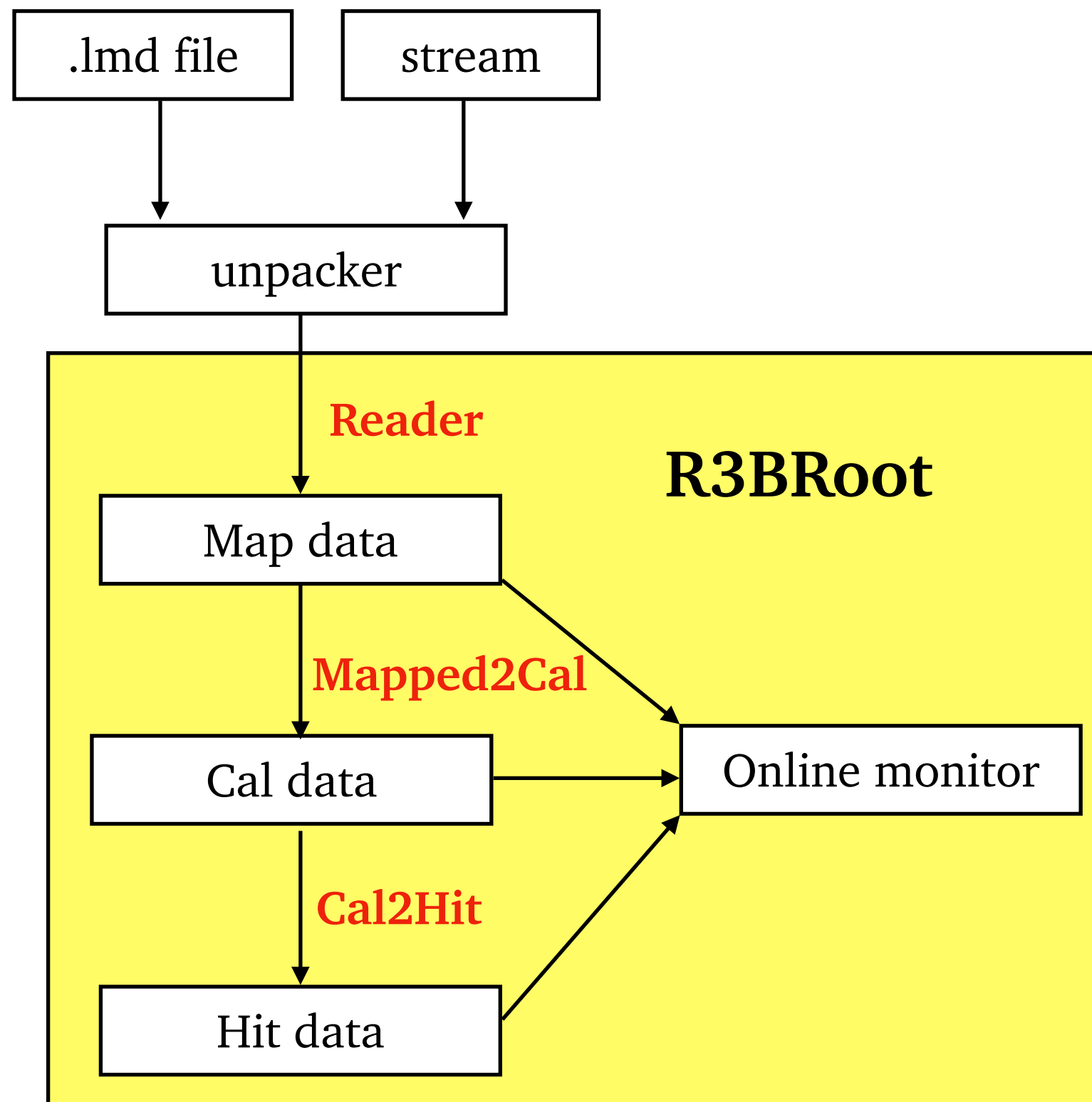


WG report: simulation and analysis

R3B Collaboration Meeting, Mainz, 6-10 November 2023

Hector Alvarez Pol, Valerii Panin, Jose Luis Rodriguez Sanchez

Current status R3BRoot analysis for different systems (from R3B wiki)



