Subject: Trackfollowing in light materials with GEANE
Posted by Anonymous Poster on Fri, 06 Mar 2009 16:45:44 GMT
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Hi Lia and other GEANE experts,

we encounter the problem in the TPC that GEANE seems sometimes unstable when following a track in a gas volume and does not encounter any material transitions. One possible solution to this problem is tuning of the stepping parameters in the material definition as suggested to me by Lia. We will certainly try this in the near future and for sure will post some questions here in the process (it will take a little since we have the DPG spring meetings).

However, I want to raise another question or possible solution to this issue:
When GEANE encounters a material transition it triggers a step. Track extrapolation to this plane of material transition should work stably, or at least let's assume it for the sake of my argument.
Somewhere inside GEANE this mechanism of forcing a step, can be triggered by the material transition. Can we trigger this ourselves? Or to put it another way: Can we cheat GEANE into thinking that it encounters a material transition in the plane where we want to extrapolate in? That would make it much more stable.

If my suggestion would work it would of course be combined with a fine stepping, still.

Looking forward to your reply!

Cheers, Christian

Subject: Re: Trackfollowing in light materials with GEANE
Posted by Lia Lavezzi on Tue, 10 Mar 2009 15:48:08 GMT
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Hi,
concerning the problem of light materials I would ask you one question: does the problem arise when you perform the extrapolation to the point of closest approach or when you extrapolate to a defined plane?
I ask you this just because the extrapolation to plane is a kind of propagation belonging to the original geane and so it should be deeply tested: I guess this part works and the problem is in the extrapolation to the point of closest approach, isn' t it?
In this case I really think this might be a step size problem.

Is the rate of failures very high? Note that sometimes some failure may happen also if you have a wrong order in the list of hits (as discussed in the other thread), because if geane tries to extrapolate from a point to the next one, but these two points are in the wrong order obviously geane fails (once again the importance of ordered hits arises!).

Concerning your question about triggering the step "by hand" I don' t know if this is feasible, so I can' t answer, while I guess that we could cheat geane by dividing the big TPC volume in smaller volumes all filled with the same material: this would trigger the steps at each transition (I think), increasing the simulation time, but this is almost the same thing as reducing the steps (and honestly that is a more elegant and correct solution! ).

Ciao,
Lia.