Subject: Re: Segmentation Violation when simulating events with run_sim1.C
Posted by Marius Mertens on Wed, 04 Feb 2009 17:27:28 GMT
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Hi all,

I managed to get a step further now:

The second (new, immediate) crash which occured later during testing was fixed by deleting the file testparams.root. It might have been corrupted from a previous crash.

The first (initial, appearing after a few 100 events) error which is the actual reason for my post, still persists when running with the parameters below. In the meantime, I also updated Pandaroot to Revision 4500.

Mrun_sim1_PndFlatGen.C
Toggle Spoiler

```
// Macro for running Cbm  with Geant3  or Geant4 (M. Al-Turany , D. Bertini)
// Modified 22/06/2005 D.Bertini

Mrun_sim1_PndFlatGen(Int_t numevents, TString basefile)
{
  TStopwatch timer;
  timer.Start();
  gDebug=0;
  // Load basic libraries
  gROOT->LoadMacro("$VMCWORKDIR/gconfig/rootlogon.C");
  rootlogon();

  CbmRunSim *fRun = new CbmRunSim();

  // set the MC version used
  // ------------------------

  fRun->SetName("TGeant4");
  // Choose the Geant Navigation System
  // fRun->SetGeoModel("G3Native");

  //fRun->SetOutputFile("testsimu10.root");
  fRun->SetOutputFile(basefile);


  // Set Material file Name
  //-----------------------

  fRun->SetMaterials("media_pnd.geo");

  // Create and add detectors
  //-------------------------

  CbmModule *Cave= new PndCave("CAVE");
  Cave->SetGeometryFileName("pndcave.geo");
```

```
  fRun->AddModule(Cave);

  CbmModule *Magnet= new PndMagnet("MAGNET");
  Magnet->SetGeometryFileName("FullSolenoid.root");
  fRun->AddModule(Magnet);

  CbmModule *Dipole= new PndMagnet("MAGNET");
  Dipole->SetGeometryFileName("dipole.geo");
  fRun->AddModule(Dipole);


  CbmModule *Pipe= new PndPipe("PIPE");
  //Pipe->SetGeometryFileName("pipebeamtarget.geo");
  fRun->AddModule(Pipe);

  /*
    CbmDetector *Stt = new CbmStt("STT",kTRUE);
    Stt->SetGeometryFileName("stt24.geo"); // 14 = 1 solo 2layer pablo01.geo 3 layers stt24
    fRun->AddModule(Stt);
  */
  /*
    CbmDetector *Stt= new CbmStt("STT", kTRUE);
    Stt->SetGeometryFileName("straws_axial.geo");
    fRun->AddModule(Stt);
  */
/*
  CbmDetector *Stt= new PndStt("STT", kTRUE);
  Stt->SetGeometryFileName("straws_skewed_blocks_35cm.geo");
  fRun->AddModule(Stt);
*/

  CbmDetector *Tpc = new PndTpcDetector("TPC", kTRUE);
  Tpc->SetGeometryFileName("tpc.geo");
  fRun->AddModule(Tpc);


  CbmDetector *Mvd = new PndMvdDetector("MVD", kTRUE);
  Mvd->SetGeometryFileName("MVD_v1.0_woPassiveTraps.root");
  //Mvd->SetGeometryFileName("MVD_v1_2addDisks.root");
  fRun->AddModule(Mvd);



  PndEmc *Emc = new PndEmc("EMC",kTRUE);
  Emc->SetGeometryFileNameDouble("emc_module1245.dat","emc_module3new.root "); // if
you want to use new geometry for FwEndCap
  fRun->AddModule(Emc);


  CbmDetector *Tof = new PndTof("TOF",kTRUE);
  Tof->SetGeometryFileName("tofbarrel.geo");
  fRun->AddModule(Tof);
```

```
  CbmDetector *Drc = new PndDrc("DIRC", kTRUE);
  Drc->SetGeometryFileName("dirc.geo");
  fRun->AddModule(Drc);

/*
 CbmDetector *Muo = new PndMdt("MDT",kTRUE);
  Muo->SetGeometryFileName("muopars.root");
  fRun->AddModule(Muo);
*/

  CbmDetector *Dch = new PndDchDetector("DCH", kTRUE);
  Dch->SetGeometryFileName("dch.root");
  fRun->AddModule(Dch);

  // Create and Set Event Generator
  //-------------------------------

  CbmPrimaryGenerator* primGen = new CbmPrimaryGenerator();
  fRun->SetGenerator(primGen);

  PndFlatParticleGenerator pndFlatGen;
pndFlatGen.SetPDGType(211);
//pndFlatGen.SetMultiplicity(10);
pndFlatGen.SetPRange(1, 1, 1);
pndFlatGen.SetPhiRange(0, 359.8, 0.1);
pndFlatGen.SetThetaRange(20, 20, 1);

primGen->AddGenerator(&pndFlatGen);


/*
    //EvtGen Generator
    CbmEvtGenGenerator* evtGen = new
    //CbmEvtGenGenerator("/home/ralfk/Pandaroot/pandaroot/macro/mvd/output.evt ");
    //CbmEvtGenGenerator("
/private/mertens/fairsoft/cbmsoft/pandaroot/pgenerators/EvtGen/lambdalam
bdabar_15gev_100k.evt ");
    CbmEvtGenGenerator(eventfile);
    primGen->AddGenerator(evtGen);
*/

  /*  // Box Generator
      CbmBoxGenerator* boxGen = new CbmBoxGenerator(13, 200); // 13 = muon; 1 = multipl.
