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.
Than 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 indizes.....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
-I- PndStack: Updating track indizes......stack and 8 collections updated.
 **** GTRIGI: IEVENT=      9 IDEVT=      9 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  = 1713
            Number of tracks in output = 1678
-I- PndStack: Updating track indizes......stack and 8 collections updated.
 **** GTRIGI: IEVENT=     10 IDEVT=     10 Random Seeds =       4357           0
FairMCApplication::GeneratePrimaries()
-I 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.

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