Subject: Crash in DIRC with G4

Posted by StefanoSpataro on Wed, 18 Jan 2012 17:24:21 GMT

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Hi.

I have tried to run DIRC simulation with G4 and I have the following crash:

Toggle Spoilerspataro@briareos:~/jan12/pandaroot/macro/drc\$ rt sim\_dirc.C root [0]

Processing sim dirc.C...

Warning in <TClassTable::Add>: class PndSdsMCPoint already in TClassTable

Warning in <TClassTable::Add>: class PndSdsStrip already in TClassTable

Warning in <TClassTable::Add>: class PndSdsDigi already in TClassTable

Warning in <TClassTable::Add>: class PndSdsDetector already in TClassTable

[INFO ] Media file used : /home/spataro/jan12/pandaroot/geometry/media pnd.geo

[INFO ] ======= FairRunSim: Initialising simulation run =========

Info in <TGeoManager::TGeoManager>: Geometry FAIRGeom, FAIR geometry created

-I- FairGeoMedia Read media

[INFO ] Create visualisation manager

Loading Geant4 global libraries ...Our Macro

Loading Library libG4Tree

Loading Library libG4FR

Loading Library libG4GMocren

Loading Library libG4visHepRep

Loading Library libG4RayTracer

Loading Library libG4VRML

Loading Library libG4vis\_management

Loading Library libG4modeling

Loading Library libG4interfaces

Loading Library libG4persistency

Loading Library libG4analysis

Loading Library libG4error\_propagation

Loading Library libG4readout

Loading Library libG4physicslists

Loading Library libG4run

Loading Library libG4event

Loading Library libG4tracking

Loading Library libG4parmodels

Loading Library libG4processes

Loading Library libG4digits\_hits

Loading Library libG4track

Loading Library libG4particles

Loading Library libG4geometry

Loading Library libG4materials

Loading Library libG4graphics\_reps

Loading Library libG4intercoms

Loading Library libG4global

Loading Library libG4clhep

Loading VGM libraries ...

Loading g4root library ...

Loading libraries ... finished

Info in <TGeoManager::SetTopVolume>: Top volume is cave. Master volume is cave

Info in <TGeoNavigator::BuildCache>: --- Maximum geometry depth set to 100 <I> PndPipe - Using default geometry ===== DRC:: ConstructGeometry() ====== Info in <TGeoManager::CheckGeometry>: Fixing runtime shapes... Info in <TGeoManager::CheckGeometry>: ...Nothing to fix Info in <TGeoManager::CloseGeometry>: Counting nodes... Info in <TGeoManager::Voxelize>: Voxelizing... Info in <TGeoManager::CloseGeometry>: Building cache... Info in <TGeoManager::CloseGeometry>: 207 nodes/ 19 volume UID's in FAIR geometry Info in <TGeoManager::CloseGeometry>: ------modeler ready-----Info in <TG4RootNavMgr::SetNavigator>: TG4RootNavigator created and registered to G4TransportationManager Running TVirtualMCApplication::ConstructGeometry Geant4 version Name: geant4-09-05-ref-00 (2-December-2011) Copyright: Geant4 Collaboration Reference: NIM A 506 (2003), 250-303 WWW: http://cern.ch/geant4 Info in <TG4RootNavMgr::Initialize>: Creating G4 hierarchy ... Info in <TGeoManager::ConvertReflections>: Converting reflections in: FAIRGeom - FAIR geometry ... Info in <TGeoManager::ConvertReflections>: Done ===> GEANT4 materials created and mapped to TGeo ones... ----- EEEE ----- G4Exception-START ----- EEEE -----\*\*\* G4Exception : G4Root F003 issued by: TG4RootDetectorConstruction::CreateG4LogicalVolume Cannot make material for volume: BarrelDIRC \*\*\* Fatal Exception \*\*\* core dump \*\*\* ------ EEEE ------ G4Exception-END ------ EEEE ------\*\*\* G4Exception: Aborting execution \*\*\* spataro@briareos:~/jan12/pandaroot/macro/drc\$ In order to see this I have run macro/drc/sim dirc.C. If I use G3 I have no crash. This affects all the macros using G4. Could somebody please check what is going wrong? I am using jan12 and latest trunk.