Detector	Reader	Mapped2Cal	Cal2Hit	Online	Simulation	Included for compilation tests
SCI-FRS	YES	YES	YES	Needs update	NO	NO
R3B-Music	YES	YES	YES	Needs update	YES	YES
Twin-Music for light ions	YES	YES	YES	Needs update	YES	NO
MWPCs	YES	YES	YES	Needs update	YES	YES
ROLU	YES	YES	YES	Needs update	NO	NO
LOS	YES	YES	YES	Needs update	NO	NO
PSPX	YES	YES	YES	YES	YES	NO
AMS	YES	YES	YES	YES	YES	YES
TTT10	NO	NO	NO	NO	NO	NO
FOOT	YES	Needs update	Needs update	Needs update	YES	YES
ALPIDE	Needs update	YES	YES	Needs update	YES	YES
CALIFA	YES	YES	Needs update	Needs update	YES	YES
Twin-Music	YES	YES	YES	YES	YES	YES
Fibers	YES	Needs update	Needs update	Needs update	YES	NO
ToFD	YES	Needs update	Needs update	Needs update	YES	NO
ToFI	YES	YES	YES	YES	YES	NO
Sofia ToFW	YES	YES	YES	YES	YES	NO
NeuLAND	YES	YES	YES	YES	YES	YES
RPC	YES	YES	YES	Needs update	YES	NO
HYDRA	NO	YES (sim data)	YES (sim data)	NO	YES	NO
CHIMERA	NO	NO	NO	NO	NO	NO
KRATTA	NO	NO	NO	NO	NO	NO

new detectors

Introducing sync check values for online monitor

ROOT online server

[JSROOT](#) version 6.3.x 24/05/2022

Hierarchy in [json](#) and [xml](#) format

Monitoring simple

[open all](#) | [close all](#) | [reload](#) | [clear](#)

