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Subject: Re: back-propagation with GEANE

Posted by [Lia Lavezzi](#) on Mon, 28 Jun 2010 10:35:55 GMT

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Hi Anastasia,

EPSIL is the boundary crossing precision in cm.

I simulated 100 events of 1 GeV/c muons at  $\theta = [-10, 10]$  deg,  $\phi$  random, with magnetic field in the usual cave (air) on a silicon plane orthogonal to the z axis, placed at 300 cm and 0.02 cm thick --> the surface should be at  $300 - 0.02 = 299.98$  cm.

In the plot I attach I draw the z coordinate registered on this plane in different cases:

- 1) with the  $\epsilon$  as it is on svn, 0.001 both for air and for silicon
- 2) with the  $\epsilon = 0.0001$  for silicon and  $= 0.001$  for air
- 3) with the  $\epsilon = 0.0001$  both for air and for silicon

In the third case, where I ask for a precision of 1  $\mu\text{m}$ , the registered z coordinate after simulation is closer to the real surface (by printing the values from root with the Scan function I get in the three cases: 1) 299.98025, 2) 299.98025, 3) 299.98004 cm).

Then the  $\epsilon$  value has an effect, but maybe it is not enough in your case, because we are in a very ideal case and we are talking of rounding errors that are below the limit set by  $\epsilon$ . Anyway it should happen that in real life the rounding errors are covered by physical effect errors and finite resolutions and you can neglect them, I hope...

Cheers,

Lia.

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### File Attachments

- 1) [epsilon.ps](#), downloaded 273 times
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