



Contribution ID: 351

Type: Oral

DD4hep: a community driven detector description tool for HEP

Tuesday, November 5, 2019 4:30 PM (15 minutes)

Detector description is an essential component in simulation, reconstruction and analysis of data resulting from particle collisions in high energy physics experiments and for the detector development studies for future experiments. Current detector description implementations of running experiments are mostly specific implementations. DD4hep is an open source toolkit created in 2012 to serve as a generic detector description solution. The main motivation behind DD4hep is to provide the community with an integrated solution for all these stages and address detector description in a broad sense, including the geometry and the materials used in the device, and additional parameters describing e.g. the detection techniques, constants required for alignment and calibration, description of the readout structures and conditions data. In this presentation, we will give an overview of the project and discuss recent developments in DD4hep as well as showcase adaptations of the framework by LHC and upcoming accelerator projects together with the roadmap of future developments. We will describe the DDG4 component of DD4hep, which is a powerful tool that converts arbitrary DD4hep detector geometries to Geant4 and gives access to all Geant4 action stages, including an overview of its comprehensive plugin suite that includes handling of different IO formats, Monte Carlo truth linking and a large set of segmentation and sensitive detector classes, allowing the simulation of a wide variety of detector technologies. We will further describe DDCond and DDAlign, which expose a mechanism to manage multiple versions of detector conditions data simultaneously and efficiently.

Consider for promotion

Yes

Primary authors: SAILER, Andre (CERN); GAEDE, Frank-Dieter (Deutsches Elektronen-Synchrotron (DE)); PETRIC, Marko (CERN); FRANK, Markus (CERN)

Presenter: GAEDE, Frank-Dieter (Deutsches Elektronen-Synchrotron (DE))

Session Classification: Track 2 –Offline Computing

Track Classification: Track 2 –Offline Computing