

GEANT4 Simulation
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Chapter 1

Hierarchical Index

1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

G4Run	
Run	13
G4UserRunAction	
RunAction	14
TesteUserRunAction	19
G4VUserDetectorConstruction	
DetectorConstruction	7
TesteDetectorConstruction	16
G4VUserPhysicsList	
PhysicsList	10
PhysicsList	10
TestePhysicsList	17
G4VUserPrimaryGeneratorAction	
PrimaryGeneratorAction	12
TestePrimaryGeneratorAction	18
MyMaterial	8
MyRandom	9
Teste	15

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

DetectorConstruction	7
MyMaterial	8
MyRandom	9
PhysicsList	10
PrimaryGeneratorAction	12
Run	13
RunAction	14
Teste	15
TesteDetectorConstruction	16
TestePhysicsList	17
TestePrimaryGeneratorAction	18
TesteUserRunAction	19

Chapter 3

File Index

3.1 File List

Here is a list of all files with brief descriptions:

DetectorConstruction.cc	21
DetectorConstruction.hh	21
Geant4MasterDissertationSimulation.cc	22
MyMaterial.cc	22
MyMaterial.hh	23
MyRandom.cc	23
MyRandom.hh	23
src/PhysicsList.cc	24
stuff/PhysicsList.cc	24
include/PhysicsList.hh	24
stuff/PhysicsList.hh	24
PrimaryGeneratorAction.cc	25
PrimaryGeneratorAction.hh	25
Run.cc	25
Run.hh	25
src/RunAction.cc	26
stuff/RunAction.cc	26
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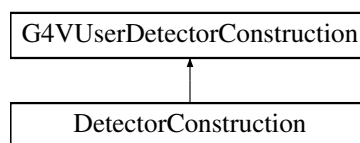
Chapter 4

Class Documentation

4.1 DetectorConstruction Class Reference

```
#include <DetectorConstruction.hh>
```

Inheritance diagram for DetectorConstruction:



Public Member Functions

- [DetectorConstruction](#) ()
- [~DetectorConstruction](#) ()
- G4VPhysicalVolume * [Construct](#) ()
- G4VPhysicalVolume * [getWorldVolume](#) ()
- G4VPhysicalVolume * [getCube](#) ()

4.1.1 Detailed Description

Definition at line 16 of file DetectorConstruction.hh.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 DetectorConstruction::DetectorConstruction ()

Author

Sandro Boschetti, August 30, 2012

Definition at line 27 of file DetectorConstruction.cc.

4.1.2.2 DetectorConstruction::~~DetectorConstruction ()

Definition at line 32 of file DetectorConstruction.cc.

4.1.3 Member Function Documentation

4.1.3.1 G4VPhysicalVolume * DetectorConstruction::Construct ()

A LogicalVolume is some geometry figure, like a G4Box, fulfilled with some material.

A PhysicalVolume is a LogicalVolume put in place.

Here I set the Sensitive Detector used to accumulate radiation dose. There is a bunch of things that must be UNDERSTOOD here.

Definition at line 45 of file DetectorConstruction.cc.

4.1.3.2 G4VPhysicalVolume * DetectorConstruction::getCube ()

Definition at line 41 of file DetectorConstruction.cc.

4.1.3.3 G4VPhysicalVolume * DetectorConstruction::getWordVolume ()

Definition at line 37 of file DetectorConstruction.cc.

The documentation for this class was generated from the following files:

- [DetectorConstruction.hh](#)
- [DetectorConstruction.cc](#)

4.2 MyMaterial Class Reference

```
#include <MyMaterial.hh>
```

Public Member Functions

- [MyMaterial](#) ()
- virtual [~MyMaterial](#) ()
- G4Material * [getAir](#) ()
- G4Material * [getArgonGas](#) ()
- G4Material * [getPb](#) ()
- G4Material * [getWater](#) ()

4.2.1 Detailed Description

Definition at line 12 of file MyMaterial.hh.

4.2.2 Constructor & Destructor Documentation

4.2.2.1 MyMaterial::MyMaterial ()

Definition at line 12 of file MyMaterial.cc.

4.2.2.2 MyMaterial::~MyMaterial () [virtual]

Definition at line 43 of file MyMaterial.cc.