ROOT

Objects

OnlineSyncCheck

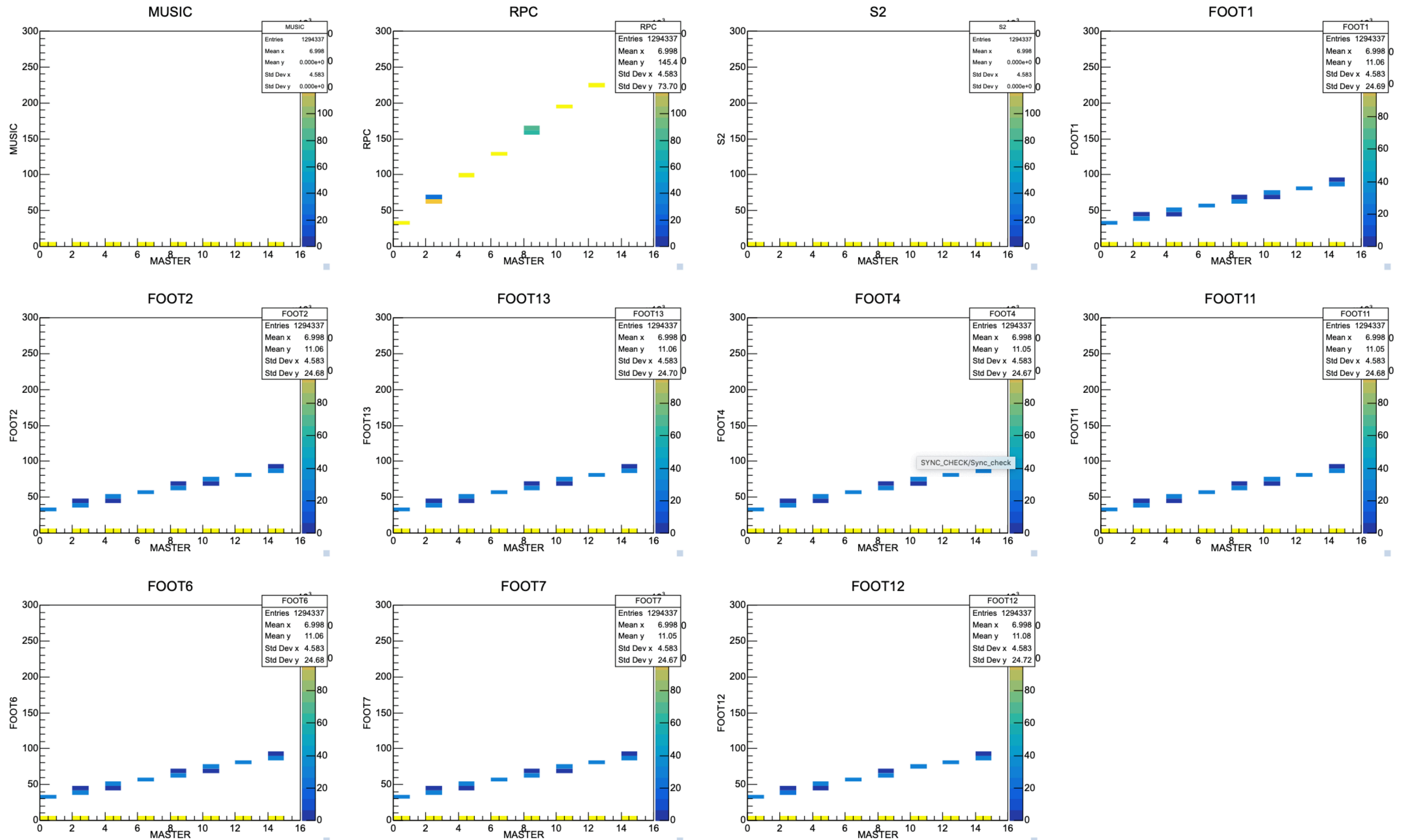
Reset_Sync_Check

SYNC_CHECK

Sync check

Canvases

Files



Recent updates on CI and tests (Jose Luis / Yanzhao)

GitHub CIs (recently updated):

