G4Generator Status

R.Giannitrapani
Present status

General

- The package works on both Linux (RH6.1) and Windows (Win2000) platforms with the last version of Gleam (v1r0).
- It uses ver.3.2 of the Geant4 toolkit

Code

- It produces both McPositionHit and McIntegratingHit collections in the TDS via the DetectorManager hierarchy classes; this has been tested
- It produces the McParticle tree in the TDS; this has NOT been tested yet
- It uses xmlGeoDbs and detModel, via GlastDetSvc interfaces, for the geometry
- It uses the FluxSvc to retrieve the primary particle
- It supports a partial (optional) GUI with a DisplayManager class using the GuiSvc
Documentation

- The package has a `mainpage.h` with the requested structure (introduction, release.notes link, requirements)

- Every class in the package has been doxygenated as specified in the template guidelines and documentation recommendations, at least for what concern the main structures

- `release.notes` not updated with all the “old” release tags, only for the last ones

- Not all the class methods are commented properly (due to Geant4 overlapping)
Future plans

General

▷ Continue to iterate on the code following users suggestions (and complaints)

▷ Step to Geant4 ver.4.0, but not before the release of June (at least this is my suggestion based on the Geant4 release policy) ...

▷ Set up heavy tests on physics, especially for basic hadronic processes, (Francesco, Riccardo and Alessandro will be at CERN next May 10th to speak with physics coordinators of Geant4)

▷ Tuning of the physics parameters (mainly cuts)

▷ Insert physics processes modified by Tune group (or contribute to Geant4 with them)

▷ Check for memory leakages

▷ Is the Algorithm structure the best one? Others (ATLAS for example) have implemented a Service for Geant4
**Code**

▷ Fix as much as possible code conventions violations (all classes)

▷ It now uses a mixture of Gaudi logs output and `std::cout`; this must be fixed

▷ Remove the **FluxSvc** dependencies and step to the new FluxAlg design for the primary particle retrieval (**G4Generator**)  

▷ Insert back full detector representation in the optional GUI (**DetectorConstruction** with some iteration on **detModel** and **GlastDetSvc**)

▷ Insert customizable physics processes choice in the jobOption.txt file, probably via a Geant4 messenger (**PhysicsList**)

▷ Prepare for the incoming **HepRep** support for Event Display (more to come in the next months)

**Documentation**

▷ Translate parts of the documentation from Italian English to pure English :)

▷ Expand documentation for all the classes
Update the web page related to **G4Generator**

Add more todo items in the code (using doxygen feature)

Add some diagrams

Add a tutorial
Urgent actions

- Transition to the new FluxAlg design
- Tests of McParticle tree
- Tests and validation of physics
- Iteration of the documentation and code using the outcomes of this code review