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Subject: Re: Usage of Dirc in concord with certain detectors  
Posted by [StefanoSpataro](#) on Thu, 06 Aug 2009 12:58:58 GMT  
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Hello,

I have tried to study this behaviour.

First I have run tutorials/lhetrack/run\_sim\_tpccombi\_pgun.C"(100,13,1)" with the standard macro, where Drc is at the end, and everything was running fine.

Then I have moved the Drc part just before Tpc, almost at the beginning, and after 10 events I have a crash in geometry (TGeoNode::Safety).

This is the backtrace:

Toggle Spoiler

```
root [0] .x run_sim_tpccombi_pgun.C(200,13,1)
Note: File "/home/stefano/july08/cbuild/lib/libDrc.so" already loaded
- RTDB container factory PndPidContFact
-I- FairRun::SetMaterials() Media file used:
/home/stefano/july08/pandaroot/geometry/media_pnd.geo
- I - PndMvdDetector: fListOfSensitives contains:
    Disk-Sensor
    Barrel-Sensor
    PixelActive
    StripActive
    StripSensor
    SensorActiveArea
    StripActive
    PixelActive
---> _new_ Forward End-Cap has been used:
/home/stefano/july08/pandaroot/geometry/emc_module3new.root
```

MDT version used: torino

```
===== FairRunSim: Initialising simulation run =====
Info in <TGeoManager::TGeoManager>: Geometry FAIRGeom, FAIR geometry created
-I- FairGeoMedia Read media
FairRunSim::Init() create visualisation manager
-I- PndFieldMap: Reading field map from ROOT file
/home/stefano/july08/pandaroot/input/TransMap.root
-I- PndFieldMap: Reading field map from ROOT file
/home/stefano/july08/pandaroot/input/DipoleMap.root
-I- PndFieldMap: Reading field map from ROOT file
/home/stefano/july08/pandaroot/input/SolenoidMap.root
----- Standard Config is called -----
Loading Geant3 libraries ...
Loading Geant3 libraries ... finished
```

```
MZSTOR. ZEBRA table base TAB(0) in /MZCC/ at adr 764000863 2D89BA5F HEX
```

```
MZSTOR. Initialize Store 0 in /GCBANK/
with Store/Table at absolute adrs 764109709 764000863
```

```
          HEX 2D8B638D 2D89BA5F
          HEX  1A77A    0
relative adrs 108410    0
with 1 Str. in 2 Links in 5300 Low words in 4999970 words.
This store has a fence of 16 words.
```

```
MZLOGL. Set Log Level 0 for store 0
1***** GEANT Version 3.21/11 Released on 100298
0***** Correction Cradle Version 0.1100
```

```
MZDIV. Initialize Division Constant in Store 0
      NW/NWMAX= 20004000000, MODE/KIND= 1 2
      Division 20 initialized.
```

```
MZLINK. Initialize Link Area /GCLINK/ for Store 0 NL/NS= 20 20
```

```
MZLINK. Initialize Link Area /GCSLNK/ for Store 0 NL/NS= 100 100
```

```
-I- G3Config: Geant3 with TGeo has been created.
```

```
SetCuts Macro: Setting Processes..
```

```
SetCuts Macro: Setting cuts..
```

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

```
Material aluminium is not defined
```

```
Create Medium aluminium
```

```
Material iron is not defined
```

```
Create Medium iron
```

```
===== DRC:: ConstructGeometry() =====
```

```
=====
```

```
DIRC min. radius = 50.35
```

```
DIRC max. radius = 53.0364
```

```
sob_shift = -150
```

```
sob_radius2 = 104.012
```

```
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 <TGeoNavigator::BuildCache>: --- Maximum geometry depth set to 100
```

```
Info in <TGeoManager::CloseGeometry>: 566 nodes/ 110 volume UID's in FAIR geometry
```

```
Info in <TGeoManager::CloseGeometry>: -----modeler ready-----
```

```
--- Building TPC Geometry ---
```

```
Material silicon is not defined
```

```
Create Medium silicon
```

```
Material carbon is not defined
```

```
Create Medium carbon
```

```
fwendcap & bwendcap flags == 1 / 0
```

```
===== EMC 2):: ConstructASCIIGeometry() =====
```

```
=====
```

```
PndEmcReader: EMC geometry file ==
```

```
/home/stefano/july08/pandaroot/geometry/emc_module1245.dat
```

```
Emc module = 1
```

