

New Developments in Geant4 Version 10 Series and Its Physics Validations

Friday 6 October 2017 11:50 (20 minutes)

The Geant4 Collaboration released a new generation of the Geant4 simulation toolkit (version 10) in December 2013. Since then, the Collaboration continues to improve its physics and computing performance and usability. This presentation will survey the major improvements made since version 10.0. On the physics side, it includes new multiple scattering models, Auger atomic de-excitation cascade simulation, significant improvements in string models, radioactive decay model including isomer production, and an extension of the low-energy neutron model to protons and light ions. The Geant4 collaboration regularly performs validation and regression tests on all the physics models the toolkit offers. Validation tests compare results obtained with a specific Geant4 version, with data obtained by various experiments. Regression tests compare results of two or more versions of Geant4 for any observable. The Geant4 collaboration reconciles and organizes the validation materials in one central repository and makes this data easily available to both collaborators and the user community in general. This presentation will also survey the major observables regularly monitored, and introduce ways in which the user community could contribute to this validation process through providing their experimental data.

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Session Classification: Simulation