

Task 12.2 - Turnkey Software

AIDAInnova WP12 Meeting

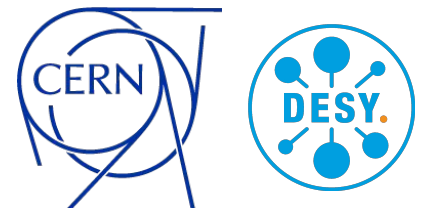
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HELMHOLTZ RESEARCH FOR
GRAND CHALLENGES



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Developments in podio

- **New tag v01-02**
 - Last tag with c++17 support
 - Improve detection of schema changes and add tests ([#715](#))
 - Make it possible to use datatypes from different datamodels in interfaces ([#714](#))
 - Tool to merge several podio files into one ([#681](#))
- Make c++20 the default and start using features ([#698](#))
- Support for reading from multiple RNTuple files ([#708](#))
- Make collection iterators fulfill LegacyInputIterator and input_iterator concepts ([#626](#), [#725](#))
- WIP: Make collection iterators fulfill forward_iterator ([#720](#))
- WIP: Make it possible to only read a subset of collections ([#504](#))

```
// requires InputIterator -> OK
std::find_if(std::begin(collection), std::end(collection), predicate );
// requires ForwardIterator -> might compile, unspecified result
std::adjacent_find(std::begin(collection), std::end(collection), predicate );
// requires ForwardIterator and writable -> might compile, wrong result
std::fill(std::begin(collection), std::end(collection), value );
// requires RandomAccessIterator and Swappable -> might compile, wrong result
std::sort(std::begin(collection), std::end(collection));
█
// requires input_range -> OK
std::ranges::find_if(collection, predicate );
// requires forward_range -> won't compile
std::ranges::adjacent_find(collection, predicate );
// requires output_range -> won't compile
std::ranges::fill(collection, value );
// requires random_access_range and sortable -> won't compile
std::ranges::sort(collection);
```

Developments in EDM4hep

Towards v01-00

- Meeting with MCNet people at DESY beginning of Dec
 - Very insightful discussions
 - Quite a few details around MCParticles and generator meta data still to be sorted out
- Use templated links for specifying MC <-> reco links ([#373](#), [#391](#), [#394](#))
- Remove the colorFlow from the MCParticle ([#389](#))
- Make the event number a uint64_t (from int) ([#398](#))
- Update doxygen version and config ([#393](#))
- Use YAML multiline string support for ExtraCode ([#401](#))
- WIP: Replace spin with helicity in MCParticle ([#404](#))
- TODO: Rework the GeneratorEventHeader and GeneratorPdfInfo into one class

Developments in k4FWCore

- Documentation updates, re: IOSvc, k4run capabilities ([#267](#), [#269](#))
- Properly export version info via CMake for downstream consumption ([#230](#))
- Make it possible to use edm4hep::utils::ParticleIDMeta in k4FWCore::[gs]etParameter ([#273](#))
- Make sure Functional algorithms check types during conversion ([#275](#))
- Improve support for mixing IOSvc and “old” DataSvc ([#280](#))
- Write configuration metadata in initialize rather than finalize ([#262](#))

k4MarlinWrapper and friends

- Segmentation fault when only some of the events have subset collections ([k4MarlinWrapper#215](#))
 - Spurious but reliably triggerable issue for collections that are only rarely filled (e.g. FTD for ILD)
 - Needs possibility to create subset collections on the fly ([LCIO#201](#))
 - Documentation ([k4EDM4hep2LcioConv#109](#)) and configuration changes for ILD ([ILDConfig#158](#))
- Support for running with IOSvc ([k4MarlinWrapper#216](#))
 - Possibility to use Functional algorithms together with wrapped processors
- Add an EDM4hep reader to DDG4 ([DD4hep#1371](#))

Key4hep stack & general news

- Add a bundle package and environment for “externals” ([key4hep-spack#676](#))
 - Enough to start building Gaudi, podio, DD4hep, ...
- Build a container image with only the externals stack ([#693](#), [#706](#))
 - Originally done by muon collider community, entirely within github actions runtime
- Preparations for next nightlies iteration ([#700](#))
 - Support for Ubuntu 24
- In-person meeting at CERN, Dec 11-12
 - [Report from Andre at FCC physics workshop](#), [meeting notes](#)
 - Technical & policy discussions
 - E.g. start to rebuild expertise for Pandora tuning: [\[wiki for collecting information\]](#)
- Plan to prepare a Key4hep document for EPPSU
- More meetings
 - Crystal DR calorimetry discussion on SimCalorimeterHit adaptations [\[indico\]](#)
 - Discussion with MuonCollider people to harmonize tracking approaches [\[indico\]](#)
- Delivery report for D12.2 finished and handed to management