\*\*\*\*\*

Emc module = 2

\*\*\*\*\*

Emc module = 3

\*\*\*\*\*

Emc module = 4

\*\*\*\*\*

Emc module = 5

\*\*\*\*\*

===== EMC:: ConstructRootGeometry() m3a =====

=====

File name = /home/stefano/july08/pandaroot/geometry/emc\_module3new.root

You do not provide a ROOT file

FairMCApplication::ConstructGeometry() : Now closing the geometry

Warning in <TGeoManager::CloseGeometry>: geometry already closed

-I- PndDrc: Switching OFF Cherenkov Propagation

-I- PndDrc: Intialization successfull

-I- Initializing PndMvdDetector()

\*\*\*\*\*

initialisation for run id 482956479

\*\*\*\*\*

-I FairParSet::init() 2 0

Error in <FairBaseParSet::init()>: FairBaseParSet not initialized

-I FairParSet::init() 2 0

Error in <PndGeoPassivePar::init()>: PndGeoPassivePar not initialized

-I FairParSet::init() 2 0

Error in <PndTpcGeoPar::init()>: PndTpcGeoPar not initialized

-I FairParSet::init() 2 0

Error in <PndGeoTofPar::init()>: PndGeoTofPar not initialized

-I FairParSet::init() 2 0

Error in <PndGeoDrcPar::init()>: PndGeoDrcPar not initialized

-I FairParSet::init() 2 0

Error in <PndGeoMdtPar::init()>: PndGeoMdtPar not initialized

Error in <FairRuntimeDb::initContainers()>: Error occured during initialization

-I- FairMCApplication -> simulation RunID: 482956479

Calculating cross section tables, see gphysi.dat for more information

Cross section calculation concluded successfully

-I- FairMCApplication:: Monte carlo Engine Initialisation with TGeant3TGeo

create PndFieldPar container PndMultiFieldPar

create PndFieldPar container PndTransPar

create PndFieldPar container PndDipolePar

create PndFieldPar container PndSolenoidPar

RuntimeDb: write container FairBaseParSet

\*\*\* FairBaseParSet written to ROOT file version: 2

RuntimeDb: write container PndGeoPassivePar

\*\*\* PndGeoPassivePar written to ROOT file version: 2

RuntimeDb: write container PndTpcGeoPar

\*\*\* PndTpcGeoPar written to ROOT file version: 2

```

RuntimeDb: write container PndGeoTofPar
*** PndGeoTofPar written to ROOT file version: 2
RuntimeDb: write container PndGeoDrcPar
RuntimeDb: write container PndGeoMdtPar
RuntimeDb: write container PndMultiFieldPar
*** PndMultiFieldPar written to ROOT file version: 2
RuntimeDb: write container PndTransPar
RuntimeDb: write container PndDipolePar
RuntimeDb: write container PndSolenoidPar

```

----- actual containers in runtime database -----

```

FairBaseParSet          Test class for parameter io
PndGeoPassivePar        Passive Geometry Parameters
PndTpcGeoPar            PndTpc Geometry Parameters
PndGeoTofPar            tof Geometry Parameters
PndGeoDrcPar            Drc Geometry Parameters
PndGeoMdtPar            MDT Geometry Parameters
PndMultiFieldPar        Multiple Field parameter container
PndTransPar             Trans. Field parameter container
PndDipolePar            Dipole Field parameter container
PndSolenoidPar          Solenoid Field parameter container

```

----- runs, versions -----

```

run id
  container          1st-inp  2nd-inp  output
run: 482956479
  FairBaseParSet    482956479   -1      2
  PndGeoPassivePar  482956479   -1      2
  PndTpcGeoPar      482956479   -1      2
  PndGeoTofPar      482956479   -1      2
  PndGeoDrcPar      -1          -1      0
  PndGeoMdtPar      -1          -1      0
  PndMultiFieldPar  482956479   -1      2
  PndTransPar       482956479   -1      0
  PndDipolePar      482956479   -1      0
  PndSolenoidPar    482956479   -1      0