      //  boxGen->SetPRange(1.,1.1); // GeV/c
      boxGen->SetPtRange(1.,1.); // GeV/c
      boxGen->SetPhiRange(0., 360.); // Azimuth angle range [degree]
      boxGen->SetThetaRange(0., 90.); // Polar angle in lab system range [degree]
      boxGen->SetXYZ(0., 0., 0.); // mm o cm ??
      primGen->AddGenerator(boxGen);
  */
  /*
```

```
      // proton 2212 pi+ 211 pi- -211
      Double_t randx, randy;
      for (Int_t n =0; n<10; n++){
        randx= gRandom->Gaus(0,1);
        randy= gRandom->Gaus(0,1);
        CbmParticleGenerator* partGen = new CbmParticleGenerator(2212, 1, 0.3*randx,
0.3*randy, 0.3);
        primGen->AddGenerator(partGen);
      }
  */


  // Ion Generator
  //CbmIonGenerator *fIongen= new CbmIonGenerator(79, 197,79,1, 0.,0., 25, 0.,0.,-1.);
  //  primGen->AddGenerator(fIongen);


  //
  fRun->SetStoreTraj(kFALSE);

  PndMultiField *fField= new PndMultiField();

  PndTransMap *map= new PndTransMap("TransMap", "R");
  PndDipoleMap *map1= new PndDipoleMap("DipoleMap", "R");
  PndSolenoidMap *map2= new PndSolenoidMap("SolenoidMap", "R");
  fField->AddField(map);
  fField->AddField(map1);
  fField->AddField(map2);

/**
 // New field oct.2008
  PndTransMap  *tmap= new PndTransMap("Trans1", "R");
  PndDipoleMap *dmap1= new PndDipoleMap("Dipole1", "R");
  PndDipoleMap *dmap2= new PndDipoleMap("Dipole2", "R");

  PndSolenoidMap *smap1= new PndSolenoidMap("Solenoid1", "R");
  PndSolenoidMap *smap2= new PndSolenoidMap("Solenoid2", "R");
  PndSolenoidMap *smap3= new PndSolenoidMap("Solenoid3", "R");
  PndSolenoidMap *smap4= new PndSolenoidMap("Solenoid4", "R");

  fField->AddField(tmap);
  fField->AddField(dmap1);
  fField->AddField(dmap2);

  fField->AddField(smap1);
  fField->AddField(smap2);
  fField->AddField(smap3);
  fField->AddField(smap4);
*/
```

```
  //magnetic field
  /*  PndConstField *fMagField=new PndConstField();
      fMagField->SetField(0.,0.,20.); // values are in kG
      fMagField->SetFieldRegion(-50, 50,-50, 50, -100, 100);// values are in cm
(xmin,xmax,ymin,ymax,zmin,zmax)
      fField->AddField(fMagField);
  */
  fRun->SetField(fField);



  fRun->Init();
/*
  // -Trajectories Visualization
  // --------------------------
  CbmTrajFilter* trajFilter = CbmTrajFilter::Instance();
  // Set cuts for storing the trajectpries
  trajFilter->SetStepSizeCut(0.01); // 1 cm
  //     trajFilter->SetVertexCut(-2000., -2000., 4., 2000., 2000., 100.);
  //     trajFilter->SetMomentumCutP(10e-3); // p_lab > 10 MeV
  //     trajFilter->SetEnergyCut(0., 1.02); // 0 < Etot < 1.04 GeV
  trajFilter->SetStorePrimaries(kTRUE);
  trajFilter->SetStoreSecondaries(kTRUE);
*/
  //
  //   // Fill the Parameter containers for this run
  //   //--------------------------------------------
  //
  CbmRuntimeDb *rtdb=fRun->GetRuntimeDb();
  Bool_t kParameterMerged=kTRUE;



  //if a field is used save the parameters in the RTDB
  /*
 PndSolenoidPar* Par1 = (PndSolenoidPar*) rtdb->getContainer("PndSolenoidPar");
 if ( map2 ) {  Par1->SetParameters(map2); }
 Par1->setChanged();
 Par1->setInputVersion(fRun->GetRunId(),1);

 PndDipolePar* Par2 = (PndDipolePar*) rtdb->getContainer("PndDipolePar");
 if (map1 ) {  Par2->SetParameters(map1); }
 Par2->setInputVersion(fRun->GetRunId(),1);
 Par2->setChanged();

 PndTransPar* Par3 = (PndTransPar*) rtdb->getContainer("PndTransPar");
 if (map ) {  Par3->SetParameters(map); }
 Par3->setInputVersion(fRun->GetRunId(),1);
```

```
 Par3->setChanged();
  */

  PndMultiFieldPar* Par = (PndMultiFieldPar*) rtdb->getContainer("PndMultiFieldPar");
  if (fField) {  Par->SetParameters(fField); }
  Par->setInputVersion(fRun->GetRunId(),1);
  Par->setChanged();

  CbmParRootFileIo* output=new CbmParRootFileIo(kParameterMerged);
  output->open("testparams.root");
  rtdb->setOutput(output);
  rtdb->saveOutput();
  rtdb->print();
  // Transport nEvents
  // ----------------1

  Int_t nEvents = numevents;
  fRun->Run(nEvents);

  timer.Stop();

  Double_t rtime = timer.RealTime();
  Double_t ctime = timer.CpuTime();
  printf("RealTime=%f seconds, CpuTime=%f seconds\n",rtime,ctime);

  cout << " Test passed" << endl;
  cout << " All ok " << endl;
  exit(0);

}
```