4.2.3 Member Function Documentation

4.2.3.1 G4Material * MyMaterial::getAir ()

Definition at line 47 of file MyMaterial.cc.

4.2.3.2 G4Material * MyMaterial::getArgonGas ()

Definition at line 51 of file MyMaterial.cc.

4.2.3.3 G4Material * MyMaterial::getPb ()

Definition at line 55 of file MyMaterial.cc.

4.2.3.4 G4Material * MyMaterial::getWater ()

Definition at line 59 of file MyMaterial.cc.

The documentation for this class was generated from the following files:

- [MyMaterial.hh](#)
- [MyMaterial.cc](#)

4.3 MyRandom Class Reference

```
#include <MyRandom.hh>
```

Public Member Functions

- double [getRandomNumber](#) ()
- [MyRandom](#) ()
- virtual [~MyRandom](#) ()

4.3.1 Detailed Description

Definition at line 21 of file MyRandom.hh.

4.3.2 Constructor & Destructor Documentation

4.3.2.1 MyRandom::MyRandom ()

Definition at line 8 of file MyRandom.cc.

4.3.2.2 MyRandom::~~MyRandom () [virtual]

Definition at line 13 of file MyRandom.cc.

4.3.3 Member Function Documentation

4.3.3.1 double MyRandom::getRandomNumber ()

Definition at line 3 of file MyRandom.cc.

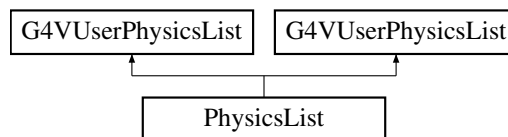
The documentation for this class was generated from the following files:

- [MyRandom.hh](#)
- [MyRandom.cc](#)

4.4 PhysicsList Class Reference

```
#include <PhysicsList.hh>
```

Inheritance diagram for PhysicsList:



Public Member Functions

- [PhysicsList](#) ()
- [~PhysicsList](#) ()
- [PhysicsList](#) ()
- [~PhysicsList](#) ()

Protected Member Functions

- void [ConstructParticle](#) ()
- void [ConstructProcess](#) ()
- void [SetCuts](#) ()
- void [ConstructBosons](#) ()
- void [ConstructLeptons](#) ()
- void [ConstructMesons](#) ()
- void [ConstructBaryons](#) ()
- void [ConstructGeneral](#) ()
- void [ConstructEM](#) ()
- void [AddStepMax](#) ()
- void [ConstructParticle](#) ()
- void [ConstructProcess](#) ()
- void [SetCuts](#) ()

4.4.1 Detailed Description

Author

Sandro Boschetti

This is a class based on ExN01PhysicsList.hh from Geant4.9.3.p02

Definition at line 10 of file include/PhysicsList.hh.

4.4.2 Constructor & Destructor Documentation

4.4.2.1 PhysicsList::PhysicsList ()

Author

Sandro Boschetti, August 28, 2012

This class is essentially the same class of the Geant4's Example N02.

Author

Sandro Boschetti

This is the implementation class [PhysicsList](#) based on ExN01PhysicsList.cc
Definition at line 16 of file src/PhysicsList.cc.

4.4.2.2 PhysicsList::~PhysicsList ()

Definition at line 24 of file src/PhysicsList.cc.

4.4.2.3 PhysicsList::PhysicsList ()

4.4.2.4 PhysicsList::~PhysicsList ()

4.4.3 Member Function Documentation

4.4.3.1 void PhysicsList::AddStepMax () [protected]

Definition at line 230 of file src/PhysicsList.cc.

4.4.3.2 void PhysicsList::ConstructBaryons () [protected]

Definition at line 94 of file src/PhysicsList.cc.

4.4.3.3 void PhysicsList::ConstructBosons () [protected]

Definition at line 44 of file src/PhysicsList.cc.

4.4.3.4 void PhysicsList::ConstructEM () [protected]

Definition at line 139 of file src/PhysicsList.cc.

4.4.3.5 void PhysicsList::ConstructGeneral () [protected]

Definition at line 208 of file src/PhysicsList.cc.

4.4.3.6 void PhysicsList::ConstructLeptons () [protected]

Definition at line 56 of file src/PhysicsList.cc.