```

----- input/output -----

```

first input: none
second input: none
output:
OBJ: FairParRootFile  params_tpccombi.root   : 0 at: 0xc19f2e8
Root file I/O params_tpccombi.root is open
detector I/Os: FairGenericParIo
**** GTRIGI: IEVENT=   1 IDEVT=   1 Random Seeds =   4357   0
FairMCApplication::GeneratePrimaries()
-I FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
-I- PndStack: Filling MCTrack array...
-I- PndStack: Number of primaries      = 1
      Total number of particles = 2006
      Number of tracks in output = 1953
-I- PndStack: Updating track indices.....stack and 8 collections updated.
**** GTRIGI: IEVENT=   2 IDEVT=   2 Random Seeds =   4357   0
FairMCApplication::GeneratePrimaries()

```

```

-I FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
-I- PndStack: Filling MCTrack array...
-I- PndStack: Number of primaries      = 1
      Total number of particles = 1875
      Number of tracks in output = 1842
-I- PndStack: Updating track indizes.....stack and 8 collections updated.
**** GTRIGI: IEVENT=  3 IDEVT=  3 Random Seeds =  4357      0
FairMCApplication::GeneratePrimaries()
-I FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
-I- PndStack: Filling MCTrack array...
-I- PndStack: Number of primaries      = 1
      Total number of particles = 1051
      Number of tracks in output = 1031
-I- PndStack: Updating track indizes.....stack and 8 collections updated.
**** GTRIGI: IEVENT=  4 IDEVT=  4 Random Seeds =  4357      0
FairMCApplication::GeneratePrimaries()
-I FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
-I- PndStack: Filling MCTrack array...
-I- PndStack: Number of primaries      = 1
      Total number of particles = 2678
      Number of tracks in output = 2640
-I- PndStack: Updating track indizes.....stack and 8 collections updated.
**** GTRIGI: IEVENT=  5 IDEVT=  5 Random Seeds =  4357      0
FairMCApplication::GeneratePrimaries()
-I FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
-I- PndStack: Filling MCTrack array...
-I- PndStack: Number of primaries      = 1
      Total number of particles = 1715
      Number of tracks in output = 1677
-I- PndStack: Updating track indizes.....stack and 8 collections updated.
**** GTRIGI: IEVENT=  6 IDEVT=  6 Random Seeds =  4357      0
FairMCApplication::GeneratePrimaries()
-I FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
-I- PndStack: Filling MCTrack array...
-I- PndStack: Number of primaries      = 1
      Total number of particles = 2291
      Number of tracks in output = 2272
-I- PndStack: Updating track indizes.....stack and 8 collections updated.
**** GTRIGI: IEVENT=  7 IDEVT=  7 Random Seeds =  4357      0
FairMCApplication::GeneratePrimaries()
-I FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
-I- PndStack: Filling MCTrack array...
-I- PndStack: Number of primaries      = 1
      Total number of particles = 1541
      Number of tracks in output = 1504
-I- PndStack: Updating track indizes.....stack and 8 collections updated.
**** GTRIGI: IEVENT=  8 IDEVT=  8 Random Seeds =  4357      0
FairMCApplication::GeneratePrimaries()
-I FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
-I- PndStack: Filling MCTrack array...
-I- PndStack: Number of primaries      = 1
      Total number of particles = 2451

```

Number of tracks in output = 2408

-l- PndStack: Updating track indices.....stack and 8 collections updated.

\*\*\*\* GTRIGI: IEVENT= 9 IDEVT= 9 Random Seeds = 4357 0

FairMCApplication::GeneratePrimaries()

-l FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)

-l- PndStack: Filling MCTrack array...

-l- PndStack: Number of primaries = 1

Total number of particles = 1713

Number of tracks in output = 1678

-l- PndStack: Updating track indices.....stack and 8 collections updated.

\*\*\*\* GTRIGI: IEVENT= 10 IDEVT= 10 Random Seeds = 4357 0

FairMCApplication::GeneratePrimaries()

-l FairPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)

Program received signal SIGSEGV, Segmentation fault.