First lines of output
Toggle Spoiler

```
Processing Mrun_sim1_PndFlatGen.C(3600, "
/home/mertens/pandaroot/myoutput/20090204_flatgen_g4_crashtest_newinstal l5.root ")...
- RTDB container factory CbmBaseContFact
- RTDB container factory PndFieldContFact
- RTDB container factory PndPassiveContFact

PSaid instance created...  access via gSaid->f()

- RTDB container factory PndEmcContFact
- RTDB container factory PndTpcContFact
- RTDB container factory PndSttContFact
- RTDB container factory PndMvdContFact
- RTDB container factory PndTofContFact
- RTDB container factory PndDrcContFact
- RTDB container factory PndMdtContFact
- RTDB container factory PndDchContFact
- RTDB container factory PndLheContFact
-I- CbmRun::SetMaterials() Media file used:
```

/home/mertens/pandaroot/pandaroot/trunk/geometry/media_pnd.geo

============== CbmRunSim: Initialising simulation run ==============
Info in <TGeoManager::TGeoManager>: Geometry CBMGeom, CBM geometry created
-I- CbmGeoMedia Read media
-I- PndFieldMap: Reading field map from ROOT file
/home/mertens/pandaroot/pandaroot/trunk/input/TransMap.root
-I- PndFieldMap: Reading field map from ROOT file
/home/mertens/pandaroot/pandaroot/trunk/input/DipoleMap.root
-I- PndFieldMap: Reading field map from ROOT file
/home/mertens/pandaroot/pandaroot/trunk/input/SolenoidMap.root
Loading Geant4 granular libraries ...
Error in <TUnixSystem::DynamicPathName>: libG4OpenGL[.so | .sl | .dl | .a | .dll] does not
exist in .:/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib::/usr/local
/panda/fairroot/fairsoft/tools/root_v5.20.00/lib:/usr/lib:/usr/X11R6/lib
:/home/mertens/pandaroot/cbuild/lib:/home/mertens/pandaroot/cbuild/lib:/
home/mertens/pandaroot/tools/root/lib:/home/mertens/pandaroot/generators
/lib:/home/mertens/pandaroot/generators/lib:/home/mertens/pandaroot/tran
sport/geant3/lib/tgt_linux:/home/mertens/pandaroot/transport/geant4/lib/
Linux-g++:/home/mertens/pandaroot/transport/geant4_vmc/lib/tgt_linux:/ho
me/mertens/pandaroot/transport/vgm/lib:/home/mertens/pandaroot/cern/clhe
p/lib:/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/cint/cint/s tl
Loading VGM libraries ...
Loading libraries ... finished
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
--- Building TPC Geometry ---
Material silicon is not defined
Create Medium silicon
Material carbon is not defined
Create Medium carbon

====== EMC:: ConstructASCIIGeometry() ======
==========
PndEmcReader: EMC geometry file ==
/home/mertens/pandaroot/pandaroot/trunk/geometry/emc_module1245.dat
Emc module = 1
****
Emc module = 2
****
Emc module = 3
****
Emc module = 4
****
Emc module = 5
****

