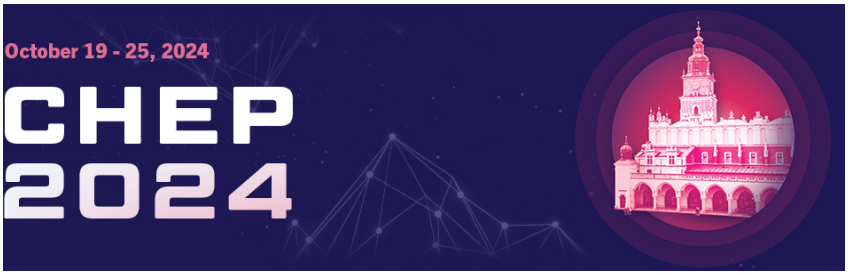

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EDM4hep.jl: Analysing EDM4hep files with Julia

Monday 21 October 2024 16:00 (15 minutes)

EDM4hep aims to establish a standard event data model for the store and exchange of event data in HEP experiments, thereby fostering collaboration across various experiments and analysis frameworks. The Julia package EDM4hep.jl is capable of generating Julia-friendly structures for the EDM4hep data model and reading event data files in ROOT format (either TTree or RNTuple) that are written by C++ programs, utilising the UnROOT.jl package. This paper explores the motivations behind the primary design choices of this package, such as the exclusive use of structure of arrays (SoA) to access the stored collections, which then empower users to develop ergonomic data analyses using Julia's high-level concepts and functionality, while maintaining performance comparable to C++ programs. Several examples are given to illustrate how efficient data analysis can be achieved using high-level objects, eliminating the need to resort to flat n-tuples.

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