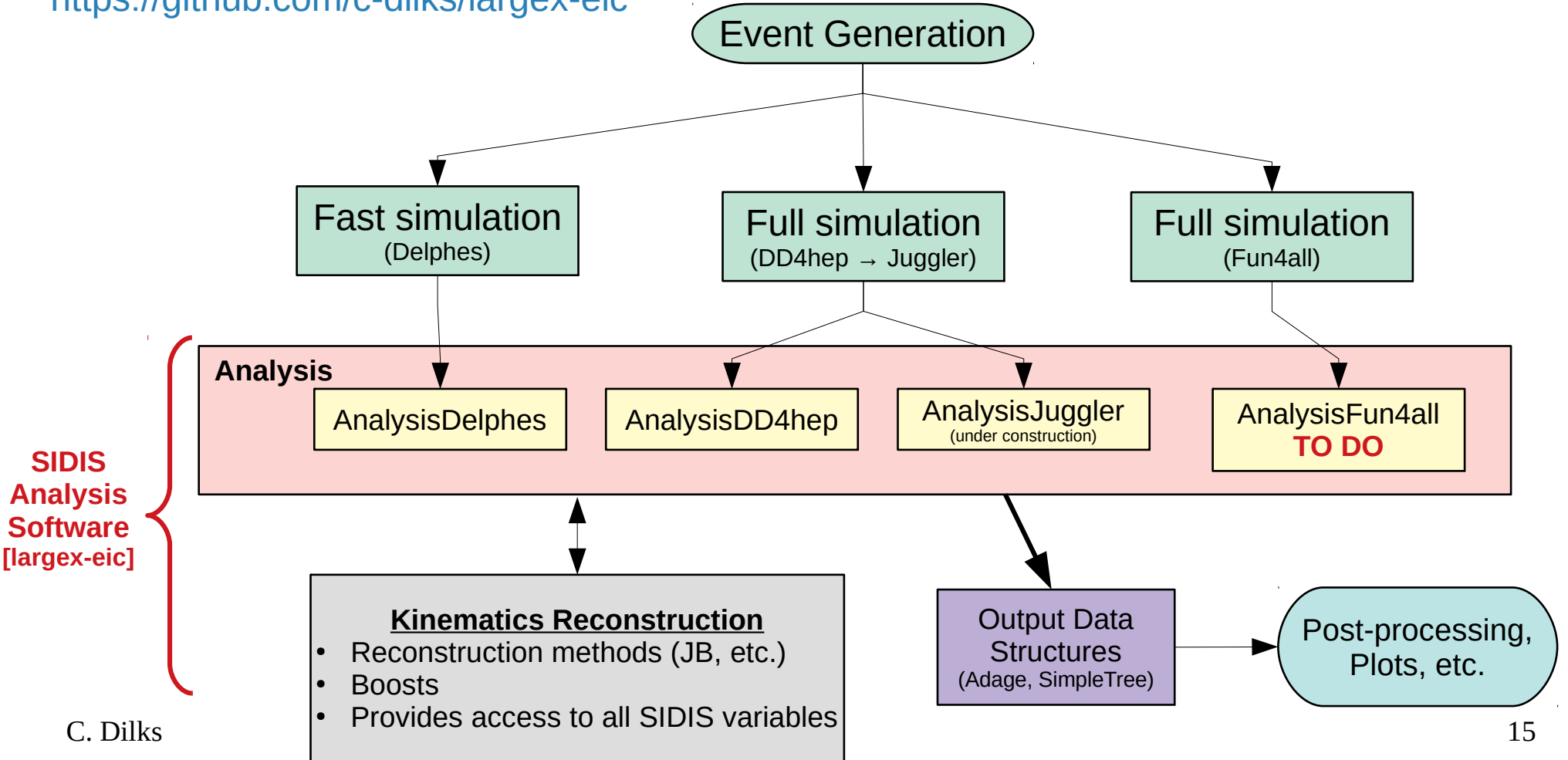


ATHENA SIDIS Analysis Software

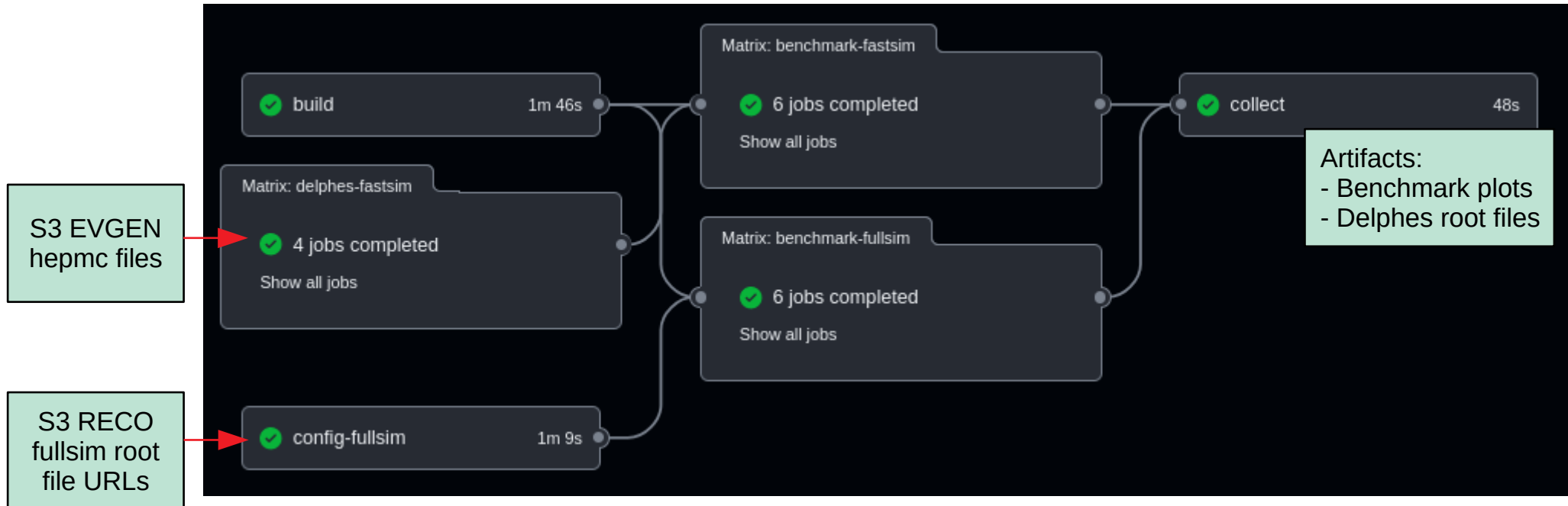
<https://github.com/c-dilks/largex-eic>



SIDIS SW Continuous Integration (CI)

