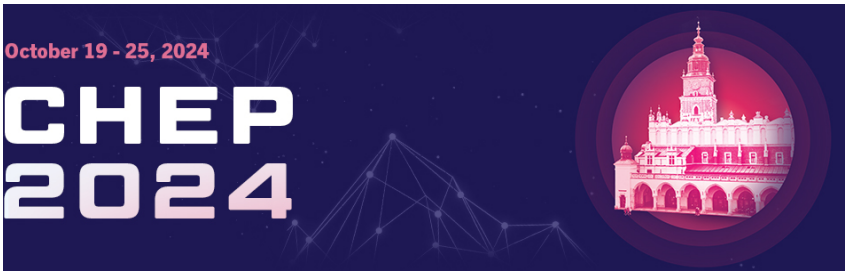

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Versioning of the LHCb DD4Hep-based Detector Description

The LHCb Detector project is home to the detector description of the LHCb experiment. It is used in all data processing applications, from simulation to reconstruction . It is based on the DD4hep package relying on the combination of XML files and C++ code. The need to support different versions of the detector layout in different data taking periods, on top of the DD4hep detector description format, necessitated a suite of recent custom developments.
The detector descriptions are identified by the C++ code and folders containing their description files (in the DD4hep CompactXML format). To support concurrent detectors layout, by convention, the components' description has to be self-contained and individually versioned within their respective component folders. There is no dependency between the components. The description of the overall LHCb detector combines specific versions of the components for the period being described; the versions for a specific data taking period or potential layouts to be simulated are in corresponding folders. When a sub-detector is identical in two LHCb layouts it can be loaded by both, avoiding code duplication and facilitating future upgrade simulation studies. A convention for naming the versions consistent between the components and the whole detector has been set up. Dependency and conventions checks as well as geometry monitoring are enforced by use of GitLab's CI testing. They include verifications that changes introduced do not affect existing versions.

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