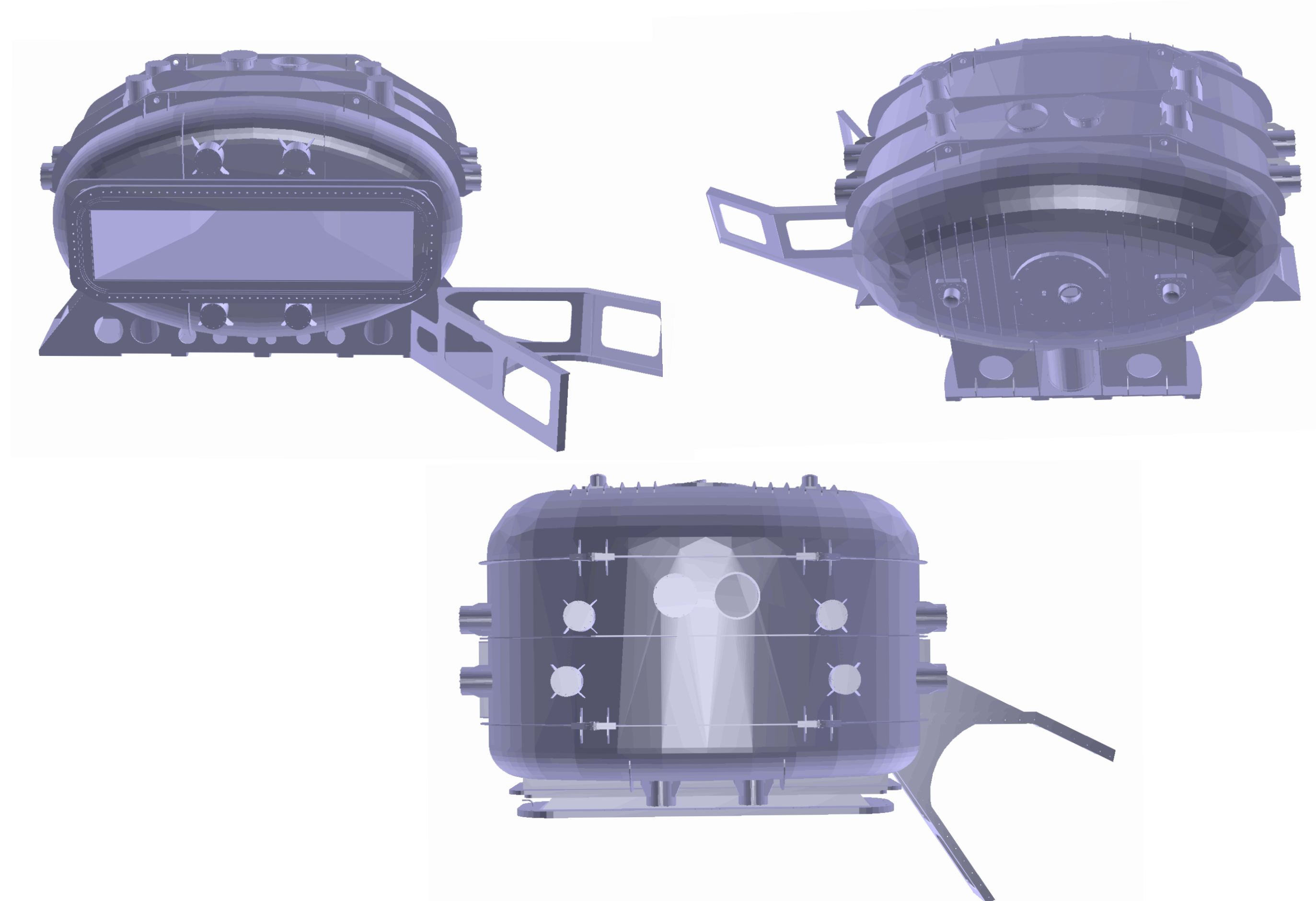
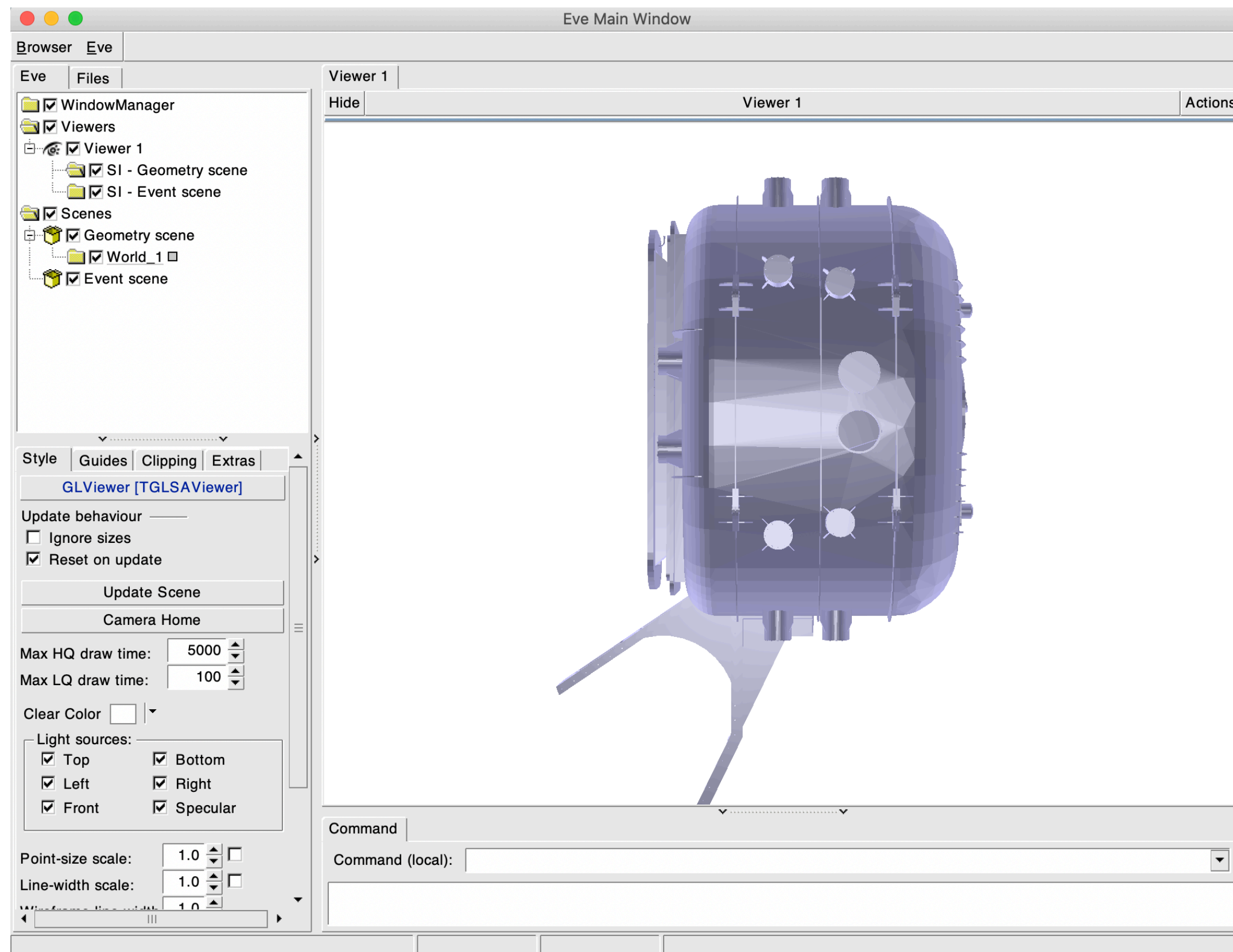
- **clang-format**: v15
- **FairSoft**: nov22p1
- **FairRoot**: v18.8.0
- **ucesb**: latest version from Chalmers

