

Release 8.2: first summary

J. Apostolakis

Selected items

- Elastic hadronic processes
 - Proton, neutron elastic: new QElastic model
 - Hadron elastic process
- EM physics refinements (for HEP)
 - Further refinement of Multiple Scattering model
 - Polarization library (for beam simulation)
- Parallel Navigation
 - Beta release
- Notes:
 - list is not complete, does not cover all areas expected, or currently scheduled developments
 - my choice, including items with which I am most familiar
 - developments can be found lacking during release testing.

Elastic hadronic processes

- New QElastic model (M. Kossov)
 - also labeled CHIPS
 - for proton/neutron on any target, all energies
 - presented at LCG Physics validation meetings 2006
 - Extends p-H and n-H models released in 8.1
 - And used in QGSP
- Hadron elastic process (N. Starkov)
 - From hadron-nucleon σ , Glauber approach
 - Replace version of hadron-elastic processes that required data files.
 - Applicable to π , K, p, n, Λ , Σ .
 - At energies above 1 GeV
 - Recently extended down to 400 MeV

Multiple Scattering

- Some refinement already in 8.1
 - Geometrical limit revised to avoid extra small step
- New refinements
 - Optional single scattering in last step in a volume
 - With 'skin'
 - Further tuning of tail of scattering distribution ($\cos \theta$)
 - Effective for light materials
- New G4hMultipleScattering process
 - For hadrons – defaults chosen not to limit step.

Other EM

- New library for circular polarised beam
 - Contribution from DESY (Zeuthen)
- Old versions of MultipleScattering obsoleted
 - Version 52 and 72 are declared obsolete
 - No changes were made, anyway
 - Code included, but PL expected not to use them.

Physics List

- Location and building changed
 - Now under geant4/source
 - Compilation, creation of libraries is done by default
 - Can be switched off, using environment variables
 - Enables use of granular shared libraries
 - According to our current testing

'Beta' development

- Parallel Navigation
 - Is not default. Can be chosen