

The GEANT4 Visualisation System

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Abstract

The GEANT4 Visualisation System is a multi-driver graphics system designed to serve the GEANT4 Simulation Toolkit. It is aimed at the visualization of GEANT4 data, primarily detector descriptions and simulated particle trajectories and hits. It can handle a variety of graphical technologies simultaneously and interchangeably, allowing the user to choose the visual representation most appropriate to requirements. It conforms to the low-level GEANT4 abstract graphical user interfaces and introduces new abstract classes from which the various drivers are derived and that can be straightforwardly extended, for example, by the addition of a new driver. It makes use of an extendable class library of models and filters for data representation and selection. The GEANT4 Visualisation System supports a rich set of interactive commands based on the GEANT4 command system. It is included in the GEANT4 code distribution and maintained and documented like other components of GEANT4.

Key words: Simulation, Particle interactions, Geometrical modelling, Graphics, Visualisation, Ray Tracing, DAWN, HepRep, OpenGL, Open Inventor, VRML, Software engineering, Object-oriented technology, Distributed software development

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