Github tests (recently updated):

- Simulation Macros for all detectors (see table in r3b-wiki)
- Geometry Macros (root auto geo generaration)
- Unpacking macro using UCESB (just checking ucesb with lmd file);
see <https://github.com/R3BRootGroup/R3BFileSource>)

Possibility to import STEP models thanks to ROOT6 in FairSoft.nov22p1

- TGeoManager to read GDML with tessellated volumes (minimum ROOT version 6.24)
- 1st step: import STEP to GDML format: via MRADSIM software <https://www.mradsim.com>
- 2nd step: import GDML to ROOT: store in TGeo format as a .root file
- Work in progress: update GLAD construction method in R3Broot (optional construction directly from GDML file), add material definition, find alignment of GLAD model to the world volume



PR checking list

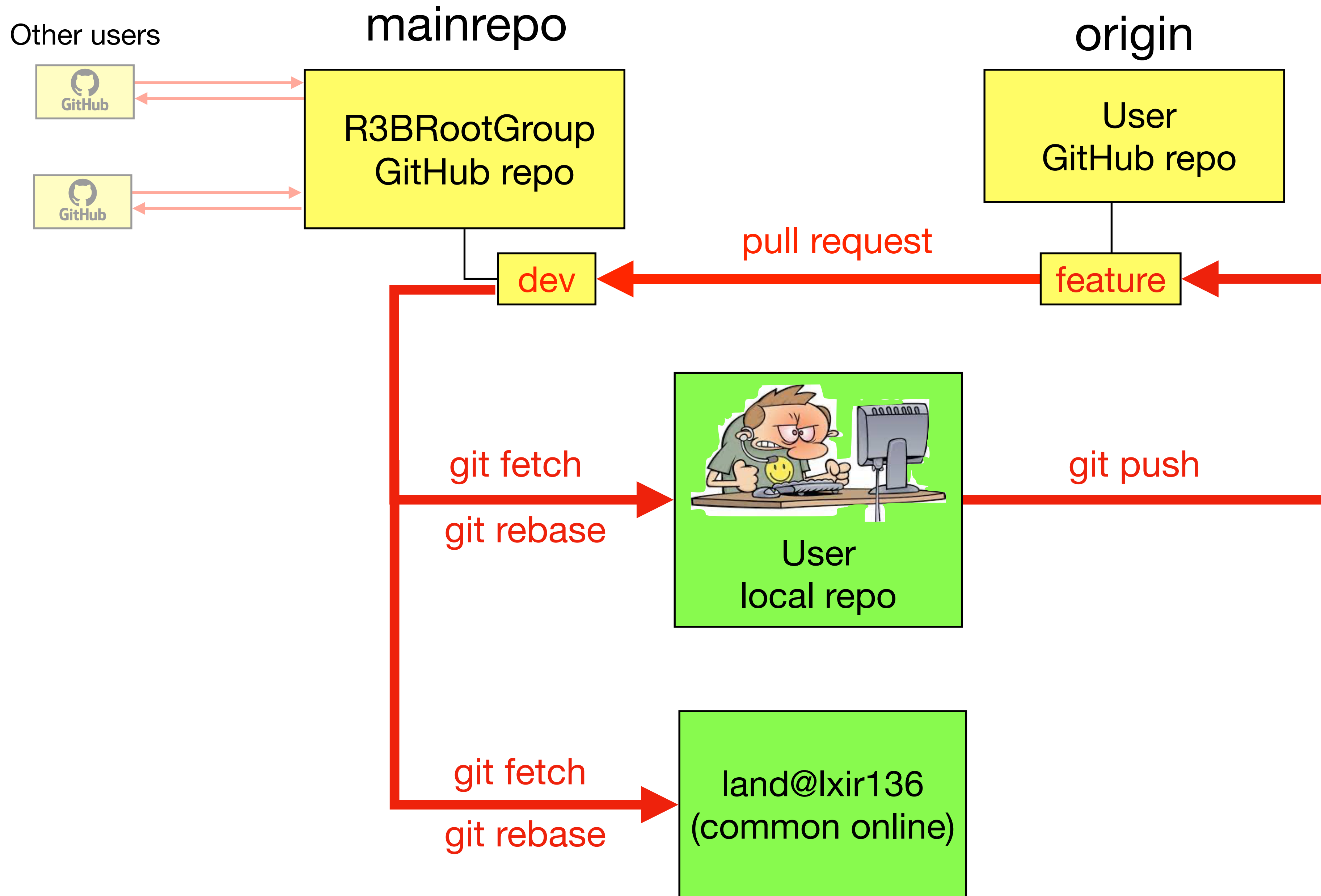
- Modify the code under git control till it's ready (compiles, works, ...).
- **Rebase against dev branch.**
- Run clang-format locally on your files
 - ➔ Single command using handy scripts from R3BRoot/util directory
- My name is in the resp. CONTRIBUTORS/AUTHORS file?
- Followed the pull request guidelines [1] and the Git workflow [2].
- Followed the seven rules of great commit messages [3].