Subject: Re: Crash in DIRC with G4 Posted by StefanoSpataro on Thu, 19 Jan 2012 10:36:35 GMT View Forum Message <> Reply to Message

Hi,

just a small addendum.

Dirc works wth the option "geomRootToGeant4" in g4Config.C, but in such a case STT and MVD geoemtries are not working anymore.

Is there a way to have all these detectors working under geant4 at the same time?

Subject: Re: Crash in DIRC with G4

Posted by Tobias Stockmanns on Thu, 19 Jan 2012 10:45:02 GMT

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Hi.

the MVD cannot run with a native Geant4 geometry because it uses assemblies which are not supported in Geant4.

Cheers,

**Tobias** 

Subject: Re: Crash in DIRC with G4

Posted by Ivana Hrivnacova on Tue, 13 Mar 2012 09:54:36 GMT

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Dear all,

There is no problem with assemblies for converting geometry from Root in Geant4. They are fully supported in the VGM converter.

Also, the crash when using geomRoot option in some detectors is not normal.

Could you, please, send me a geometry files with these geometries (one with the detector having a problem with geomRootToGeant4 and another one with those crashing with geomRoot) so that I can investigate it outside the PandaRoot framework?

Thank you,

Ivana

Subject: Re: Crash in DIRC with G4

Posted by StefanoSpataro on Tue, 13 Mar 2012 14:31:59 GMT

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Dear Ivana.

if you like to play with our geometry files,

this is the one working with geomRootToGeant4, and this is the other whch is working with geomRoot.

Good luck!

Subject: Re: Crash in DIRC with G4

Posted by Ivana Hrivnacova on Tue, 13 Mar 2012 15:17:14 GMT

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I am getting error when trying to open these files in root:

root [0] TGeoManager::Import("dirc\_I0\_p0.root")

Info in <TGeoManager::Import>: Reading geometry from file: dirc\_I0\_p0.root

(class TGeoManager\*)0x0

Maybe there has to be first loaded some top file?

Thanks,

Subject: Re: Crash in DIRC with G4

Posted by Maria Patsyuk on Wed, 14 Mar 2012 01:41:24 GMT

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Hello,

I'm the responsible person for the DIRC simulation in PandaRoot, but now I'm away. If it is possible to wait a week until I'm back at GSI, I'll take a look into all these bugs. I'm following this thread, but unfortunately right now I can't do anything.

Best regards,

Maria

Subject: Re: Crash in DIRC with G4

Posted by Ivana Hrivnacova on Wed, 14 Mar 2012 11:34:11 GMT

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Dear Marina,

I need just a geometry file which I can open outside pandaroot framework, so maybe Stefano or someone else can re-generate a complete Root file in meantime.

But it can wait when you are back as well.

Best regards,

Ivana

Subject: Re: Crash in DIRC with G4

Posted by StefanoSpataro on Wed, 14 Mar 2012 17:10:33 GMT

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I attach here the root file where I have exported the TGeoManager of our DIRC, I don't know if you are able to read it from the forum.

The macro to create it is the following, but it has inside panda dependencies.

## File Attachments

1) test.root, downloaded 346 times

Subject: Re: Crash in DIRC with G4

Posted by Ivana Hrivnacova on Thu, 15 Mar 2012 13:00:51 GMT

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The file is ok; I was able to reproduce the crash with G4Root (used in geomRoot) option. I will report the problem to Andrei Gheata who developed this tool.

Could you also re-generate Root files with the other geometries failing with geomRootToGeant4?

Thank you,

Ivana

Subject: Re: Crash in DIRC with G4
Posted by StefanoSpataro on Thu, 15 Mar 2012 13:52:41 GMT
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It seems with geomRootToGeant4 we have many strange warnigns not appearing in the gemRoot case:

During event loop:

++++ TG4Warning: ++++

TG4MCGeometry::GetTransformation:

Daughter volume &stt01assembly in /cave\_1/&stt01assembly\_0%stt01tube\_57/stt01gas\_1 does not exist.

++++++++++++++++++++

and

Negative element index in EMC, name=cave

. . .

maybe detector experts should comment about, I don't have the macros to produce such geometries with TGeoManager (it is more than one detector, as you can see).