4.4.3.7 void PhysicsList::ConstructMesons () [protected]

Definition at line 75 of file src/PhysicsList.cc.

4.4.3.8 void PhysicsList::ConstructParticle () [protected]

Definition at line 29 of file src/PhysicsList.cc.

4.4.3.9 void PhysicsList::ConstructParticle () [protected]

4.4.3.10 void PhysicsList::ConstructProcess () [protected]

Definition at line 106 of file src/PhysicsList.cc.

4.4.3.11 void PhysicsList::ConstructProcess () [protected]

4.4.3.12 void PhysicsList::SetCuts () [protected]

Definition at line 251 of file src/PhysicsList.cc.

4.4.3.13 void PhysicsList::SetCuts () [protected]

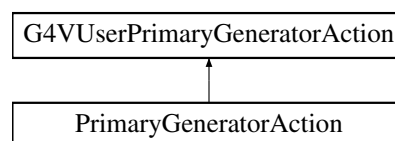
The documentation for this class was generated from the following files:

- [include/PhysicsList.hh](#)
- [stuff/PhysicsList.hh](#)
- [src/PhysicsList.cc](#)
- [stuff/PhysicsList.cc](#)

4.5 PrimaryGeneratorAction Class Reference

```
#include <PrimaryGeneratorAction.hh>
```

Inheritance diagram for PrimaryGeneratorAction:



Public Member Functions

- [PrimaryGeneratorAction \(\)](#)
- [~PrimaryGeneratorAction \(\)](#)
- void [GeneratePrimaries](#) (G4Event *anEvent)

4.5.1 Detailed Description

Definition at line 15 of file PrimaryGeneratorAction.hh.

4.5.2 Constructor & Destructor Documentation

4.5.2.1 PrimaryGeneratorAction::PrimaryGeneratorAction ()

Author

Sandro Boschetti, August 30, 2012

Definition at line 16 of file PrimaryGeneratorAction.cc.

4.5.2.2 PrimaryGeneratorAction::~~PrimaryGeneratorAction ()

Definition at line 28 of file PrimaryGeneratorAction.cc.

4.5.3 Member Function Documentation

4.5.3.1 void PrimaryGeneratorAction::GeneratePrimaries (G4Event * *anEvent*)

Definition at line 33 of file PrimaryGeneratorAction.cc.

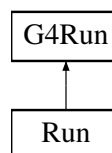
The documentation for this class was generated from the following files:

- [PrimaryGeneratorAction.hh](#)
- [PrimaryGeneratorAction.cc](#)

4.6 Run Class Reference

```
#include <Run.hh>
```

Inheritance diagram for Run:



Public Member Functions

- [Run](#) ()
- virtual [~Run](#) ()
- virtual void [RecordEvent](#) (const G4Event *)
- G4double [GetTotalEnergyDeposited](#) () const

4.6.1 Detailed Description

Definition at line 12 of file Run.hh.

4.6.2 Constructor & Destructor Documentation

4.6.2.1 Run::Run ()

Author

Sandro Boschetti, August 28, 2012

This class is based in the Geant4's Example 07 class.

Definition at line 14 of file Run.cc.

4.6.2.2 Run::~~Run () [virtual]

Definition at line 21 of file Run.cc.

4.6.3 Member Function Documentation

4.6.3.1 G4double Run::GetTotalEnergyDeposited () const [inline]

Definition at line 21 of file Run.hh.

4.6.3.2 void Run::RecordEvent (const G4Event * evt) [virtual]

Definition at line 24 of file Run.cc.

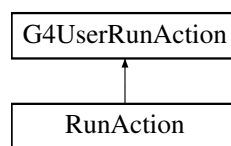
The documentation for this class was generated from the following files:

- [Run.hh](#)
- [Run.cc](#)

4.7 RunAction Class Reference

```
#include <RunAction.hh>
```

Inheritance diagram for RunAction:



Public Member Functions

- [RunAction](#) ()
- [~RunAction](#) ()
- G4Run * [GenerateRun](#) ()
This is te connection between [RunAction](#) and [Run](#) classes.
- virtual void [BeginOfRunAction](#) (const G4Run *)
- virtual void [EndOfRunAction](#) (const G4Run *)

4.7.1 Detailed Description

Definition at line 10 of file RunAction.hh.