<https://github.com/c-dilks/largex-eic/actions>

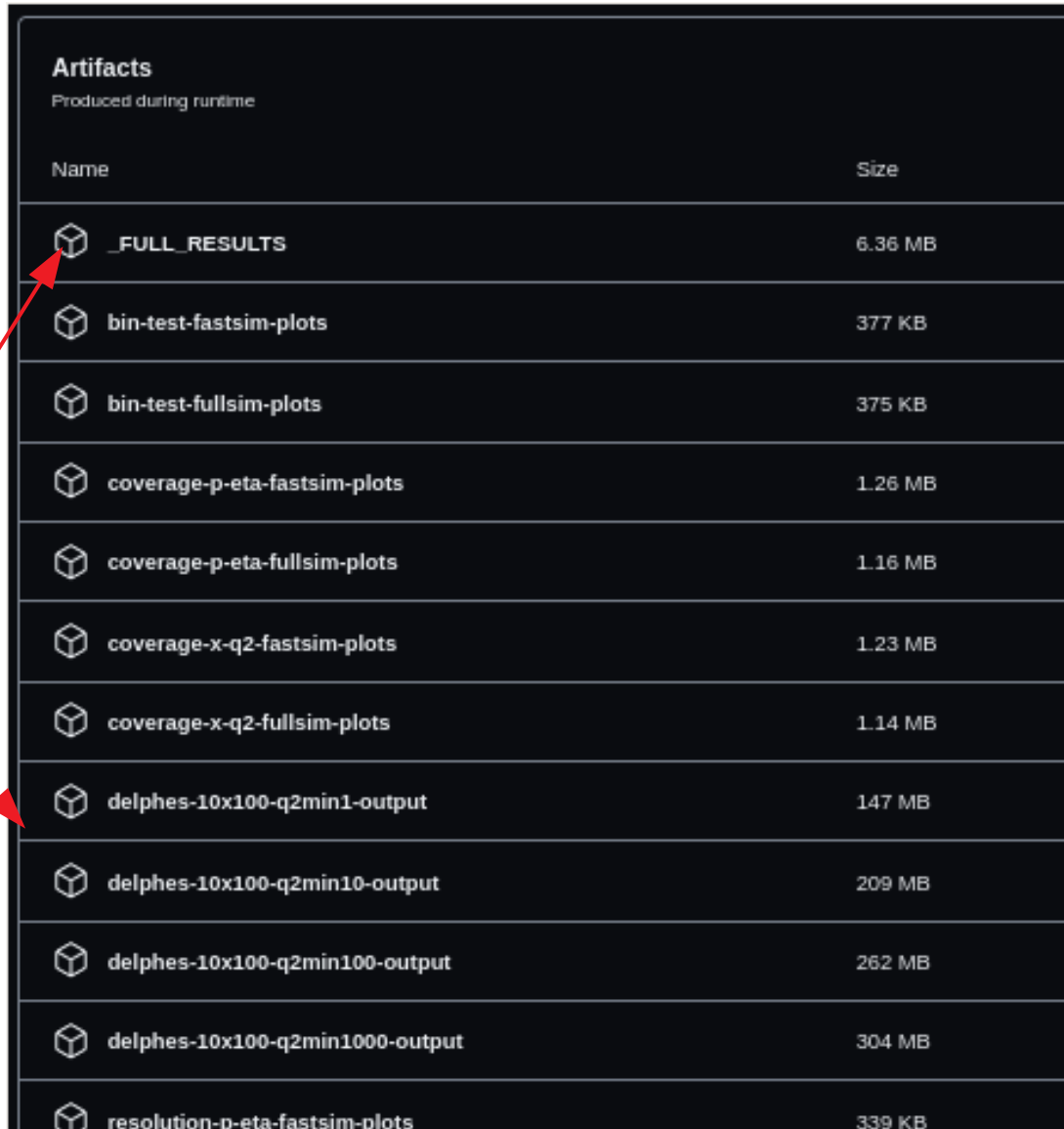
- Jobs run in parallel, left to right
- Connections between jobs denote dependence on other jobs
- Automatically runs jobs over FAST and FULL simulation, in parallel
- Matrix jobs include several parallel sub-jobs (differing Q2, differing binning schemes, etc.)
- TO DO: connect to Fun4all output**
- TO DO: consider transitioning to EICWEB (ANL-hosted GitLab)**














Artifacts

- Each job runs on a separate virtual machine, a “runner”, starting from a clean slate
- Output “artifacts” from one job can be passed to another
 - Build artifacts: compiled libraries (lib*.so), executables, etc.
 - Delphes ROOT files from fast simulation job
 - Configuration files
- The final collect job organizes and uploads the set of artifacts for humans: plots
 - The final artifacts are stored in ‘_FULL_RESULTS.zip’
 - Histograms, Trees, Anything!**