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

File name = /home/mertens/pandaroot/pandaroot/trunk/geometry/emc_module3new.root

 ======= 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 <TGeoNavigator::BuildCache>: --- Maximum geometry depth set to 100
Info in <TGeoManager::CloseGeometry>: 464316 nodes/ 1251 volume UID's in CBM geometry
Info in <TGeoManager::CloseGeometry>: ----------------modeler ready----------------
Material DCHmixture is not defined
Create Medium DCHmixture
Material DCHmixturePassive is not defined
Create Medium DCHmixturePassive
CbmMCApplication::ConstructGeometry() : Now closing the geometry
Warning in <TGeoManager::CloseGeometry>: geometry already closed
Info in <TG4RootNavMgr::SetNavigator>: TG4RootNavigator created and registered to G4TransportationManager
Running TVirtualMCApplication::ConstructGeometry
****
 Geant4 version Name: geant4-09-01-patch-02   (9-May-2008)
                      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: CBMGeom - CBM geometry ...
Info in <TGeoManager::ConvertReflections>: Done
===> GEANT4 materials created and mapped to TGeo ones...
===> GEANT4 physical volumes created and mapped to TGeo hierarchy...
INFO: TG4RootDetectorConstruction::Construct() finished
TG4PostDetConstruction::Initialize
G4 Stat: instantiated 2178 logical volumes
                      75663 physical volumes
The tables for UV photon tracking set for FusedSil
The tables for UV photon tracking set for NLAK33A
The tables for UV photon tracking set for Mirror
The tables for UV photon tracking set for Marcol82
The tables for UV photon tracking set for DIRCair
The tables for UV photon tracking set for DIRCairNoSens
Info in <TG4RootNavMgr::ConnectToG4>: ROOT detector construction class connected to G4RunManager
Adding HadronPhysicsList QGSP_BERT_EMV

<<< Geant4 Physics List engine packaging library: PACK 5.4
<<< Geant4 Physics List simulation engine: QGSP_BERT_EMV 1.0

Adding SpecialPhysicsList stepLimiter+specialCuts+specialControls

```
Debug mode is switched on.
Visualization Manager instantiating...
Visualization Manager initialising...
Registering graphics systems...

You have successfully registered the following graphics systems.
Current available graphics systems are:
  ASCIITree (ATree)
  DAWNFILE (DAWNFILE)
  G4HepRepFile (HepRepFile)
  G4HepRep (HepRepXML)
  RayTracer (RayTracer)
  VRML1FILE (VRML1FILE)
  VRML2FILE (VRML2FILE)

Registering model factories...

You have successfully registered the following model factories.
Registered model factories:
  drawByCharge
  drawByParticleID

Registered filter factories:
  None

Geant4 has been created.
 -I g4Config() using g4conf  macro:
/home/mertens/pandaroot/pandaroot/trunk/gconfig/g4config.in
Physics cuts with script
 /home/mertens/pandaroot/pandaroot/trunk/gconfig/SetCuts.C
SetCuts Macro: Setting Processes..
SetCuts Macro: Setting cuts..
SetCuts Macro: Setting Processes..
SetCuts Macro: Setting cuts..
### Adding Neutron tracking cut for neutron
###  cut value is 10 microseconds
### Hadron physics constructed.
### Processes mapped to VMC controls ok.
### Step limiter physics constructed.
### Special Cuts constructed.
### Special Controls constructed.
### User particles physics constructed.
### Processes mapped to VMC codes ok.
 -I- Initializing PndMvdDetector()
 -I- PndDrc: Intialization successfull

************************************************************
     initialisation for run id 90243391
************************************************************
Error in <CbmBaseParSet::init()>: CbmBaseParSet not initialized
Error in <PndGeoPassivePar::init()>: PndGeoPassivePar not initialized
Error in <PndTpcGeoPar::init()>: PndTpcGeoPar not initialized
```

```
Error in <PndGeoTofPar::init()>: PndGeoTofPar not initialized
Error in <PndGeoDrcPar::init()>: PndGeoDrcPar not initialized
Error in <CbmRuntimeDb::initContainers()>: Error occured during initialization
 -I- CbmMCApplication ->  simulation RunID:  90243391

*******************************************
   GEANT4 Geometry statistics:
         2178 logical volumes
        75663 physical volumes
           22 materials
           21 user limits
         1262 sensitive detectors
*******************************************

 -I- CbmMCApplication:: Monte carlo Engine Initialisation  with TGeant4
create PndFieldPar container PndMultiFieldPar
create PndFieldPar container PndTransPar
create PndFieldPar container PndDipolePar
create PndFieldPar container PndSolenoidPar
RuntimeDb: write container CbmBaseParSet
Warning in <TClass::TClass>: no dictionary for class RangeValues is available
Warning in <TStreamerInfo::Build:>: PndFlatParticleGenerator: RangeValues has no streamer
or dictionary, data member "fPt" will not be saved
Warning in <TStreamerInfo::Build:>: PndFlatParticleGenerator: RangeValues has no streamer
or dictionary, data member "fPhi" will not be saved
Warning in <TStreamerInfo::Build:>: PndFlatParticleGenerator: RangeValues has no streamer
or dictionary, data member "fEta" will not be saved
Warning in <TStreamerInfo::Build:>: PndFlatParticleGenerator: RangeValues has no streamer
or dictionary, data member "fRapidity" will not be saved
Warning in <TStreamerInfo::Build:>: PndFlatParticleGenerator: RangeValues has no streamer
or dictionary, data member "fP" will not be saved
Warning in <TStreamerInfo::Build:>: PndFlatParticleGenerator: RangeValues has no streamer
or dictionary, data member "fTheta" will not be saved
Warning in <TStreamerInfo::Build:>: PndFlatParticleGenerator: RangeValues has no streamer
or dictionary, data member "fCosTheta" will not be saved
***  CbmBaseParSet written to ROOT file   version: 1
RuntimeDb: write container PndGeoPassivePar
***  PndGeoPassivePar written to ROOT file   version: 1
RuntimeDb: write container PndTpcGeoPar
***  PndTpcGeoPar written to ROOT file   version: 1
RuntimeDb: write container PndGeoTofPar
***  PndGeoTofPar written to ROOT file   version: 1
RuntimeDb: write container PndGeoDrcPar
RuntimeDb: write container PndMultiFieldPar
***  PndMultiFieldPar written to ROOT file   version: 1
RuntimeDb: write container PndTransPar
RuntimeDb: write container PndDipolePar
RuntimeDb: write container PndSolenoidPar
 ------------------------------------------------------------------------ --------
----------  actual containers in runtime database  ------------------------
CbmBaseParSet                          Test class for parameter io
PndGeoPassivePar                        Passive Geometry Parameters
```

```
PndTpcGeoPar                        PndTpc Geometry Parameters
PndGeoTofPar                       tof Geometry Parameters
PndGeoDrcPar                        Drc 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: 90243391
  CbmBaseParSet                      90243391        -1         1
  PndGeoPassivePar                    90243391        -1         1
  PndTpcGeoPar                       90243391        -1         1
  PndGeoTofPar                       90243391        -1         1
  PndGeoDrcPar                          -1        -1         0
  PndMultiFieldPar                   90243391        -1         1
  PndTransPar                        90243391        -1         0
  PndDipolePar                       90243391        -1         0
  PndSolenoidPar                      90243391        -1         0
--------------  input/output  ------------------------------------------------
first input: none
second input: none
output:
OBJ: CbmParRootFile     testparams.root  : 0 at: 0xd40e0f8
Root file I/O testparams.root is open
detector I/Os:  CbmGenericParIo

phot:  Total cross sections from Sandia parametrisation.
      Sampling according PhotoElectric model

compt:  Total cross sections has a good parametrisation from 10 KeV to (100/Z) GeV
      Sampling according Klein-Nishina model
      tables are built for  gamma
      Lambda tables from 100 eV  to 100 GeV in 90 bins.

conv:  Total cross sections has a good parametrisation from 1.5 MeV to 100 GeV for all Z;
      sampling secondary e+e- according Bethe-Heitler model
      tables are built for  gamma
      Lambda tables from 1.022 MeV to 100 GeV in 100 bins.

msc:  Model variant of multiple scattering for e-
      Lambda tables from 100 eV  to 100 TeV in 120 bins.
      LateralDisplacementFlag=  1   Skin= 0
      Boundary/stepping algorithm is active with RangeFactor= 0.2  Step limit type 0

eIoni:   tables are built for  e-
      dE/dx and range tables from 100 eV  to 100 TeV in 120 bins.
      Lambda tables from threshold to 100 TeV in 120 bins.
      Delta cross sections and sampling from MollerBhabha model
      Good description from 1 KeV to 100 GeV.
      Step function: finalRange(mm)= 1, dRoverRange= 0.8, integral: 1, fluct: 1
```