4.7.2 Constructor & Destructor Documentation

4.7.2.1 RunAction::RunAction ()

Author

Sandro Boschetti, August 28, 2012

This class is based in the Geant4's Example 07 class.

Definition at line 22 of file src/RunAction.cc.

4.7.2.2 RunAction::~~RunAction ()

Definition at line 24 of file src/RunAction.cc.

4.7.3 Member Function Documentation

4.7.3.1 void RunAction::BeginOfRunAction (const G4Run *) [virtual]

Definition at line 33 of file src/RunAction.cc.

4.7.3.2 void RunAction::EndOfRunAction (const G4Run * *aRun*) [virtual]

Definition at line 37 of file src/RunAction.cc.

4.7.3.3 G4Run * RunAction::GenerateRun ()

This is the connection between [RunAction](#) and [Run](#) classes.

Definition at line 29 of file src/RunAction.cc.

The documentation for this class was generated from the following files:

- [RunAction.hh](#)
- [src/RunAction.cc](#)
- [stuff/RunAction.cc](#)

4.8 Teste Class Reference

```
#include <Teste.hh>
```

Public Member Functions

- [Teste](#) ()
- virtual [~Teste](#) ()

Static Public Attributes

- static int [teste](#) = 0

4.8.1 Detailed Description

Definition at line 11 of file Teste.hh.

4.8.2 Constructor & Destructor Documentation

4.8.2.1 Teste::Teste ()

Definition at line 10 of file Teste.cc.

4.8.2.2 Teste::~~Teste () [virtual]

Definition at line 14 of file Teste.cc.

4.8.3 Member Data Documentation

4.8.3.1 int Teste::teste = 0 [static]

Definition at line 15 of file Teste.hh.

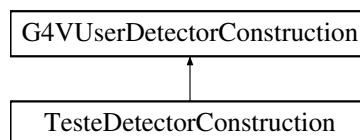
The documentation for this class was generated from the following files:

- [Teste.hh](#)
- [Teste.cc](#)

4.9 TesteDetectorConstruction Class Reference

```
#include <TesteDetectorConstruction.hh>
```

Inheritance diagram for TesteDetectorConstruction:



Public Member Functions

- [TesteDetectorConstruction](#) ()
- [~TesteDetectorConstruction](#) ()
- G4VPhysicalVolume * [Construct](#) ()

4.9.1 Detailed Description

Definition at line 14 of file TesteDetectorConstruction.hh.

4.9.2 Constructor & Destructor Documentation

4.9.2.1 TesteDetectorConstruction::TesteDetectorConstruction ()

Definition at line 16 of file TesteDetectorConstruction.cc.

4.9.2.2 TesteDetectorConstruction::~TesteDetectorConstruction ()

Definition at line 23 of file TesteDetectorConstruction.cc.

4.9.3 Member Function Documentation

4.9.3.1 G4VPhysicalVolume * TesteDetectorConstruction::Construct ()

Definition at line 27 of file TesteDetectorConstruction.cc.

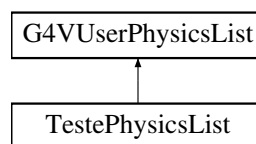
The documentation for this class was generated from the following files:

- [TesteDetectorConstruction.hh](#)
- [TesteDetectorConstruction.cc](#)

4.10 TestePhysicsList Class Reference

```
#include <TestePhysicsList.hh>
```

Inheritance diagram for TestePhysicsList:



Public Member Functions

- [TestePhysicsList \(\)](#)
- [~TestePhysicsList \(\)](#)

Protected Member Functions

- void [ConstructParticle \(\)](#)
- void [ConstructProcess \(\)](#)
- void [SetCuts \(\)](#)

4.10.1 Detailed Description

Definition at line 13 of file TestePhysicsList.hh.

4.10.2 Constructor & Destructor Documentation

4.10.2.1 TestePhysicsList::TestePhysicsList ()

Definition at line 11 of file TestePhysicsList.cc.

4.10.2.2 TestePhysicsList::~TestePhysicsList ()

Definition at line 14 of file TestePhysicsList.cc.

