GEANT4 10.1.p01
& last patches highlights
kernel modules

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for the Geant4 Collaboration

Outline

- Fixes introduced in release 10.1.p01
  - Kernel modules
  - Physics (see talk by V.Ivantchenko)
- Overview of back-ported fixes
  - To release 9.6 (9.6.p04) and 10.0 (10.0.p04)
  - Kernel modules

➢ *Detailed patch release notes:*
  - **http://cern.ch/geant4/support/Patch4.10.1-1.txt**
  - **http://cern.ch/geant4/support/Patch4.10.0-4.txt**
  - **http://cern.ch/geant4/support/Patch4.9.6-4.txt**

➢ *All planned features for 2015:*
  - **http://geant4.cern.ch/support/planned_features.shtml**

Bugzilla problem reports addressed

9.6.p04:

#1487, #1527, #1573, #1584, #1602, #1614, #1695, #1703

10.0.p04:

#1679, #1695, #1703, #1705

10.1.p01:

#1679, #1683, #1691, #1695, #1696, #1702, #1703, #1704, #1705, #1706, #1710, #1713, #1716, #1725

Geometry

Geometrical primitives
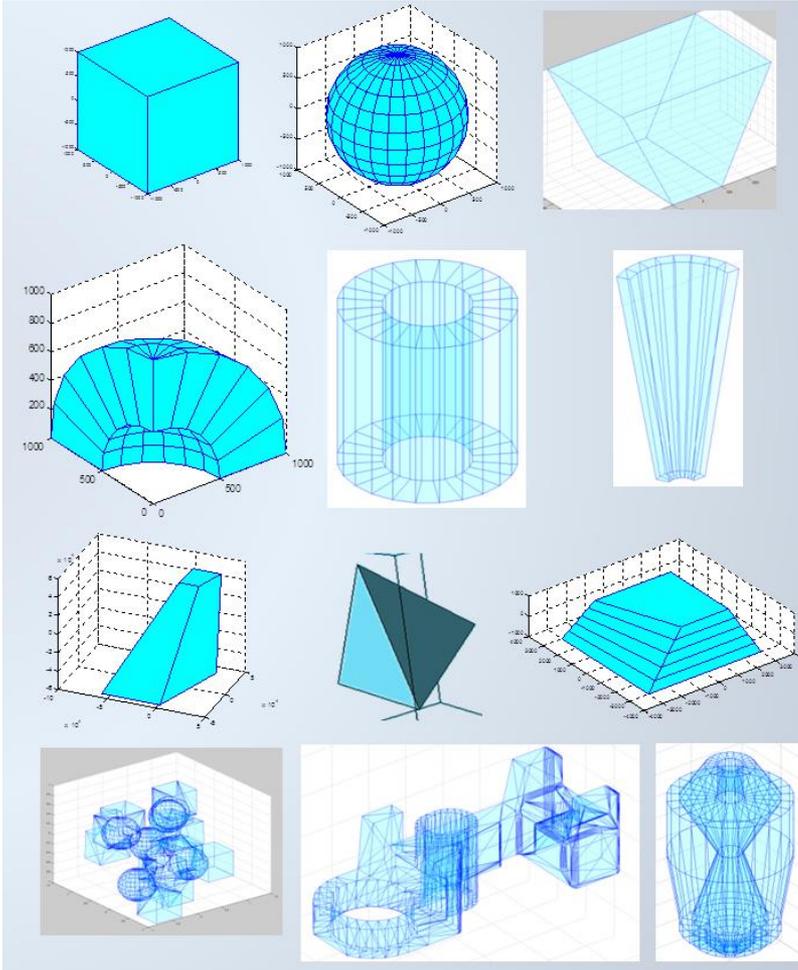
- [AIDA Unified Solids library](#)

  10.0.p04, 10.1.p01

  – Optional component, aiming to replace the original solids (G4GEOM_USE_USOLIDS flag)

- Fixed precision issues in UPolycone
  – In the calculation of distance to side
  – In case of presence of 'ring' structures constructed by corners

- Fixed implementation of safety (in/out) in Utrap

- Fixed triangularisation in UExtrudedSolid (also in G4ExtrudedSolid)

  9.6.p04, 10.0.p04, 10.1.p01

  – To avoid generation of flat triangles
  – Problem report [#1703](#)

Geometry
Navigation & Transportation

- Fix in G4ErrorPropagationNavigator for ComputeSafety() `10.0.p04, 10.1.p01`
  - Problem report [#1679](#)

- Fix in G4PathFinder to properly treat properties (charge, spin, momentum, …) in equation of motion `10.1.p01`
  - Problem report [#1696](#)

- Fix in G4MultiNavigator to properly set index to navigator limiting the step `9.6.p04`
  - If only one navigator limits the step

- Fix in G4[Coupled]Transportation classes to avoid inconsistent kinematics when dynamic mass is measurably different from "PDG" mass `10.0.p04, 10.1.p01`

Analysis & Persistency

- Analysis:
  - Fixed reading of XML ntuples with vector-type column
  - Fixed resetting of histograms

- GDML:
  - Fix in writer for Boolean solids for the case of repeated displacements
  - Correction to import of mixture materials for mixtures by fraction
    - corrects referencing for cases when elements and materials may carry the same name
  - Correction in reader to allow standalone parsing off-network when validation turned off
  - Corrected dump of of 'phi' and 'theta' for G4Trap and G4Para
    - Problem report #1602
  - Correction for export of tessellated solids
    - Problem report #1573

10.1.p01

9.6.p04, 10.0.p04

9.6.p04

9.6.p04

9.6.p04

Scoring, GPS, Management

- Scoring:

  10.1.p01

  - Fix in drawing to speed up drawing primitive scorers attached to the scoring meshes

- Events:

  10.1.p01

  - Fix to reduce performance penalty in MT mode when using GPS with low energy primaries
    - Problem report #1706

  9.6.p04, 10.0.p04, 10.1.p01

- Management:

  - Fixed logic in G4ProcessManager to make sure the process is always set before the process that has ordering index 1

Materials, Particles, Intercoms

- ## Materials:

  10.1.p01

  - Set NTP_Temperature (20C) as default for all materials
    - Problem report #1704

- ## Particles:

  10.1.p01

  - Added missing gamma-gamma and omega-gamma modes to EtaPrime and updated branching ratio
    - Problem report #1713

- ## Intercoms:

  9.6.p04

  - Fixed case of core-dump in G4GenericMessenger when calling GetCurrentValue() method

Track & Interfaces

- Track:

  10.1.p01

  – Fix in FieldTrackUpdator to pass magnetic moment and PDG spin
    - Problem report [#1696](#)

- Interfaces:

  10.1.p01

  – Fixed problem in G4UIQt when displaying the help tree

Configuration

- Added support for c++1y standard for GNU and Clang compilers

- Corrected search path for X11 libs on MacOSX
  - Problem report #1683

- Corrected CMake setup for adopting USolids as external library

Platforms for 10.1

- Linux, gcc-4.4.7, 4.7.X, 4.8.X, 4.9.X, 64 bits
- MacOSX 10.9, 10.10, gcc-4.2.1/clang-3.5, 64 bits
- Windows 7, Visual C++ 12.0 (Visual Studio 2013)

- Also tested:
  - Linux SLC6, icc-15
  - Linux Ubuntu 12/14, gcc-4.6/4.8
  - MacOSX 10.8, gcc-4.2.1/clang-3.4
  - Windows 7, VC++-9.0/10.0/12.0

Thanks!