[Switching to Thread -1208748352 (LWP 14287)]

0x031773c9 in TGeoNode::Safety () from /home/stefano/july08/tools/root/lib/libGeom.so  
(gdb) bt

#0 0x031773c9 in TGeoNode::Safety () from /home/stefano/july08/tools/root/lib/libGeom.so

#1 0x031956f4 in TGeoShapeAssembly::Safety () from

/home/stefano/july08/tools/root/lib/libGeom.so

#2 0x031773fd in TGeoNode::Safety () from /home/stefano/july08/tools/root/lib/libGeom.so

#3 0x031717f9 in TGeoNavigator::Safety () from

/home/stefano/july08/tools/root/lib/libGeom.so

#4 0x03174c6f in TGeoNavigator::FindNextBoundary () from

/home/stefano/july08/tools/root/lib/libGeom.so

#5 0x0315a7f3 in TGeoManager::FindNextBoundary () from

/home/stefano/july08/tools/root/lib/libGeom.so

#6 0xb5fc7302 in gtnextTGeo () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#7 0xb5fc126d in gtnext\_ () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#8 0xb5eb55f7 in g3tmuon\_ () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#9 0xb5ebab57 in g3track\_ () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#10 0xb5fc43ff in gutrak\_ () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#11 0xb5ebb46d in gtreveroot\_ () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#12 0xb5fc442e in gutrev\_ () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#13 0xb5fafb9f in jumpt0\_ () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#14 0xb5de0882 in g3trig\_ () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#15 0xb5fbc776 in TGeant3::Gtrig () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#16 0xb5fc0dc5 in TGeant3::ProcessEvent () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#17 0xb5fc0d12 in TGeant3::ProcessRun () from

/home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

```

#18 0x023cb954 in FairMCApplication::RunMC (this=0x9d21b00, nofEvents=200) at
/home/stefano/july08/pandaroot/base/FairMCApplication.cxx:229
#19 0x023e4d38 in FairRunSim::Run (this=0x9c96030, NStart=200, NStop=0) at
/home/stefano/july08/pandaroot/base/FairRunSim.cxx:289
#20 0x02417b63 in G__FairDict_532_0_5 (result7=0xbfece2b0, funcname=0x9c94390 "\001",
libp=0xbfec8460, hash=0)
    at /home/stefano/july08/cbuild/base/FairDict.cxx:9071
#21 0x00dee2e7 in Cint::G__ExceptionWrapper () from
/home/stefano/july08/tools/root/lib/libCint.so.5.20
#22 0x00e82497 in G__execute_call () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#23 0x00e826fa in G__call_cppfunc () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#24 0x00e63f67 in G__interpret_func () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#25 0x00e52b28 in G__getfunction () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#26 0x00f34055 in G__getstructmem () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#27 0x00f2bb3f in G__getvariable () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#28 0x00e36b2a in G__getitem () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#29 0x00e39abf in G__getexpr () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#30 0x00eae4ac in G__exec_statement () from
/home/stefano/july08/tools/root/lib/libCint.so.5.20
#31 0x00e65a8f in G__interpret_func () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#32 0x00e5296a in G__getfunction () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#33 0x00e36e74 in G__getitem () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#34 0x00e39abf in G__getexpr () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#35 0x00e42dd0 in G__calc_internal () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#36 0x00ebfe34 in G__process_cmd () from /home/stefano/july08/tools/root/lib/libCint.so.5.20
#37 0x0095a8d3 in TCint::ProcessLine () from
/home/stefano/july08/tools/root/lib/libCore.so.5.20
#38 0x0095aa54 in TCint::ProcessLineSynch () from
/home/stefano/july08/tools/root/lib/libCore.so.5.20
#39 0x008a15f3 in TApplication::ExecuteFile () from
/home/stefano/july08/tools/root/lib/libCore.so.5.20
#40 0x008a1916 in TApplication::ProcessFile () from
/home/stefano/july08/tools/root/lib/libCore.so.5.20
#41 0x0089f93e in TApplication::ProcessLine () from
/home/stefano/july08/tools/root/lib/libCore.so.5.20
#42 0x00630e8a in TRint::HandleTermInput () from
/home/stefano/july08/tools/root/lib/libRint.so.5.20
#43 0x0062f4e0 in TTermInputHandler::Notify () from
/home/stefano/july08/tools/root/lib/libRint.so.5.20
#44 0x0063177e in TTermInputHandler::ReadNotify () from
/home/stefano/july08/tools/root/lib/libRint.so.5.20
#45 0x00969dfa in TUnixSystem::CheckDescriptors () from
/home/stefano/july08/tools/root/lib/libCore.so.5.20
#46 0x0096e01c in TUnixSystem::DispatchOneEvent () from
/home/stefano/july08/tools/root/lib/libCore.so.5.20
#47 0x008f78b4 in TSystem::InnerLoop () from
/home/stefano/july08/tools/root/lib/libCore.so.5.20
---Type <return> to continue, or q <return> to quit---
#48 0x008f767b in TSystem::Run () from /home/stefano/july08/tools/root/lib/libCore.so.5.20
#49 0x0089fafa in TApplication::Run () from /home/stefano/july08/tools/root/lib/libCore.so.5.20
#50 0x0062fc5e in TRint::Run () from /home/stefano/july08/tools/root/lib/libRint.so.5.20
#51 0x08048d5a in main ()