4.10.3 Member Function Documentation

4.10.3.1 void TestePhysicsList::ConstructParticle () [protected]

Definition at line 17 of file TestePhysicsList.cc.

4.10.3.2 void TestePhysicsList::ConstructProcess () [protected]

Definition at line 27 of file TestePhysicsList.cc.

4.10.3.3 void TestePhysicsList::SetCuts () [protected]

Definition at line 34 of file TestePhysicsList.cc.

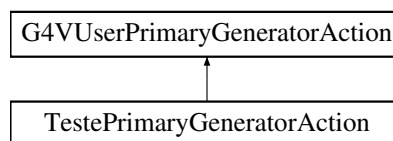
The documentation for this class was generated from the following files:

- [TestePhysicsList.hh](#)
- [TestePhysicsList.cc](#)

4.11 TestePrimaryGeneratorAction Class Reference

```
#include <TestePrimaryGeneratorAction.hh>
```

Inheritance diagram for TestePrimaryGeneratorAction:



Public Member Functions

- [TestePrimaryGeneratorAction \(\)](#)
- [~TestePrimaryGeneratorAction \(\)](#)
- void [GeneratePrimaries](#) (G4Event *anEvent)

4.11.1 Detailed Description

Definition at line 14 of file TestePrimaryGeneratorAction.hh.

4.11.2 Constructor & Destructor Documentation

4.11.2.1 TestePrimaryGeneratorAction::TestePrimaryGeneratorAction ()

Definition at line 14 of file TestePrimaryGeneratorAction.cc.

4.11.2.2 TestePrimaryGeneratorAction::~~TestePrimaryGeneratorAction ()

Definition at line 26 of file TestePrimaryGeneratorAction.cc.

4.11.3 Member Function Documentation

4.11.3.1 void TestePrimaryGeneratorAction::GeneratePrimaries (G4Event * *anEvent*)

Definition at line 31 of file TestePrimaryGeneratorAction.cc.

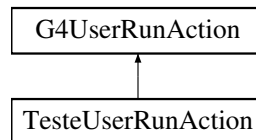
The documentation for this class was generated from the following files:

- [TestePrimaryGeneratorAction.hh](#)
- [TestePrimaryGeneratorAction.cc](#)

4.12 TesteUserRunAction Class Reference

```
#include <TesteUserRunAction.hh>
```

Inheritance diagram for TesteUserRunAction:



Public Member Functions

- [TesteUserRunAction](#) ()
- virtual [~TesteUserRunAction](#) ()
- virtual G4Run * [GenerateRun](#) ()
- void [BeginOfRunAction](#) (const G4Run *)
- void [EndOfRunAction](#) (const G4Run *)

4.12.1 Detailed Description

Definition at line 10 of file TesteUserRunAction.hh.

4.12.2 Constructor & Destructor Documentation

4.12.2.1 TesteUserRunAction::TesteUserRunAction ()

Definition at line 17 of file TesteUserRunAction.cc.

4.12.2.2 TesteUserRunAction::~TesteUserRunAction () [virtual]

Definition at line 19 of file TesteUserRunAction.cc.

4.12.3 Member Function Documentation

4.12.3.1 void TesteUserRunAction::BeginOfRunAction (const G4Run *)

Definition at line 21 of file TesteUserRunAction.cc.

4.12.3.2 void TesteUserRunAction::EndOfRunAction (const G4Run * *aRun*)

Definition at line 29 of file TesteUserRunAction.cc.

4.12.3.3 virtual G4Run* TesteUserRunAction::GenerateRun () [virtual]

The documentation for this class was generated from the following files:

- [TesteUserRunAction.hh](#)
- [TesteUserRunAction.cc](#)

Chapter 5

File Documentation

5.1 DetectorConstruction.cc File Reference

```
#include "DetectorConstruction.hh"
#include "MyMaterial.hh"
#include "G4Material.hh"
#include "G4Box.hh"
#include "G4LogicalVolume.hh"
#include "G4ThreeVector.hh"
#include "G4PVPlacement.hh"
#include "G4NistManager.hh"
#include "G4VisAttributes.hh"
#include "G4MultiFunctionalDetector.hh"
#include "G4SDManager.hh"
#include "G4VPrimitiveScorer.hh"
#include "G4VSDFilter.hh"
#include "G4PSFlatSurfaceFlux.hh"
#include "G4SDParticleFilter.hh"
#include "G4PSDoseDeposit.hh"
#include "G4PSEnergyDeposit.hh"
```

