
Subject: Problems with EMC backward endcap geometry
Posted by [StefanoSpataro](#) on Mon, 14 Jul 2014 13:02:21 GMT
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Dear all,

it seems that there are some problems in the geoemtry of the backward endcap, which are hidden with externals apr13 but they appear with new versions of root, and also using dec13 and dec13p1.

In particular, if you run a simulation macro with dec13/dec13p1 with a root backward EC geometry, you have a crash when quitting root, when the TGeoManager is closing the objects. If you run with apr13, everything seems smooth. If you use an EMC geoemtry w/o the roto backward endcap, or with an old .dat geoemtry, the crash is not present.

You can try by yourself, running macro/emc/sim_emc.C where you have to use:

```
Emc->SetGeometryVersion(11);
```

(corresponding to file emc_module4_StraightGeo24.4.root).

You will have the following crash:

Toggle Spoiler

Cross section calculation concluded successfully

```
[INFO ] Monte carlo Engine Initialisation with : TGeant3TGeo
[INFO ] *** PndEmcGeoPar written to ROOT file version: 1
[INFO ] *** PndEmcDigiPar written to ROOT file version: 1
[INFO ] *** PndEmcDigiNonuniformityPar written to ROOT file version: 1
[INFO ] *** FairBaseParSet written to ROOT file version: 1
```

```
*** Break *** segmentation violation
Aborted (core dumped)
```

=====
There was a crash.

This is the entire stack trace of all threads:

```
=====  
#0 0x00007fa4e438bc8e in __libc_waitpid (pid=<optimized out>, stat_loc=0x7fff830eb200, options=0) at ../sysdeps/unix/sysv/linux/waitpid.c:32  
#1 0x00007fa4e431129e in do_system (line=0x73725c0  
"/home/spataro/dec13p1/fairbuild//etc/gdb-backtrace.sh 4479 1>&2") at  
../sysdeps/posix/system.c:149  
#2 0x00007fa4e5251fa7 in TUnixSystem::StackTrace() () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#3 0x00007fa4e5254893 in TUnixSystem::DispatchSignals(ESignals) () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#4 <signal handler called>  
#5 0x00007fa4e5921f30 in vtable for TString () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#6 0x00007fa4e522296c in TClass::GetActualClass(void const*) const () from
```

```
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#7 0x00007fa4e1ee690b in TBufferFile::WriteObjectAny(void const*, TClass const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#8 0x00007fa4e52094ab in TObjArray::Streamer(TBuffer&) () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#9 0x00007fa4e1ee8814 in TBufferFile::WriteFastArray(void**, TClass const*, int, bool,
TMemberStreamer*) () from /home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#10 0x00007fa4e20621f6 in int TStreamerInfo::WriteBufferAux<char**>(TBuffer&, char**
const&, int, int, int, int) () from /home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#11 0x00007fa4e1f3c4bb in TStreamerInfoActions::GenericWriteAction(TBuffer&, void*,
TStreamerInfoActions::TConfiguration const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#12 0x00007fa4e1ee7be5 in
TBufferFile::ApplySequence(TStreamerInfoActions::TActionSequence const&, void*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#13 0x00007fa4e1ee42a8 in TBufferFile::WriteClassBuffer(TClass const*, void*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#14 0x00007fa4e1ee8f32 in TBufferFile::WriteObjectClass(void const*, TClass const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#15 0x00007fa4e1ee692f in TBufferFile::WriteObjectAny(void const*, TClass const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#16 0x00007fa4db0aa149 in operator<< <TGeoManager> (buf=..., obj=0x1975950) at
/home/spataro/dec13p1/fairbuild/include/root/TBuffer.h:386
#17 0x00007fa4daff1fba in FairGeoParSet::Streamer
(this=0x19b4be0/build/builddd/gdb-7.4-2012.04/gdb/stack.c:584: internal-error:
print_frame_args: Assertion `nsym != NULL' failed.
```

=====

The lines below might hint at the cause of the crash.
If they do not help you then please submit a bug report at
<http://root.cern.ch/bugs>. Please post the ENTIRE stack trace
from above as an attachment in addition to anything else
that might help us fixing this issue.

