Contribution ID: **118** Type: **not specified**

Python binding for Geant4 toolkit using Reflex/PyROOT

Tuesday 4 July 2006 12:10 (30 minutes)

Geant4 is one of the principal toolkits used for the simulation of the passage of particles through matter. It is implemented in C++ and it exposes to the users a set of methods (of different classes) needed to construct a functional application. In other words, users need to interact with Geant4 objects via a C++ API and therefore users' Geant4 based applications are normally written in C++.

In this paper we discuss how to use the Reflex/PyROOT tools to create a Python binding for the Geant4 classes. Such a binding gives the users the possibility of implementing their applications in Python as well as to interact and configure them from the Python prompt. Moreover, using the already existing Python binding for the ROOT data analysis framework, the Python binding for Geant4 allows to run interactively and simultaneously the two applications from the Python prompt. This proves to be very interesting, especially in the case of development and debugging of simulation applications. The advantanges of using the Reflex/PyROOT tools for creating a Python binding for C++ classes will be presented in this paper.

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Session Classification: Python in Science

Track Classification: Python in Science