5.2 DetectorConstruction.hh File Reference

```
#include "G4VUserDetectorConstruction.hh"
```

Classes

- class [DetectorConstruction](#)

5.3 Geant4MasterDissertationSimulation.cc File Reference

```
#include <ctime>
#include "G4RunManager.hh"
#include "G4UImanager.hh"
#include "DetectorConstruction.hh"
#include "PhysicsList.hh"
#include "PrimaryGeneratorAction.hh"
#include "RunAction.hh"
#include <pthread.h>
```

Functions

- void [setupUIProgramatically](#) (G4UImanager *UI)
List of classes that must be implemented by the user.
- int [main](#) (G4int argc, char **argv)
Entry point function for the whole simulation.

5.3.1 Function Documentation

5.3.1.1 int main (G4int argc, char ** argv)

Entry point function for the whole simulation.

This gets the actual time for simulation duration computation.

Adding user action

This translates the physical volume

Definition at line 39 of file Geant4MasterDissertationSimulation.cc.

5.3.1.2 void setupUIProgramatically (G4UImanager * UI)

List of classes that must be implemented by the user.

This function has been implemented only for a sake of organization.

Author

Sandro Boschetti, August 24, 2012

Version

0.2

This is the main routine, i.e., the entry point for the program simulation. It's based on the example N01 from Geant4.9.3.p02.

Definition at line 178 of file Geant4MasterDissertationSimulation.cc.

5.4 MyMaterial.cc File Reference

```
#include "MyMaterial.hh"
#include "G4Material.hh"
```

5.5 MyMaterial.hh File Reference

Classes

- class [MyMaterial](#)

5.6 MyRandom.cc File Reference

```
#include "MyRandom.hh"
```

5.7 MyRandom.hh File Reference

```
#include <CLHEP/Random/Randomize.h>
#include <CLHEP/Random/RandGaussQ.h>
#include <CLHEP/Random/RandGaussT.h>
#include <CLHEP/Random/RandPoissonQ.h>
#include <CLHEP/Random/RandPoissonT.h>
#include <CLHEP/Random/RandLandau.h>
#include <CLHEP/Random/RandBit.h>
```

Classes

- class [MyRandom](#)

Macros

- `#define randomize_h 1`
- `#define G4RandGauss RandGaussQ`
- `#define G4UniformRand() CLHEP::HepRandom::getTheEngine()->flat()`

5.7.1 Macro Definition Documentation

5.7.1.1 `#define G4RandGauss RandGaussQ`

Definition at line 16 of file MyRandom.hh.

5.7.1.2 `#define G4UniformRand() CLHEP::HepRandom::getTheEngine()->flat()`

Definition at line 18 of file MyRandom.hh.

5.7.1.3 `#define randomize_h 1`

Definition at line 5 of file MyRandom.hh.

5.8 PhysicsList.cc File Reference

```
#include "globals.hh"
#include "PhysicsList.hh"
#include "G4ProcessManager.hh"
#include "G4ParticleTypes.hh"
#include "G4ComptonScattering.hh"
#include "G4GammaConversion.hh"
#include "G4PhotoElectricEffect.hh"
#include "G4eMultipleScattering.hh"
#include "G4eIonisation.hh"
#include "G4eBremsstrahlung.hh"
#include "G4eplusAnnihilation.hh"
#include "G4MuMultipleScattering.hh"
#include "G4MuIonisation.hh"
#include "G4MuBremsstrahlung.hh"
#include "G4MuPairProduction.hh"
#include "G4hMultipleScattering.hh"
#include "G4hIonisation.hh"
#include "G4hBremsstrahlung.hh"
#include "G4hPairProduction.hh"
#include "G4ionIonisation.hh"
#include "G4Decay.hh"
#include "G4StepLimiter.hh"
#include "G4UserSpecialCuts.hh"
```

