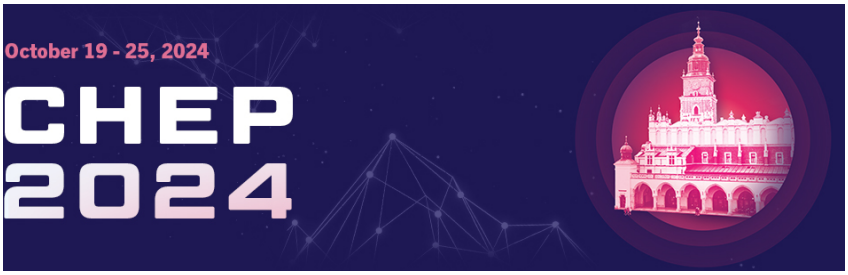

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Reconstruction in Key4hep using Gaudi

Wednesday 23 October 2024 13:48 (18 minutes)

Key4hep, a software framework and stack for future accelerators, integrates all the steps in the typical offline pipeline: generation, simulation, reconstruction and analysis. The different components of Key4hep use a common event data model, called EDM4hep. For reconstruction, Key4hep leverages Gaudi, a proven framework already in use by several experiments at the LHC, to orchestrate configuration and execution of reconstruction algorithms.

In this contribution, a brief overview of Gaudi is given. The specific developments built to make Gaudi work seamlessly with EDM4hep (and therefore in Key4hep) are explained, as well as other improvements requested by the Key4hep community. The list of developments includes a new IO service to run algorithms that read or write EDM4hep files in multithreading in a thread-safe way and a possibility to easily switch the EDM4hep I/O to the new ROOT RNTuple format for reading or writing. We show that both native (algorithms that use EDM4hep as input and output) and non-native algorithms from the ILC community can run together in Key4hep, picking up on knowledge and software developed over many years. A few examples of algorithms that have been created or ported to Key4hep recently are given, featuring the usage of Key4hep-specific features.

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