eBrem: tables are built for e-
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Total cross sections and sampling from StandBrem model (based on the EEDL data library)
Good description from 1 KeV to 100 GeV, log scale extrapolation above 100 GeV. LPM flag 1

eIoni: tables are built for e+
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Delta cross sections and sampling from MollerBhabha model
Good description from 1 KeV to 100 GeV.
Step function: finalRange(mm)= 1, dRoverRange= 0.8, integral: 1, fluct: 1

eBrem: tables are built for e+
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Total cross sections and sampling from StandBrem model (based on the EEDL data library)
Good description from 1 KeV to 100 GeV, log scale extrapolation above 100 GeV. LPM flag 1

annihil: Sampling according eplus2gg model
tables are built for e+
Lambda tables from 100 eV to 100 TeV in 120 bins.

msc: Model variant of multiple scattering for proton
Lambda tables from 100 eV to 100 TeV in 120 bins.
LateralDisplacementFlag= 1 Skin= 0
Boundary/stepping algorithm is active with RangeFactor= 0.2 Step limit type 0

hIoni: tables are built for proton
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Scaling relation is used from proton dE/dx and range.
Delta cross sections and sampling from BetheBloch model for scaled energy > 2 MeV
Parametrisation from Bragg for protons below. NuclearStopping= 1
Step function: finalRange(mm)= 1, dRoverRange= 0.2, integral: 1, fluct: 1

msc: Model variant of multiple scattering for GenericIon
LateralDisplacementFlag= 0 Skin= 0
Boundary/stepping algorithm is active with RangeFactor= 0.2 Step limit type 1

ionIoni: tables are built for GenericIon
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Scaling relation is used from proton dE/dx and range.
Delta cross sections and sampling from BetheBloch model for scaled energy > 2 MeV
Parametrisation from BraggIon for protons below. NuclearStopping= 1

