anonymous Poster](#) on Mon, 05 May 2008 21:37:42 GMT

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Hi Lia & Susanna,

thanks a lot for your great help. Your tip helped me a lot. I am still not at my goal of a Kalman fit to space points, but I definitely got a lot closer. Now the debugging can continue.

I really want to say that I appreciate this kind of communication a lot. Things are starting to go better. Maybe there will be a breakthrough in the tracking of 3D points soon. This is team work!

Bye, Christian

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