Geant 4
release 4.0 - highlights

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Geant4 Users’ Workshop
SLAC February 18-22, 2002
New features

• Ability to reduce initialisation time
  • By saving/retrieving physics processes’ table

• A field can now be set to any volume or volume tree
  • Overriding a potential global ‘default’ field
    • For now, all fields must be addressed in global coordinates

• Ability to set different Cuts for different regions
  • In a first implementation (for urgent clients)
  • Subject to evolution

• In Physics Processes
  • New theoretical hadronic models
    ➢ CHIPS for gamma-Nucleus, π capture and intranuclear transport
    ➢ Cascade+Pre-compound re-engineered from HETC (not ready)
  • New more advanced algorithm for multiple scattering
New features

- Ability to reflect solids and hierarchy of volumes
  - Currently limited to simple CSG solids
- Built-in run-time commands for geometry
  - Overlaps debugging
  - Geometry optimisation monitoring
  - Navigator reset
- Adoption of reference-counting for touchables
New features

- ‘GAG’ as plug-in version for JAS
  - enables user to control the execution, while taking histograms

- Reengineering of visualization commands
  - First version of new “HepRep” graphics driver
  - The first release of the XML ==> DAWN file converter

- Example utilising new AIDA interfaces, version 2.2
  - That includes support for tuple, cloud of points & plotter
More…

• Ability to customize default behavior of G4Exception

• Simplified handling of environment setup
  • For graphics and UI drivers

• Improved porting on different Linux distributions and compilers
  • Cleanup of pedantic warnings

• Removed old interface module to STL
  • Now fully compliant to native STL implementations

• **In addition**: all current fixes, and numerous improvements in functionality and physics modeling are also included
**Patch-01**

- Released on January 31\textsuperscript{st}
- Includes important fixes to release 4.0
  - affect both performance and physics
- **Strongly recommended**
Patch-02

- Will be released next week: Thursday, February 28th
- Several fixes will address performance issues
  - Optimisation in tracking G4SteppingManager in handling reference counted touchables
  - Tuning and some fixes in EM physics processes for better handling the new cut-in-range mechanism
- Fixes in decay and hadronic models