Stopping Power data for 8 ion/material pairs are used.
Step function: finalRange(mm)= 0.1, dRoverRange= 0.1, integral: 1, fluct: 1

hIoni: tables are built for anti_proton
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Scaling relation is used from proton dE/dx and range.
Delta cross sections and sampling from BetheBloch model for scaled energy > 2 MeV
Parametrisation from Bragg for protons below. NuclearStopping= 1
Step function: finalRange(mm)= 1, dRoverRange= 0.2, integral: 1, fluct: 1

msc: Model variant of multiple scattering for mu+
Lambda tables from 100 eV to 100 TeV in 120 bins.
LateralDisplacementFlag= 1 Skin= 0
Boundary/stepping algorithm is active with RangeFactor= 0.2 Step limit type 0

muIoni: tables are built for mu+
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Bether-Bloch model for E > 0.2 MeV, parametrisation of Bragg peak below,
radiative corrections for E > 1 GeV
Step function: finalRange(mm)= 1, dRoverRange= 0.2, integral: 1, fluct: 1

muBrems: tables are built for mu+
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Parametrised model

muPairProd: tables are built for mu+
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Parametrised model

muIoni: tables are built for mu-
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Bether-Bloch model for E > 0.2 MeV, parametrisation of Bragg peak below,
radiative corrections for E > 1 GeV
Step function: finalRange(mm)= 1, dRoverRange= 0.2, integral: 1, fluct: 1

muBrems: tables are built for mu-
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Parametrised model

muPairProd: tables are built for mu-
dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
Lambda tables from threshold to 100 TeV in 120 bins.
Parametrised model

G4UHadronElasticProcess for neutron PDGcode= 2112 Elow(MeV)= 19 Elowest(eV)= 0

hIoni: tables are built for pi+
    dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
    Lambda tables from threshold to 100 TeV in 120 bins.
    Scaling relation is used from proton dE/dx and range.
    Delta cross sections and sampling from BetheBloch model for scaled energy > 0.297504 MeV
    Parametrisation from Bragg for protons below. NuclearStopping= 1
    Step function: finalRange(mm)= 1, dRoverRange= 0.2, integral: 1, fluct: 1

msc: Model variant of multiple scattering for pi-
    Lambda tables from 100 eV to 100 TeV in 120 bins.
    LateralDisplacementFlag= 1   Skin= 0
    Boundary/stepping algorithm is active with RangeFactor= 0.2 Step limit type 0

hIoni: tables are built for pi-
    dE/dx and range tables from 100 eV to 100 TeV in 120 bins.
    Lambda tables from threshold to 100 TeV in 120 bins.
    Scaling relation is used from proton dE/dx and range.
    Delta cross sections and sampling from BetheBloch model for scaled energy > 0.297504 MeV
    Parametrisation from Bragg for protons below. NuclearStopping= 1
    Step function: finalRange(mm)= 1, dRoverRange= 0.2, integral: 1, fluct: 1

========= Table of registered couples ==============================

Index : 0   used in the geometry : Yes   recalculation needed : No
 Material : air
 Range cuts   : gamma 1 mm   e- 1 mm   e+ 1 mm
 Energy thresholds : gamma 990 eV   e- 990 eV   e+ 990 eV
 Region(s) which use this couple :
    DefaultRegionForTheWorld

Index : 1   used in the geometry : Yes   recalculation needed : No
 Material : aluminium
 Range cuts   : gamma 1 mm   e- 1 mm   e+ 1 mm
 Energy thresholds : gamma 6.88731 keV   e- 596.68 keV   e+ 568.011 keV
 Region(s) which use this couple :
    DefaultRegionForTheWorld

Index : 2   used in the geometry : Yes   recalculation needed : No
 Material : iron
 Range cuts   : gamma 1 mm   e- 1 mm   e+ 1 mm
 Energy thresholds : gamma 20.8323 keV   e- 1.28002 MeV   e+ 1.21851 MeV
 Region(s) which use this couple :
    DefaultRegionForTheWorld

Index : 3   used in the geometry : Yes   recalculation needed : No
 Material : copper
 Range cuts   : gamma 1 mm   e- 1 mm   e+ 1 mm
 Energy thresholds : gamma 24.6072 keV   e- 1.39521 MeV   e+ 1.31192 MeV
 Region(s) which use this couple :
    DefaultRegionForTheWorld

Index : 4 used in the geometry : Yes recalculation needed : No
Material : steel
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 20.8323 keV e- 1.31192 MeV e+ 1.23361 MeV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 5 used in the geometry : Yes recalculation needed : No
Material : vacuum
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 990 eV e- 990 eV e+ 990 eV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 6 used in the geometry : Yes recalculation needed : No
Material : Al+Be
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 4.45676 keV e- 496.074 keV e+ 478.087 keV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 7 used in the geometry : Yes recalculation needed : No
Material : TPCmixture
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 990 eV e- 990 eV e+ 990 eV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 8 used in the geometry : Yes recalculation needed : No
Material : silicon
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 6.88731 keV e- 540.718 keV e+ 521.113 keV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 9 used in the geometry : Yes recalculation needed : No
Material : carbon
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 3.29462 keV e- 568.011 keV e+ 554.196 keV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 10 used in the geometry : Yes recalculation needed : No
Material : PWO
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 84.7768 keV e- 1.13176 MeV e+ 1.06419 MeV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 11 used in the geometry : Yes recalculation needed : No
Material : lead

Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 100.511 keV e- 1.37814 MeV e+ 1.28002 MeV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 12 used in the geometry : Yes recalculation needed : No
Material : FscScint
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 2.36895 keV e- 355.791 keV e+ 347.138 keV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 13 used in the geometry : Yes recalculation needed : No
Material : polyvinyltoluene
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 2.36895 keV e- 355.791 keV e+ 347.138 keV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 14 used in the geometry : Yes recalculation needed : No
Material : DIRCairNoSens
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 990 eV e- 990 eV e+ 990 eV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 15 used in the geometry : Yes recalculation needed : No
Material : FusedSil
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 5.51637 keV e- 534.102 keV e+ 514.737 keV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 16 used in the geometry : Yes recalculation needed : No
Material : NLAK33A
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 7.44009 keV e- 884.76 keV e+ 842.248 keV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 17 used in the geometry : Yes recalculation needed : No
Material : Mirror
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 5.51637 keV e- 534.102 keV e+ 514.737 keV
Region(s) which use this couple :
DefaultRegionForTheWorld

Index : 18 used in the geometry : Yes recalculation needed : No
Material : Marcol82
Range cuts : gamma 1 mm e- 1 mm e+ 1 mm
Energy thresholds : gamma 2.1641 keV e- 326.415 keV e+ 318.477 keV
Region(s) which use this couple :

```
   DefaultRegionForTheWorld

Index : 19     used in the geometry : Yes     recalculation needed : No
 Material : DCHmixturePassive
 Range cuts        :  gamma 1 mm     e- 1 mm     e+ 1 mm
 Energy thresholds :  gamma 990 eV     e- 990 eV     e+ 990 eV
 Region(s) which use this couple :
   DefaultRegionForTheWorld

Index : 20     used in the geometry : Yes     recalculation needed : No
 Material : DCHmixture
 Range cuts        :  gamma 1 mm     e- 1 mm     e+ 1 mm
 Energy thresholds :  gamma 990 eV     e- 990 eV     e+ 990 eV
 Region(s) which use this couple :
   DefaultRegionForTheWorld

========================================================================

### Run 0 start.
CbmMCApplication::GeneratePrimaries()
outerVal, midVal, innerVal: 0.1 20 1
phi, cosTheta, p: 0.1 0 1
-I CbmPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
>>> Event 0
CbmMCApplication::GeneratePrimaries()
outerVal, midVal, innerVal: 0.2 20 1
phi, cosTheta, p: 0.2 0 1
-I CbmPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
>>> Event 1
CbmMCApplication::GeneratePrimaries()
outerVal, midVal, innerVal: 0.3 20 1
phi, cosTheta, p: 0.3 0 1
-I CbmPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
>>> Event 2
CbmMCApplication::GeneratePrimaries()
outerVal, midVal, innerVal: 0.4 20 1
phi, cosTheta, p: 0.4 0 1
-I CbmPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)


Last lines of output
Toggle Spoiler
>>> Event 311
CbmMCApplication::GeneratePrimaries()
outerVal, midVal, innerVal: 31.3 20 1
phi, cosTheta, p: 31.3 0 1
-I CbmPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
>>> Event 312
CbmMCApplication::GeneratePrimaries()
outerVal, midVal, innerVal: 31.4 20 1
phi, cosTheta, p: 31.4 0 1
-I CbmPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
```

```
>>> Event 313
CbmMCApplication::GeneratePrimaries()
outerVal, midVal, innerVal: 31.5 20 1
phi, cosTheta, p: 31.5 0 1
-I CbmPrimaryGenerator: 1 primary tracks from vertex (0, 0, 0)Event Time = 0(ns)
>>> Event 314

 *** Break *** segmentation violation
Using host libthread_db library "/lib/libthread_db.so.1".
Attaching to program: /proc/7969/exe, process 7969
[Thread debugging using libthread_db enabled]
[New Thread -1228290352 (LWP 7969)]
0xb7f1a410 in __kernel_vsyscall ()
#1  0xb6d5c5c3 in __waitpid_nocancel () from /lib/libc.so.6
#2  0xb6d06d3b in do_system () from /lib/libc.so.6
#3  0xb6e0c51d in system () from /lib/libpthread.so.0
#4  0xb79db24d in TUnixSystem::Exec () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#5  0xb79e0717 in TUnixSystem::StackTrace () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#6  0xb79df71e in TUnixSystem::DispatchSignals ()
   from  /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#7  0xb79df7ed in SigHandler () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#8  0xb79d8734 in sighandler () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#9  <signal handler called>
#10 0xb682ab3f in TGeoNavigator::CdDown () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libGeom.so
#11 0xb682cccb in TGeoNavigator::SearchNode () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libGeom.so
#12 0xb682da1e in TGeoNavigator::CrossBoundaryAndLocate ()
   from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libGeom.so
#13 0xb68108f2 in TGeoManager::CrossBoundaryAndLocate ()
   from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libGeom.so
#14 0xaf8f41ad in TG4RootNavigator::LocateGlobalPointAndSetup ()
   from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libG4root.so
#15 0xb1c97e18 in G4Navigator::LocateGlobalPointAndUpdateTouchableHandle
(this=0xb070340, position=@0xe40d70c,
    direction=@0xdc262d0, oldTouchableToUpdate=@0xd0cfccc, RelativeSearch=true)
    at  /usr/local/panda/fairroot/fairsoft/transport/geant4/source/geometry/navi
gation/include/G4Navigator.icc:321
#16 0xb1c94cf2 in G4Transportation::PostStepDoIt (this=0xd0cfb68, track=@0xe40d708) at
src/G4Transportation.cc:623
#17 0xb054e622 in G4SteppingManager::InvokePSDIP (this=0xb078db8, np=0) at
src/G4SteppingManager2.cc:503
#18 0xb054e909 in G4SteppingManager::InvokePostStepDoItProcs (this=0xb078db8) at
src/G4SteppingManager2.cc:479
#19 0xb054a566 in G4SteppingManager::Stepping (this=0xb078db8) at
src/G4SteppingManager.cc:210
#20 0xb0558c96 in G4TrackingManager::ProcessOneTrack (this=0xb078d90,
apValueG4Track=0xe40d708) at src/G4TrackingManager.cc:126
```

