



GEANT4
A SIMULATION TOOLKIT



extended/physicslists Category

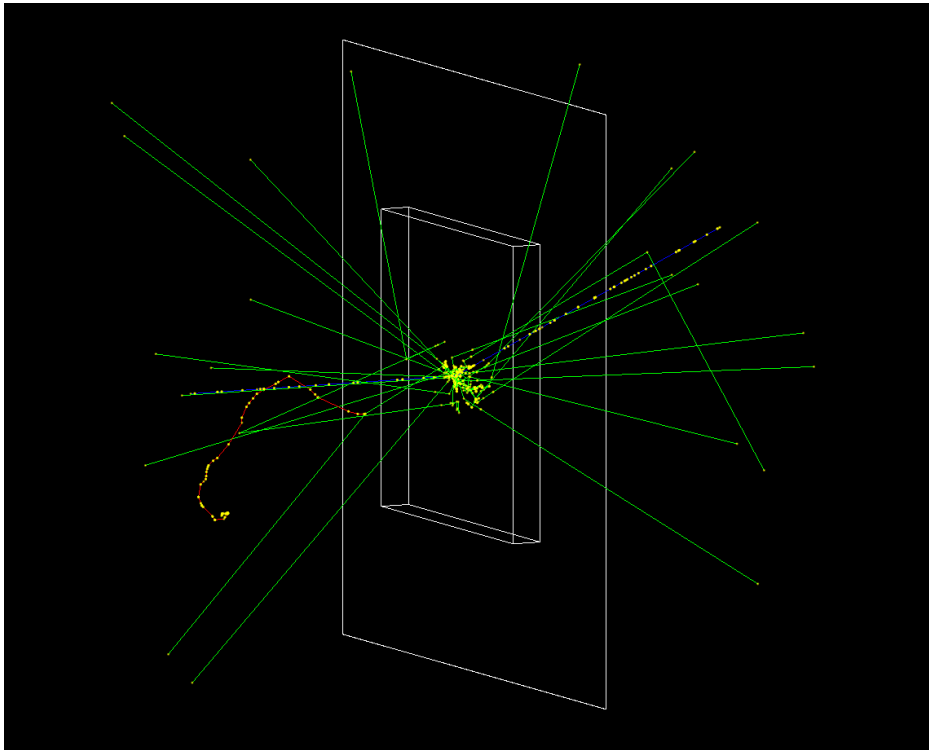
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Physicslists Category

- Introduced in the last year release (10.4)
- The purpose is to demonstrate usage of Geant4 reference physics lists and physics builders.
- Three examples:
 - `factory`, `extensibleFactory`, `genericPL`
- The same scenario is used in all three example
 - `Implemented with use of shared code`

Physicslists Examples Scenario



- Geometry: a box of scintillator material (CsI) followed by a thin box of air (screen) which is used to simplify scoring
- The primary generator: G4ParticleGun; default 1 GeV proton
- The screen volume is associated with a sensitive detector, ScreenSD
- The scored quantities are filled in the Screen ntuple, which is defined using G4AnalysisManager and is saved in a Root file

Example “factory”

- Based on Hadr00 by V. Ivantchenko, CERN
 - Demonstrates the usage of `G4PhysListFactory` to build the concrete physics list.
 - Physics List can be defined by its name given by the `-p` argument of the of the run command or by the `PHYSLIST` environment variable.
- ```
./factory -m my.macro [-p QGSP_BERT]
```
- By default, `FTFP_BERT` Physics List will be instantiated if `-p` argument is not set and the `PHYSLIST` environment variable is not defined.

# Example “genericPL”

- Demonstrates the usage of `G4GenericPhysicsList` to build the concrete physics list
    - Replaced `extended/hadronic/Hadr05`
  - The physics list is built at the run time in two possible ways
    - either by processing a macro file containing the 'physics list'
    - or by passing a vector of 'physics constructors' names to the constructor of the class.
- ```
./genericPL -m run.mac [ -p FTFP_BERT.mac ]
```
- `FTFP_BERT.mac` is the macro file containing the 'physics list'
 - If the PL macro is not provided the physics list will be constructed by using a vector of the names of the different physics constructor defined in the `genericPL.cc` file (`main()`)