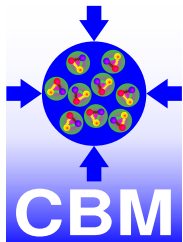


Status and updates for online/offline data reconstruction software



Sergei Zharko

CBM Department
GSI Helmholtzzentrum für Schwerionenforschung
Darmstadt, Germany

09.10.2025



Outline

- Open merge requests
- `cbm::algo::RecoSetup`
- Data classes in online/offline reconstruction
- Event reconstruction

Open merge requests

!2183 CBM setup representation in reconstruction algorithms

!2187 Proper address handling in MVD simulation and legacy data-classes

!1983 Common data classes in online/offline

!2183

!2094 Event reconstruction in online/offline

!2200 Tracking parameter updates

!2183

!1983

Setup representation in reconstruction

- !2183
- A common, unified and simplified CBM setup representation for reconstruction algorithms
- Replaces the hard-coded `cbm::algo::TrackingSetup` class (mCBM-specific, depends on hitfinder parameters)
- At the moment, used in tracking, digi-event selection, V0-finder
- Proposed to handle hit-finder parameters (at least, geometry for modules: translation, rotation and sizes)
 - **if yes, a subject for another merge request**
- Brings extra features:
 - optional fields in `cbm::algo::ParFiles` (readout, timesliceReco, eventReco, recoSetupPath)
 - bugfix in dumping optional fields with `Yaml`
 - automatic update of the `MainConfig.yaml` on the derived parameter creation step
- The online part is ready, the offline part should be still applied (replacement of `TrackingDetectorInterface` classes):
 - **can be delivered in another merge request**

Data classes in online/offline reconstruction

- !1983
- Candidates for common data-classes in cbmreco and offline data processing
 - no-ROOT, no-polymorphic, GPU-friendly
 - hits, tracks, matching objects (MC→digi, digi→hit, hit→track, track→PV)
- **Old and has diverged from master, needs to be re-submitted and extended**

Event reconstruction

- [!2094](#)
- An online/offline common `digi-event`→`digi-timeslice` reconstruction:
 - a common steering class (online offline)
 - a FAIR-task for FairRoot
 - a converter of `RecoEvent` (container of hits and tracks in one event) into legacy data-branches
- **was ready, but needs to be rebased on [!2183](#), [!2200](#) and maybe [!1983](#)**
- An issue with crashing of an example ROOT-macro:
 - [#3679](#)
 - segmentation violation in a call of destructor of the STS hitfinder

Roadmap for merging

- A.
 - 1. !2187 Address in MVD classes (assignee: Volker, reviewer: Ajit)
 - 2. !2183 Reco-setup (assignee: Volker, reviewer: Sergey G.)
 - 3. !2200 Tracking parameter updates (assignee/reviewer: Sergey G.)¹
 - 4. !2094 Event reconstruction (assignee: Volker, reviewer: Jan)²
 - 5. !1983 Common data classes in online/offline (assignee: Sergey G., reviewer: Volker)
- B.
 - 1. !2187 Address in MVD classes (assignee: Volker, reviewer: Ajit)
 - 2. !2183 Reco-setup (assignee: Volker, reviewer: Sergey G.)
 - 3. !1983 Common data classes in online/offline (assignee: Sergey G., reviewer: Volker)³
 - 4. !2200 Tracking parameter updates (assignee/reviewer: Sergey G.)
 - 5. !2094 Event reconstruction (assignee: Volker, reviewer: Jan)
- The !1983 has logically higher priority, then !2094 (scenario B.), but it will be easier to bring the latter first (scenario A.)

¹Is needed to properly initialize tracking in the event-reconstruction mode

²Ready and reviewed, a rebase is needed, testing can be done after merging

³Needs to be re-submitted, because the master has diverged. Extra work is also required