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Ultra-Fast Simulation of LHCb

Review of the beta version

The aim of the review is to evaluate the status of the software in view of a beta release of Delphes in Gauss.

The beta release should have the following functionality:

- Code for the propagation of charged particles and parameterised efficiency and resolution
- Code for the propagation of neutral particles (gamma and pi0)
- Code for the simulation of the Rich and Muon detectors
- Code for the parametrization of primary vertices
- Parametrization for at least one data taking conditions and a mechanisms to select/load other conditions
- Transparent steering of Delphes via the Gauss() configurable

Their status and technical implementation as well as the implication of the choices made will be presented.

The review will also cover

- Timing measurements, disk space, i.e. computing requirements
- Plans and methods for testing and validation
- Options for production and user tests
- Identification of the remaining features to make Delphes-in-Gauss a fully functional Monte Carlo option for physics analysis and planning for their implementation
- Strategy for the migration to the future Gauss-on-Gaussino simulation framework. In particular the mitigation of design changes for Multi-threading and migration to HepMC 3 should be presented
- Method to obtain parameterization from data and expected studies to establish the granularity needed for data taking conditions

People preparing material for the review

Benedetto Siddi, Adam Davis, Lucio Anderlini

Reviewers and invited parties

Marco Clemencic, Gloria Corti, Dominik Muller, Vladimir Romanovsky, Federico Stagni, Concezio Bozzi, Marco Cattaneo, Ben Couturier, Agnieszka Dziurda, Calorimeter, Chris Jones, Matt Charles, + 1 or 2 analysts from Matt, Dima Popov, Gerhard Raven

Documentation

Internal Note on (Tracking and Calorimeter) [LHCb-INT-2019-013]

- LHCb-INT-2019-013.pdf: Version circulated before the first review meeting

Internal Note on Generative Adversarial Networks (Particle Identification) [LHCb-INT-2019-014]

- LHCb-INT-2019-014_v0r2.pdf: Version circulated before the first review meeting

Documents for the review

- Aim of the review and invitation to collaborate [↗](#)

Meetings

- First review meeting, 29/05/2019 [↗](#)

Jira Tasks

- Adopt Delphes as fast simulation option in the Gauss framework [↗](#)
- LHCb-INT-2019-013.pdf: LHCb-INT-2019-013.pdf

This topic: LHCb > DelphesFastSimulation

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