Subject: Re: Crash in DIRC with G4

Posted by asanchez on Thu, 15 Mar 2012 14:16:00 GMT

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yes,

from my experience that is due to the fact that when one uses the option GeomRootToGeant4 the path to the sensitive volume

within the volume hierarchy is not separated by "/" but "&" .....

best regards Alicia.

Subject: Re: Crash in DIRC with G4

Posted by Oliver Merle on Wed, 28 Mar 2012 12:04:39 GMT

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I've observed the same problem when I started implementing the Disc DIRC geometry earlier this year. To understand how you construct the geometry within PandaRoot, I had to read your code (thanks for the missing documentation, really helpfull) and expected undefined behavior if the first volume (v1 in void FairModule::ConstructRootGeometry()) is not a TGeoAssembly.

The reason is simple: the material of the first volume is ignored. Hard to believe that these geometry files have ever worked in Geant4 - how was it possible without proper material information? Somehow I doubt that they worked ever. With which version of pandaroot and external packages did they actually work? I would like to check that.

I've implemented a fix which works fine for me. Try the attached version FairModule and see if it solves your problem.

Regards, Oliver

## File Attachments

1) FairModule.tar.gz, downloaded 326 times

Subject: Re: Crash in DIRC with G4
Posted by Mohammad Al-Turany on Wed, 28 Mar 2012 14:40:48 GMT
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Hallo Oliver,

The ConstructRootGeometry was specially implemented for ROOT files which are produced by the CAD2ROOT converter where the keeping volumes are always "Assemblies" and maybe that is the reason we did not see any see the crash there, in any case if you discover an error there then thanks a lot we will check that and correct it and write in the credits that you discover it!

now if you read the posts before yours, you will notice that the crash was reproducible without FairModule and without the error you discover.

Quote: The reason is simple: the material of the first volume is ignored. Hard to believe that these geometry files have ever worked in Geant4 - how was it possible without proper material information? Somehow I doubt that they worked ever. With which version of pandaroot and external packages did they actually work? I would like to check that.

This is very easy to test, in the g4Config.C set the option: geomRootToGeant4 This works with the same DIRC geometry and the (according to your comments) crappy code in FairModule, for your info, this option means use the native G4 geometry and navigation, and this works with all versions of PandaRoot and external packages, the problem when you set this option is that some detectors (STT and emc) relay on the herachy of volumes to create set some variables, in ROOT the Assembly has an ID and can be a mother of a volume, in G4 the assemblies do not show up at all during the simulation, and this create some problems (Stefano mentioned this in the second post here!)

About the documentation I cannot promise to document every single line in the code, but we will try our best!

regards

Mohammad

Subject: Re: Crash in DIRC with G4

Posted by Oliver Merle on Wed, 28 Mar 2012 16:39:01 GMT

Thanks Mohammad,

Mohammad Al-Turany wrote on Wed, 28 March 2012 16:40
This is very easy to test, in the g4Config.C set the option: geomRootToGeant4
This works with the same DIRC geometry and the (according to your comments) crappy code in FairModule.

I thought I had tested this with native navigation, but it seems I switched to G4 after the update of FairModule. Silly me. Anyhow, even if it doesn't crash with G4 native navigation, the material of v1 is not guaranteed to be equal to the one defined in the media file because it was not obtained via your factory.

The "crappy" code works, it just has to be called for v1, too. Fixing this is no big deal, so I don't care about any credit. I guess it wouldn't hurt to use the Logger instead of std::out, too. (BTW: I was a bit pissed when I fixed the issue )

## Quote:

About the documentation I cannot promise to document every single line in the code, but we will try our best!

It is NOT about commenting a line of code. I can read C++. It is about commenting how the algorithms are intended to work, why things are implemented that way and how things are intended to be used.

Regards, Oliver

Subject: Re: Crash in DIRC with G4
Posted by Mohammad Al-Turany on Wed, 28 Mar 2012 18:46:27 GMT
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Hallo Oliver,

Ok, I added your changes to SVN (r 15136) I also get rid of COUTs and add a few lines explaining some functionality, but still many things to document!

regards

Mohammad