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New software technologies in the LHCb Simulation

The LHCb Experiment at the Large Hadron Collider (LHC) at CERN has successfully performed a large number of physics measurements during Runs 1 and 2 of the LHC. It will resume operation in Run3 with an upgraded detector to process events with up to five times higher luminosity. Monte Carlo simulations are key to the commissioning of the new detector and the interpretation of past and future measurements. In order to cope with the amount of simulated samples required for the LHCb future physics program, new simulation software technologies have to be introduced to produce them within the computing resources allocated for the next few years. Therefore, the LHCb collaboration is currently preparing a new version of its GAUSS simulation framework. The new version provides the LHCb specific functionality while its generic simulation infrastructure has been encapsulated in an experiment independent framework, GAUSSINO. The latter combines the GAUDI core software framework and the GEANT simulation toolkit and fully exploits their multi-threading capabilities. A prototype of a fast simulation interface to the simulation toolkit is being developed as the last addition to GAUSSINO to provide an extensive palette of fast simulation models, including new deep learning based options.

Significance

References

Speaker time zone

Compatible with Europe

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