=====

```
#5 0x00007fa4e5921f30 in vtable for TString () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#6 0x00007fa4e522296c in TClass::GetActualClass(void const*) const () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#7 0x00007fa4e1ee690b in TBufferFile::WriteObjectAny(void const*, TClass const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#8 0x00007fa4e52094ab in TObjArray::Streamer(TBuffer&) () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#9 0x00007fa4e1ee8814 in TBufferFile::WriteFastArray(void**, TClass const*, int, bool,
TMemberStreamer*) () from /home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#10 0x00007fa4e20621f6 in int TStreamerInfo::WriteBufferAux<char**>(TBuffer&, char**
const&, int, int, int, int) () from /home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#11 0x00007fa4e1f3c4bb in TStreamerInfoActions::GenericWriteAction(TBuffer&, void*,
TStreamerInfoActions::TConfiguration const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#12 0x00007fa4e1ee7be5 in
TBufferFile::ApplySequence(TStreamerInfoActions::TActionSequence const&, void*) () from
```

```
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#13 0x00007fa4e1ee42a8 in TBufferFile::WriteClassBuffer(TClass const*, void*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#14 0x00007fa4e1ee8f32 in TBufferFile::WriteObjectClass(void const*, TClass const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#15 0x00007fa4e1ee692f in TBufferFile::WriteObjectAny(void const*, TClass const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRIO.so
#16 0x00007fa4db0aa149 in operator<< <TGeoManager> (buf=..., obj=0x1975950) at
/home/spataro/dec13p1/fairbuild/include/root/TBuffer.h:386
#17 0x00007fa4daff1ba in FairGeoParSet::Streamer
(this=0x19b4be0/build/buildd/gdb-7.4-2012.04/gdb/stack.c:584: internal-error:
print_frame_args: Assertion `nsym != NULL' failed.
```

=====

Root > Function sim_emc() busy flag cleared

*** Break *** segmentation violation

=====

There was a crash.

This is the entire stack trace of all threads:

=====

```
#0 0x00007fa4e438bc8e in __libc_waitpid (pid=<optimized out>, stat_loc=0x7fff8310b600,
options=0) at ../sysdeps/unix/sysv/linux/waitpid.c:32
#1 0x00007fa4e431129e in do_system (line=0x7277810
"/home/spataro/dec13p1/fairbuild//etc/gdb-backtrace.sh 4479 1>&2") at
../sysdeps/posix/system.c:149
#2 0x00007fa4e5251fa7 in TUnixSystem::StackTrace() () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#3 0x00007fa4e5254893 in TUnixSystem::DispatchSignals(ESignals) () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#4 <signal handler called>
#5 0x00007fa4e52089d4 in TObjArray::IndexOf(TObject const*) const () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#6 0x00007fa4e5208b59 in TObjArray::Remove(TObject*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#7 0x00007fa4dcbdd943 in TGeoShape::~TGeoShape() () from
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so
#8 0x00007fa4dcbdc3d9 in TGeoShapeAssembly::~TGeoShapeAssembly() () from
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so
#9 0x00007fa4dcc08549 in TGeoVolumeAssembly::~TGeoVolumeAssembly() () from
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so
#10 0x00007fa4dcc085d9 in TGeoVolumeAssembly::~TGeoVolumeAssembly() () from
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so
#11 0x00007fa4e52098d0 in TObjArray::Delete(char const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#12 0x00007fa4dcba2094 in TGeoManager::~TGeoManager() () from
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so
#13 0x00007fa4dcba2339 in TGeoManager::~TGeoManager() () from
```

```
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so
#14 0x00007fa4e5206735 in TList::Delete(char const*) () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#15 0x00007fa4e51be24d in TROOT::EndOfProcessCleanups() () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#16 0x00007fa4e524df46 in TUnixSystem::Exit(int, bool) () from
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34
#17 0x00007fa4e4dd1570 in TRint::Run(bool) () from
/home/spataro/dec13p1/fairbuild//lib/root/libRint.so.5.34
#18 0x0000000000400f6c in main ()
```