```

Then I have tried to move it between TPC and MVD, and now the error is in TGeoNavigator::FindNextDaughterBoundary :

Toggle Spoiler

Program received signal SIGSEGV, Segmentation fault.

[Switching to Thread -1208604992 (LWP 14523)]

0x02c86f47 in TGeoNavigator::FindNextDaughterBoundary () from /home/stefano/july08/tools/root/lib/libGeom.so

(gdb) bt

#0 0x02c86f47 in TGeoNavigator::FindNextDaughterBoundary () from /home/stefano/july08/tools/root/lib/libGeom.so

#1 0x02c8aa90 in TGeoNavigator::FindNextBoundary () from /home/stefano/july08/tools/root/lib/libGeom.so

#2 0x02c707f3 in TGeoManager::FindNextBoundary () from /home/stefano/july08/tools/root/lib/libGeom.so

#3 0xb517f302 in gtnextTGeo () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#4 0xb517926d in gtnext\_ () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#5 0xb506d5f7 in g3tmuon\_ () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#6 0xb5072b57 in g3track\_ () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#7 0xb517c3ff in gutrak\_ () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#8 0xb507346d in gtreveroot\_ () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#9 0xb517c42e in gutrev\_ () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#10 0xb5167b9f in jumpt0\_ () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#11 0xb4f98882 in g3trig\_ () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#12 0xb5174776 in TGeant3::Gtrig () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#13 0xb5178dc5 in TGeant3::ProcessEvent () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#14 0xb5178d12 in TGeant3::ProcessRun () from /home/stefano/july08/transport/geant3/lib/tgt\_linux/libgeant321.so

#15 0x024fb954 in FairMCApplication::RunMC (this=0x8ffebe8, nofEvents=200) at /home/stefano/july08/pandaroot/base/FairMCApplication.cxx:229

#16 0x02514d38 in FairRunSim::Run (this=0x8f73120, NStart=200, NStop=0) at /home/stefano/july08/pandaroot/base/FairRunSim.cxx:289

#17 0x02547b63 in G\_\_FairDict\_532\_0\_5 (result7=0xbff30b50, funcname=0x8f71480 "\001", libp=0xbff2ad00, hash=0)

I have removed the pipe, thinking about some overlap between it and the DIRC, but without improvements. I have removed all the detectors, and then the simulation runs. Once I put



inside all the detectors one by one (keeping dirc at the top after cave), at emc I have again the crash.

Then, we have some problems with geometry, maybe some conflict between dirc and emc, but I am not sure. What is strange is that the crash depends on the order of detectors. Expert should maybe take a look, trying to understand what is going wrong.

I have done all my tests with geant3 and old external packages. I will try tpo see what will happen with the new ones.