#21 0xb040e341 in G4EventManager::DoProcessing (this=0xb078d48, anEvent=0xb084f90) at src/G4EventManager.cc:185
#22 0xb040eade in G4EventManager::ProcessOneEvent (this=0xb078d48, anEvent=0xb084f90) at src/G4EventManager.cc:335
#23 0xb03a74db in G4RunManager::DoEventLoop (this=0xb078c98, n_event=3600, macroFile=0x0, n_select=-1)
    at src/G4RunManager.cc:235
#24 0xb03a5e4e in G4RunManager::BeamOn (this=0xb078c98, n_event=3600, macroFile=0x0, n_select=-1) at src/G4RunManager.cc:140
#25 0xaf894fb7 in TG4RunManager::ProcessRun () from /home/mertens/pandaroot/transport/geant4_vmc/lib/tgt_linux/libgeant4vmc. so
#26 0xaf8992e7 in TGeant4::ProcessRun () from /home/mertens/pandaroot/transport/geant4_vmc/lib/tgt_linux/libgeant4vmc. so
#27 0xb41e4639 in CbmMCApplication::RunMC (this=0x8745db0, nofEvents=3600)
    at /home/mertens/pandaroot/pandaroot/trunk/base/CbmMCApplication.cxx:228
#28 0xb41f87c1 in CbmRunSim::Run (this=0x86b9218, NStart=3600, NStop=0)
    at /home/mertens/pandaroot/pandaroot/trunk/base/CbmRunSim.cxx:286
#29 0xb423ab50 in G__CbmDict_531_0_5 (result7=0xbfa01460, funcname=0x86b69f0 "\001", libp=0xbf9faff4, hash=0)
    at /home/mertens/pandaroot/cbuild/base/CbmDict.cxx:9272
#30 0xb711a74a in Cint::G__ExceptionWrapper () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#31 0xb71d6cf8 in G__execute_call () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#32 0xb71d7d4d in G__call_cppfunc () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#33 0xb71afde7 in G__interpret_func () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#34 0xb719edd3 in G__getfunction () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#35 0xb728bc22 in G__getstructmem () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#36 0xb7281a80 in G__getvariable () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#37 0xb7171751 in G__getitem () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#38 0xb7178df2 in G__getexpr () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#39 0xb7209e9d in G__exec_statement () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#40 0xb71b1d9c in G__interpret_func () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#41 0xb719ee36 in G__getfunction () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#42 0xb7171841 in G__getitem () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#43 0xb7178df2 in G__getexpr () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#44 0xb7185600 in G__calc_internal () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20
#45 0xb7212f8a in G__process_cmd () from /usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCint.so.5. 20

#46 0xb79cdd65 in TCint::ProcessLine () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#47 0xb79cda1f in TCint::ProcessLineSynch () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#48 0xb79028e8 in TApplication::ExecuteFile () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#49 0xb7902c24 in TApplication::ProcessFile () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#50 0xb78ffd6b in TApplication::ProcessLine () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libCore.so.5. 20
#51 0xb6f682b9 in TRint::Run () from
/usr/local/panda/fairroot/fairsoft/tools/root_v5.20.00/lib/libRint.so.5. 20
#52 0x08048e23 in main ()
Root > Function Mrun_sim1_PndFlatGen() busy flag cleared

Thanks for your input,

Marius