[1] <https://opensource.creativecommons.org/contributing-code/pr-guidelines/>

[2] <https://github.com/AnarManafov/GitWorkflow>

[3] <https://cbea.ms/git-commit/#seven-rules>

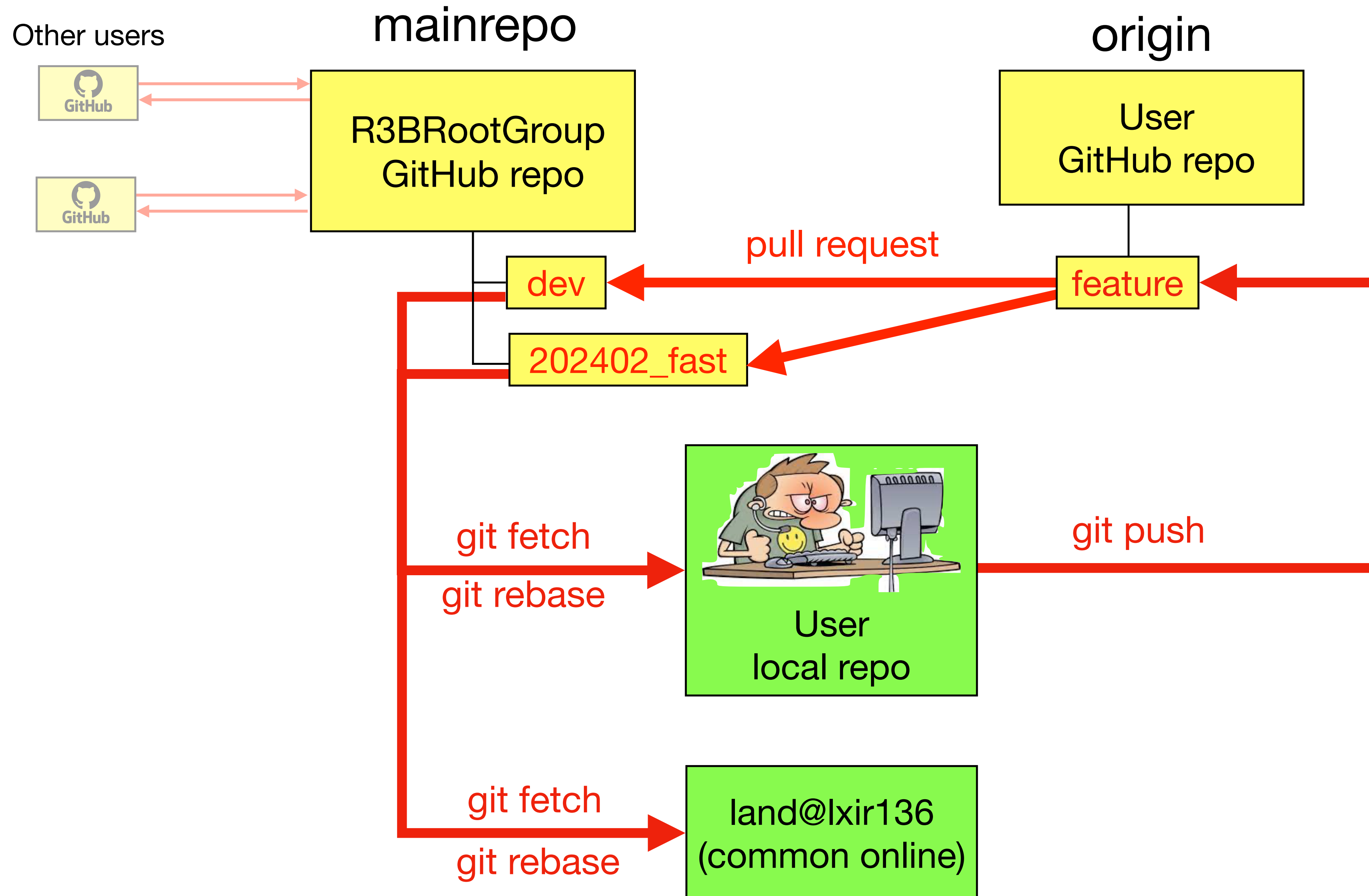
Our standard git workflow (adapted from Anar Manafov's manual)