You are welcome to add
your own CI Jobs

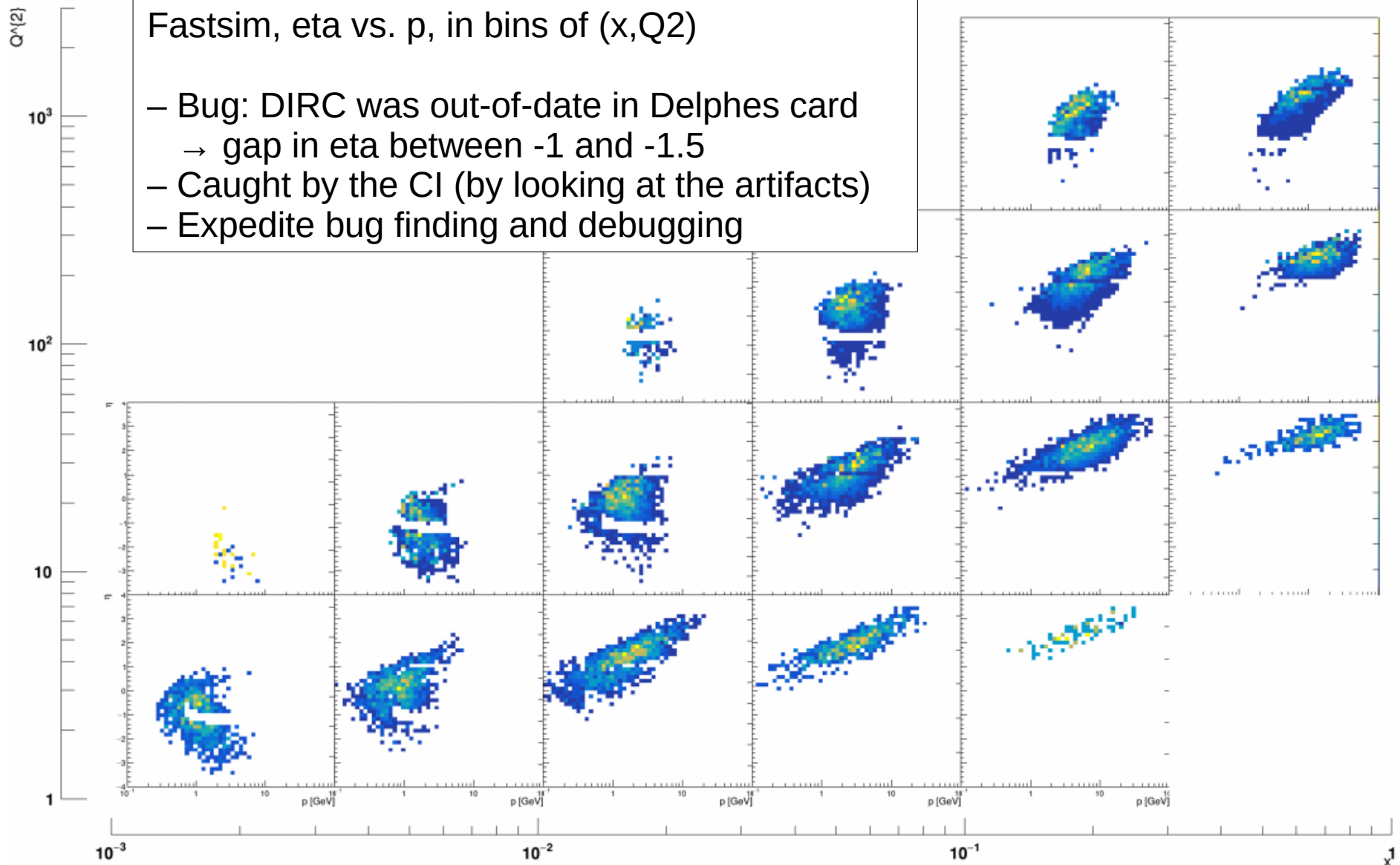


The screenshot shows a list of artifacts produced during runtime. The artifacts are organized into a table with columns for Name and Size. Red arrows from the text point to the '_FULL_RESULTS' artifact and the 'delphes-10x100-q2min1-output' artifact.

Artifacts	
Produced during runtime	
Name	Size
 _FULL_RESULTS	6.36 MB
 bin-test-fastsim-plots	377 KB
 bin-test-fullsim-plots	375 KB
 coverage-p-eta-fastsim-plots	1.26 MB
 coverage-p-eta-fullsim-plots	1.16 MB
 coverage-x-q2-fastsim-plots	1.23 MB
 coverage-x-q2-fullsim-plots	1.14 MB
 delphes-10x100-q2min1-output	147 MB
 delphes-10x100-q2min10-output	209 MB
 delphes-10x100-q2min100-output	262 MB
 delphes-10x100-q2min1000-output	304 MB
 resolution-p-eta-fastsim-plots	339 KB

Fastsim, eta vs. p, in bins of (x,Q2)

- Bug: DIRC was out-of-date in Delphes card
 - gap in eta between -1 and -1.5
- Caught by the CI (by looking at the artifacts)
- Expedite bug finding and debugging



How to Use the CI

- Ask to be a contributor on Github, or fork the repository
- Open a pull request (PR)
- CI jobs trigger on any commit to a PR branch
- Inspect CI logs and artifacts
- It's useful to link an issue to PRs you want to merge
 - Connects to our project board: <https://github.com/c-dilks/largex-eic/projects/1?fullscreen=true>
 - (this project board was for the ATHENA proposal; we can update it to better keep track of SW tasks for the future)

Check out the documentation: <https://github.com/c-dilks/largex-eic#readme>

There are several example analyses available in the `tutorials/` directory