=====
The lines below might hint at the cause of the crash.
If they do not help you then please submit a bug report at
<http://root.cern.ch/bugs>. Please post the ENTIRE stack trace
from above as an attachment in addition to anything else
that might help us fixing this issue.

```
=====  
#5 0x00007fa4e52089d4 in TObjArray::IndexOf(TObject const*) const () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#6 0x00007fa4e5208b59 in TObjArray::Remove(TObject*) () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#7 0x00007fa4dcbdd943 in TGeoShape::~~TGeoShape() () from  
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so  
#8 0x00007fa4dcbdc3d9 in TGeoShapeAssembly::~~TGeoShapeAssembly() () from  
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so  
#9 0x00007fa4dcc08549 in TGeoVolumeAssembly::~~TGeoVolumeAssembly() () from  
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so  
#10 0x00007fa4dcc085d9 in TGeoVolumeAssembly::~~TGeoVolumeAssembly() () from  
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so  
#11 0x00007fa4e52098d0 in TObjArray::Delete(char const*) () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#12 0x00007fa4dcba2094 in TGeoManager::~~TGeoManager() () from  
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so  
#13 0x00007fa4dcba2339 in TGeoManager::~~TGeoManager() () from  
/home/spataro/dec13p1/fairbuild//lib/root/libGeom.so  
#14 0x00007fa4e5206735 in TList::Delete(char const*) () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#15 0x00007fa4e51be24d in TROOT::EndOfProcessCleanups() () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#16 0x00007fa4e524df46 in TUnixSystem::Exit(int, bool) () from  
/home/spataro/dec13p1/fairbuild//lib/root/libCore.so.5.34  
#17 0x00007fa4e4dd1570 in TRint::Run(bool) () from  
/home/spataro/dec13p1/fairbuild//lib/root/libRint.so.5.34  
#18 0x0000000000400f6c in main ()
```

=====
In order to check what is going wrong, I have tried to check the macro to create the root file,
macro/emc/dedicated/createRootGeoFileBwEnd_Str24.4.C, modifying the path to the media

file, I have the following error:

```
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...
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume Emc4
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume QuarterNewVol
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol1
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol2
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol3
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol4
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol5
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol6
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol7
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol8
Error in <TGeoVoxelFinder::SortAll>: Wrong bounding box for volume SubunitVol9
Info in <TGeoManager::CloseGeometry>: Building cache...
Info in <TGeoManager::CountLevels>: max level = 4, max placements = 14
Info in <TGeoManager::CloseGeometry>: 765 nodes/ 20 volume UID's in FAIR geometry
Info in <TGeoManager::CloseGeometry>: -----modeler ready-----
Info in <TGeoManager::Export>: Exporting FAIRGeom FAIR geometry as root file.
Optimizations streamed.
Info in <TCanvas::MakeDefCanvas>: created default TCanvas with name c1
Info in <TGeoManager::SetVisLevel>: Automatic visible depth disabled
```

This tells me that we have some serious problem, since the same error I get usign apr13 externals.

Could somebody please take a look and fix it? If not, with the new incoming external packages, I will have to comment out the detector from the default reconstruction.

Thanks in advance.