5.9 PhysicsList.cc File Reference

```
#include "PhysicsList.hh"
#include "G4ParticleTypes.hh"
#include "G4ProcessManager.hh"
#include "G4PhotoElectricEffect.hh"
#include "G4ComptonScattering.hh"
#include "G4GammaConversion.hh"
```

5.10 PhysicsList.hh File Reference

```
#include "G4VUserPhysicsList.hh"
#include "globals.hh"
```

Classes

- class [PhysicsList](#)

5.11 PhysicsList.hh File Reference

```
#include "G4VUserPhysicsList.hh"
#include "globals.hh"
```


Classes

- class [PhysicsList](#)

5.12 PrimaryGeneratorAction.cc File Reference

```
#include "PrimaryGeneratorAction.hh"
#include "G4Event.hh"
#include "G4ParticleGun.hh"
#include "G4ParticleTable.hh"
#include "G4ParticleDefinition.hh"
#include "globals.hh"
#include "MyRandom.hh"
#include <pthread.h>
```

5.13 PrimaryGeneratorAction.hh File Reference

```
#include "globals.hh"
#include "G4VUserPrimaryGeneratorAction.hh"
```

Classes

- class [PrimaryGeneratorAction](#)

5.14 Run.cc File Reference

```
#include "Run.hh"
#include "G4Event.hh"
#include "G4HCofThisEvent.hh"
#include "G4SDManager.hh"
```

5.15 Run.hh File Reference

```
#include "globals.hh"
#include "G4Run.hh"
#include "G4THitsMap.hh"
```

Classes

- class [Run](#)

5.16 RunAction.cc File Reference

```
#include "RunAction.hh"  
#include "Run.hh"  
#include "G4RegionStore.hh"  
#include "G4Region.hh"  
#include "G4ProductionCuts.hh"  
#include "G4ios.hh"  
#include "G4UnitsTable.hh"
```

5.17 RunAction.cc File Reference

```
#include "RunAction.hh"  
#include "Run.hh"  
#include "G4RegionStore.hh"  
#include "G4Region.hh"  
#include "G4ProductionCuts.hh"  
#include "G4ios.hh"  
#include "G4UnitsTable.hh"
```

5.18 RunAction.hh File Reference

```
#include "G4UserRunAction.hh"  
#include "globals.hh"
```

Classes

- class [RunAction](#)

5.19 Teste.cc File Reference

```
#include "Teste.hh"
```

5.20 Teste.hh File Reference

Classes

- class [Teste](#)

5.21 TesteDetectorConstruction.cc File Reference

```
#include "TesteDetectorConstruction.hh"
#include "G4Material.hh"
#include "G4Box.hh"
#include "G4Tubs.hh"
#include "G4LogicalVolume.hh"
#include "G4ThreeVector.hh"
#include "G4PVPlacement.hh"
#include "globals.hh"
```

5.22 TesteDetectorConstruction.hh File Reference

```
#include "G4VUserDetectorConstruction.hh"
```

Classes

- class [TesteDetectorConstruction](#)

5.23 TestePhysicsList.cc File Reference

```
#include "TestePhysicsList.hh"
#include "G4ParticleTypes.hh"
```

5.24 TestePhysicsList.hh File Reference

```
#include "G4VUserPhysicsList.hh"
#include "globals.hh"
```

Classes

- class [TestePhysicsList](#)

5.25 TestePrimaryGeneratorAction.cc File Reference

```
#include "TestePrimaryGeneratorAction.hh"
#include "G4Event.hh"
#include "G4ParticleGun.hh"
#include "G4ParticleTable.hh"
#include "G4ParticleDefinition.hh"
#include "globals.hh"
```

5.26 TestePrimaryGeneratorAction.hh File Reference

```
#include "G4VUserPrimaryGeneratorAction.hh"
```

Classes

- class [TestePrimaryGeneratorAction](#)

5.27 TesteUserRunAction.cc File Reference

```
#include <iostream>
#include "TesteUserRunAction.hh"
#include "G4Run.hh"
#include "G4RunManager.hh"
#include "G4UnitsTable.hh"
#include <assert.h>
```

5.28 TesteUserRunAction.hh File Reference

```
#include "G4UserRunAction.hh"
#include "globals.hh"
```

Classes

- class [TesteUserRunAction](#)

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