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Geant4 News

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Simulations for Neutrinos
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Recent Geant4 Patch Releases

- Patch   9.6.p04 February 4th, 2015
- Patch 10.0.p04 March 5th, 2015
- Patch 10.1.p01 April 1st, 2015

Patch releases address known problems; They do not introduce new functionalities; New capabilities are introduced in the major/minor releases

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Geant4 9.6 Patch 9.6.p04

- Patch 9.6.p04 released on February 4th,2015
  - Release notes: http://geant4.cern.ch/support/Patch4.9.6-4.txt
  - Standard validation plots (by JY) available at:
    - http://g4validation.fnal.gov:8080/G4WebAppNG/DisplayTest.xhtml
      - look for geant4-9.6-p04 in test19,47,48,75
  - Also see presentations at the 39th Geant4 technical forum
    - https://indico.cern.ch/event/377763/timetable/#20150402
- Geant4 9.6 was initially released on November 30th, 2012
  - The support for that version will end in December 2015

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Geant4 10.1 Release and Patch 10.1.p01

- Geant4 v10.1 released on December 5th, 2014
- Patch 10.1.p01 released on April 1st, 2015
  - Release notes:

  http://geant4.web.cern.ch/geant4/support/ReleaseNotes4.10.1.html

  http://geant4.cern.ch/support/Patch4.10.1-1.txt

  - Standard validation plots (by JY) available at:
    - http://g4validation.fnal.gov:8080/G4WebAppNG/DisplayTest.xhtml
      - look for geant4-10.1-p01 in test19,47,48,75
  - Also see presentations at the 38th and 39th Geant4 technical fora:
    - https://indico.cern.ch/event/355250/timetable/#20150114.detailed
    - https://indico.cern.ch/event/377763/timetable/#20150402.detailed

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Geant4 10.1 Fermilab related highlights:

- Added NuBeam, ShieldingM Physics lists:

  ShieldingM is based on Shielding with the Bertini to FTFP model transition region at 9.5-9.9GeV (to be used e.g. by Mu2e)

  NuBeam (JY) is based mainly on FTFP_BERT with the Bertini to FTFP model transition region at 3.0-3.5GeV for protons, pions and kaons and uses QGSP+G4LundStringFragmentation above 100GeV (with FTFP used up to 101GeV) for protons

  https://cdcvs.fnal.gov/redmine/projects/g4/wiki/NuBeam_

  - Opens the possibility to easily switch EM options
    - (e.g. _EMY - G4EmStandardPhysics_option4)

- Introduced labeling of tracks resulting from muon stopping

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Selected elements of the 9.6.p04 and 10.1.p01 patches

- 9.6.p04 & 10.1.p01 addressed a problem related to the time of products from nuclear muon capture affecting Mu2e
  - http://bugzilla-geant4.kek.jp/show_bug.cgi?id=1695
- 10.1.p01 addressed a problem with spin information in parallel worlds affecting Muon g-2
  - http://bugzilla-geant4.kek.jp/show_bug.cgi?id=1696
- 9.6.p04 addressed a rare case of infinite loops in the muon capture process
- Both patches addressed a problem affecting tracking in tessellated/extruded solids:
  - http://bugzilla-geant4.kek.jp/show_bug.cgi?id=1703

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Suggested Geant4 migration paths for Fermilab IF experiments

- Experiments currently using Geant4 9.6 series < 9.6.p04 should move to 9.6.p04(a):
  - http://scisoft.fnal.gov/scisoft/packages/geant4/v4_9_6_p04a/
    - Also part of the newer ups distributions available from http://scisoft.fnal.gov/
  - Prepare for a subsequent migration to 10.1.p01+
- Experiments using Geant4 < 9.6 should consider migrating directly to 10.1.p01
  - http://scisoft.fnal.gov/scisoft/packages/geant4/v4_10_1_p01/
    - Includes Qt5 build

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