Added temporary “fast” branch for 2024 experiments

- Branch name: `202402_fast`
- Purpose: fast integration of online code during preparation/experiment
- Fast merging: only mandatory tests, ignore clang-tidy warnings, fast review
- Every PR in `202402_fast` requires additional PR on `dev` branch
 - ➔ On dev: complete set of tests, detailed review, comments, correction, improvements
- Every PR in `202402_fast` should follow our standard git workflow
- `202402_fast` branch will be deleted after the experiment
- `dev` remains the default branch

Added temporary “fast” branch for 2024 experiments



CI and tests

- Build tests (for r3broot, sofia-frs-asyeos, glad-tpc).
- Static analysis (using clang-format, clang-tidy —> disabled on ext_h101* files).
- Cdash framework checks errors and warnings:

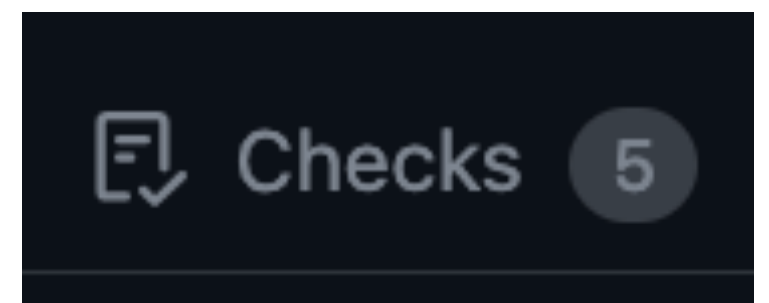
<https://cdash.gsi.de/index.php?project=R3BRoot>

- Results of CI and tests are stored on GitHub for reference.
- “Conversation” can start where other developers offer help and advice.

✓ Please, PR your code if relevant for the common analysis.

There is no reason to be afraid of the PR process!

It's designed to improve the code quality, detect errors in an early stage, and ensure a reliable analysis and simulation tool.



Some general comments

- Testing online analysis requires a working DAQ + unpacker (at least standalone)
 - ➔ At present no running DAQ for several systems
- In the meantime, online analysis/unpacker from last year should be suitable for most of the detectors
 - ➔ Tested for RPC, FOOT and Fibers
- Updates for online analysis are being gradually implemented, as more systems come into operation
 - ➔ Expected to be completed by the beginning of December
- Pending PRs (currently 8) should be revised by the contributors according to the check status
 - Resolve conflicts and address all PR comments
 - Try to fix the clang-tidy warnings as much as possible
- Avoid too big PRs (thousand of lines of code) —> longer/harder review
- Be respectful to your colleagues

Thank you!
and
Happy analysis!

