Subject: segmentation violation in sim macro
Posted by Albrecht Gillitzer on Mon, 16 Apr 2012 12:10:26 GMT
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Hi,

I am getting a crash with segmentation violation in the (standard) simulation macro for pbar d --> p phi pi- at event number 649. It seems that this crash is reproducible. The PandaRoot revision is 15051, the start random seed is 17, the output is attached below as separate file.

Can one of the experts already see with this information what goes wrong? Or is more information by running gdb required?

Albrecht

File Attachments

1) crash_17.txt, downloaded 366 times

Subject: Re: segmentation violation in sim macro
Posted by Olaf Hartmann on Mon, 16 Apr 2012 12:35:28 GMT
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Dear Albrecht,

unfortunately I have no solution so far, but I've got practically the same crash, but at in my case at a very high event number. I had no time so far to investigate this further.

Cheers
Olaf.

Subject: Re: segmentation violation in sim macro
Posted by Ralf Kliemt on Mon, 16 Apr 2012 12:50:00 GMT
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Hello,

I read from the root debugging output (gdb would't give much more, I presume) that the issue occurs when navigating somewhere upstream of the setup:

#22 0x00007fbc54f3f561 in TGeoManager::FindNode (this=0x17348a0,
x=18.377178192138672, y=-71.535911560058594, z=-150.00015258789062)
at /private/fairsoft/jan12/tools/root/geom/geom/src/TGeoManager.cxx:2381

This leads to:

#10 0x00007fbc54efe068 in TGeoBoolNode::SetSelected (this=0x900baa0, sel=2)
at /private/fairsoft/jan12/tools/root/geom/geom/src/TGeoBoolNode.cxx:101

And here the segfault handling is called.

My bet is: We have an overlap or a bug in the geometry there. Who knows what is at (x=18.3, y=-71.5, z=-150.0)?

Kind regards.
Ralf

Subject: Re: segmentation violation in sim macro
Posted by StefanoSpataro on Mon, 16 Apr 2012 15:11:57 GMT
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Quote:My bet is: We have an overlap or a bug in the geometry there. Who knows what is at (x=18.3, y=-71.5, z=-150.0)?

I think this should be the photodetector of the DIRC, or the backward endcap of the iron joke. I suppose the DIRC is the guilty one.
Can DIRC people comment?

Subject: Re: segmentation violation in sim macro
Posted by Albrecht Gillitzer on Mon, 16 Apr 2012 15:19:37 GMT
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Hello Ralf,

Thank you for this clarification. Clearly, there is no active detector at this (and even beyond this) point.

It seems this coordinate (18.3,-71.5,-150.0) is just at the border of two elements (ms01_0, ms04_0) of the solenoid backward endcap. This I saw with help of Tobias looking at the geometry in the Event Display. I didn't see the DIRC there.

Can anybody (who feels competent and responsible to do this) check whether or not the geometry is correctly implemented, and eventually correct it if necessary?

Best regards,
Albrecht

Subject: Re: segmentation violation in sim macro
Posted by StefanoSpataro on Tue, 17 Apr 2012 07:34:33 GMT
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These are the overlaps I found:

```
============================================================
STAGE 1: Overlap checking by sampling within 10 microns
============================================================
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps for cave and daughters within 0.001
Info in <TGeoNodeMatrix::CheckOverlaps>: Checking overlaps by sampling <s> for cave and daughters
Info in <TGeoNodeMatrix::CheckOverlaps>: === NOTE: Extrusions NOT checked with sampling option ! ===
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 3 overlaps adding-up to 243696 +/- 59105.1 [cm3] for daughters of cave
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 241.868 +/- 80.6227 [cm3] for daughters of FullSuperConductingSolenoidov831
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 2 overlaps adding-up to 53.7485 +/- 26.8742 [cm3] for daughters of Cryostatov830o2
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 14 overlaps adding-up to 271853 +/- 3783.04 [cm3] for daughters of ms
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 39 overlaps adding-up to 54.7304 +/- 7.44786 [cm3] for daughters of stt01assembly
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 4 overlaps adding-up to 21.1596 +/- 1.9236 [cm3] for daughters of Mvd-2.1o(Central-Mvd)
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 161.725 +/- 5.13996 [cm3] for daughters of Mvd-2.1oSupport
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 10173.3 +/- 34.6547 [cm3] for daughters of Mvd-SupportoGlobalFwd
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.000317423 +/- 0.000317423 [cm3] for daughters of SupportoPbloConeo1oIIoaoi
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.000251923 +/- 0.000251923 [cm3] for daughters of Mvd-SupportoBl1
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.00211537 +/- 0.00211537 [cm3] for daughters of Mvd-SupportoBl2
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 2 overlaps adding-up to 1.27581e-06 +/- 9.02136e-07 [cm3] for daughters of StripoSensoTrapS
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 504.96 +/- 4.20815 [cm3] for daughters of Mvd-2.1oComponents
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 820.503 +/- 4.81327 [cm3] for daughters of Mvd-ComponentsoConoElectronics
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 495.58 +/- 3.58834 [cm3] for daughters of Mvd-ComponentsoMctrl
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 368.516 +/- 3.14021 [cm3] for daughters of Mvd-ComponentsoSmd
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 8.22292 +/- 1.03599 [cm3] for daughters of Mvd-2.1oRouting
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to
```