Subject: Re: Problems with EMC backward endcap geometry
Posted by [Tobias Stockmanns](#) on Thu, 07 Aug 2014 08:46:17 GMT
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Dear EMC developers,

I can confirm the problem of Stefano in the latest external packages jul14. With the EMC the Geometry cannot be written properly at the end of the simulation macro.
I get a segmentation violation with the following output:

```
*** Break *** segmentation violation
Generating stack trace...
0x0000000101691cab in (anonymous namespace)::TerminalConfigUnix__handleSignal(int)
```

(in libCore.5.so) + 27
0x00007fff9344b5aa in _sigtramp (in libsystem_platform.dylib) + 26
0x00007fc44be8f360 in <unknown function>
0x000000010159d094 in TClass::GetActualClass(void const*) const (in libCore.5.so) + 196
0x0000000102d17ae5 in TBufferFile::WriteObjectAny(void const*, TClass const*) (in libRIO.so) + 181
0x000000010155d714 in operator<<(TBuffer&, TObject const*) (in libCore.5.so) + 68
0x00000001015695ec in TObjArray::Streamer(TBuffer&) (in libCore.5.so) + 716
0x00000001015a5c32 in TClass::StreamerTObjectInitialized(void*, TBuffer&, TClass const*) const (in libCore.5.so) + 66
0x0000000102d1d0a9 in TClass::Streamer(void*, TBuffer&, TClass const*) const (in libRIO.so) + 137
0x0000000102d1693c in TBufferFile::WriteFastArray(void**, TClass const*, int, bool, TMemberStreamer*) (in libRIO.so) + 476
0x0000000102f80283 in int TStreamerInfo::WriteBufferAux<char**>(TBuffer&, char** const&, int, int, int, int) (in libRIO.so) + 19651
0x0000000102dd578f in TStreamerInfoActions::GenericWriteAction(TBuffer&, void*, TStreamerInfoActions::TConfiguration const*) (in libRIO.so) + 111
0x0000000102d1d915 in TStreamerInfoActions::TConfiguredAction::operator()(TBuffer&, void*) const (in libRIO.so) + 53
0x0000000102d1c032 in
TBufferFile::ApplySequence(TStreamerInfoActions::TActionSequence const&, void*) (in libRIO.so) + 994
0x0000000102d1bb87 in TBufferFile::WriteClassBuffer(TClass const*, void*) (in libRIO.so) + 583
0x000000010320d53f in TGeoManager::Streamer(TBuffer&) (in libGeom.so) + 207
0x00000001015b3160 in TClass::StreamerTObject(void*, TBuffer&, TClass const*) const (in libCore.5.so) + 96
0x0000000102d1d0a9 in TClass::Streamer(void*, TBuffer&, TClass const*) const (in libRIO.so) + 137
0x0000000102d179cc in TBufferFile::WriteObjectClass(void const*, TClass const*) (in libRIO.so) + 572
0x0000000102d17c9d in TBufferFile::WriteObjectAny(void const*, TClass const*) (in libRIO.so) + 621
0x000000010b087cd5 in FairGeoParSet::Streamer(TBuffer&) (in libBase.so) (G__BaseDict.cxx:4151)
0x0000000102d973cb in TKey::TKey(TObject const*, char const*, int, TDirectory*) (in libRIO.so) + 939
0x0000000102d97013 in TKey::TKey(TObject const*, char const*, int, TDirectory*) (in libRIO.so) + 51
0x0000000102d3eb31 in TFile::CreateKey(TDirectory*, TObject const*, char const*, int) (in libRIO.so) + 97
0x0000000102d2c0da in TDirectoryFile::WriteTObject(TObject const*, char const*, char const*, int) (in libRIO.so) + 1642
0x00000001014cacdc in TObject::Write(char const*, int, int) const (in libCore.5.so) + 380
0x00000001014cae1e in TObject::Write(char const*, int, int) (in libCore.5.so) + 62
0x000000010af6c993 in FairDetParRootFileIo::write(FairParSet*) (in libParBase.so) (FairParSet.h:66)