4.7643e-05 +/- 3.36887e-05 [cm3] for daughters of CoolingoInsulationo3oIIoBundle
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 0.168498 +/- 0.119146 [cm3] for daughters of Mvd-RoutingoBl4
Info in <TGeoChecker::CheckOverlapsBySampling>: #Found 1 overlaps adding-up to 281.829 +/- 5.77815 [cm3] for daughters of Mvd-RoutingoPfwd
Error in <TGeoChecker::CheckOverlapsBySampling>: No point inside volume!!! - aborting

I can see many overlaps with MVD, overlaps also with stt (these are new), and overlaps in the magnet.
Plenty of things to fix for detector experts...

Subject: Re: segmentation violation in sim macro
Posted by Albrecht Gillitzer on Tue, 17 Apr 2012 09:27:03 GMT
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Hi Stefano,

Thank you very much for this study.
Does this mean, whenever any primary of secondary particle trajectory happens to hit these regions, there will be a crash?
If yes, what is the strategy to avoid this?

Best regards,
Albrecht

Subject: Re: segmentation violation in sim macro
Posted by StefanoSpataro on Tue, 17 Apr 2012 09:46:30 GMT
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Hi,
in reality running millions of events I have never seen such crashes, and I am curious to know from where they are coming, considering that the geometry was not changed in recent time...
The strategy is to write geometry without overlaps, but it seens this was not done for all the detectors...

Subject: Re: segmentation violation in sim macro
Posted by Ralf Kliemt on Tue, 17 Apr 2012 11:26:09 GMT
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Hi.

It might be that the geometry differs internally whith the selection of the MC engine. We have VMC which takes care of porting the geomety. GEANT4 has no assembly definition, so a deep assembly tree might cause numerical issues when combinig serveral transformations to one.

My 2 cents.

Ralf

Subject: Re: segmentation violation in sim macro
Posted by StefanoSpataro on Tue, 17 Apr 2012 11:28:10 GMT
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This was with geant3.

Subject: Re: segmentation violation in sim macro
Posted by Albrecht Gillitzer on Tue, 17 Apr 2012 13:39:57 GMT
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Hello Stefano,

One more question:
In your geometry check I do not see the critical overlap region at x=18.3, y=-71.5, z=-150.0.
Is this somewhere hidden in the output (e.g. in the line with "#Found 14 overlaps adding-up to 271853 +/- 3783.04 [cm3] for daughters of ms", or did your check not find this, or did you stop the check before because you already found many other overlap regions in MVD and STT?

Best regards,
Albrecht

Subject: Re: segmentation violation in sim macro
Posted by StefanoSpataro on Tue, 17 Apr 2012 14:07:59 GMT
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I believe it is inside those overlaps. Checking the full geometry takes a lot of time, I launched the check yesterday evening and this morning it had not finished yet, and I had to stop it.
This check should be done detector by detector, to be more efficient.

However, I am surprised to see those overlaps in ms. I had studied the solenoid some time ago and there was only something in the cryostat, discussed with Tobias who produced such file and it was not giving us problems. But I do not remember strange overlaps where now they are appearing...

Subject: Re: segmentation violation in sim macro
Posted by Dmitry Morozov on Wed, 29 Aug 2012 06:14:50 GMT
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Hello.
Any progress on this issue?
I faced the same problem with 16765 revision. Sim crashes every several thousands events in TGeoBoolNode::SetSelected (this=0x900baa0, sel=2)

at /private/fairsoft/jan12/tools/root/geom/geom/src/TGeoBoolNode.cxx:101

Dmitry