0x000000010af78a9c in FairRuntimeDb::writeContainer(FairParSet*, FairRtdbRun*, FairRtdbRun*) (in libParBase.so) (FairRuntimeDb.cxx:416)
0x000000010af787e5 in FairRuntimeDb::writeContainers() (in libParBase.so) (FairRuntimeDb.cxx:299)

```
0x000000010af794d9 in FairRuntimeDb::saveOutput() (in libParBase.so)
(FairRuntimeDb.cxx:778)
0x000000010af9df56 in G__G__ParBaseDict_286_0_31(G__value*, char const*, G__param*,
int) (in libParBase.so) (G__ParBaseDict.cxx:6115)
0x0000000101f60214 in Cint::G__ExceptionWrapper(int (*)(G__value*, char const*,
G__param*, int), G__value*, char*, G__param*, int) (in libCint.5.so) + 148
0x000000010209ab52 in G__execute_call (in libCint.5.so) + 98
0x000000010209b496 in G__call_cppfunc (in libCint.5.so) + 1830
0x0000000102058bd5 in G__interpret_func (in libCint.5.so) + 4965
0x000000010203afdd in G__getfunction (in libCint.5.so) + 9965
0x00000001021deb04 in G__getstructmem(int, G__FastAllocString&, char*, int, char*, int*,
G__var_array*, int) (in libCint.5.so) + 4884
0x00000001021cd83b in G__getvariable (in libCint.5.so) + 3243
0x0000000102029adc in G__getitem (in libCint.5.so) + 2732
0x0000000102028404 in G__getexpr (in libCint.5.so) + 87268
0x00000001020f310f in G__exec_function(G__FastAllocString&, int*, int*, int*, G__value*) (in
libCint.5.so) + 383
0x00000001020e8459 in G__exec_statement (in libCint.5.so) + 32121
0x000000010205c130 in G__interpret_func (in libCint.5.so) + 18624
0x000000010203bf62 in G__getfunction (in libCint.5.so) + 13938
0x0000000102029bbd in G__getitem (in libCint.5.so) + 2957
0x0000000102028404 in G__getexpr (in libCint.5.so) + 87268
0x0000000102012e55 in G__calc_internal (in libCint.5.so) + 1237
0x00000001020fe986 in G__process_cmd (in libCint.5.so) + 20342
0x000000010157f7ae in TCint::ProcessLine(char const*, TInterpreter::EErrorCode*) (in
libCore.5.so) + 622
0x000000010158000f in TCint::ProcessLineSynch(char const*, TInterpreter::EErrorCode*) (in
libCore.5.so) + 191
0x000000010148098c in TApplication::ExecuteFile(char const*, int*, bool) (in libCore.5.so) +
5644
0x000000010147f370 in TApplication::ProcessFile(char const*, int*, bool) (in libCore.5.so) +
48
0x000000010147ed88 in TApplication::ProcessLine(char const*, bool, int*) (in libCore.5.so) +
3960
0x00000001027be03b in TRint::Run(bool) (in libRint.5.so) + 2155
0x0000000101469b57 in main (in root.exe) + 135
0x00007fff8f1165fd in start (in libdyld.dylib) + 1
0x0000000000000004 in <unknown function>
Root > Function sim_complete_vis() busy flag cleared
```

Subject: Re: Problems with EMC backward endcap geometry
Posted by [Dmitry Khanef](#) on Tue, 16 Sep 2014 07:11:46 GMT
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Dear all,

it took some time... it should work now. I updated the BW EMC geometry and submitted it to the trunk. Please check if it works for you as well.

p.s. I updated the geometry creation macro

"macro/emc/dedicated/createRootGeoFileBwEnd_Str24.4_fixed.C" It doesn't produce any errors and an overlap test is good as well.

p.p.s. It would be nice if someone could check it independently.
I have used fairsoft dec13p1 and pandaroot trunk rev 26001 with a macro/run/sim_complete.C and it worked for me.

Cheers,
Dmitry
