

EIC Software on GitHub: The Repositories and the Website

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The EIC Software on GitHub

The screenshot shows the GitHub repository page for "Electron-Ion Collider (EIC) Software". The repository is owned by "eic.github.io" and contains 28 repositories. The page displays a list of repositories with their respective languages, topics, and update times. On the right side, there are sections for "Top languages", "Most used topics", and "People".

Electron-Ion Collider (EIC) Software
Electron-Ion Collider (EIC) software, documentation and resources
http://www.eicug.org/web/content/eic-software | eicug-software-core@eicug.org, eicug-computi...

Repositories 28 | Packages | People 12 | Teams | Projects | Settings

Find a repository... | Type: All | Language: All | Customize pins | New

eic.github.io
EIC software website
HTML Apache-2.0 0 stars 0 issues 0 pull requests Updated 4 hours ago

Singularity
Forked from sPHENIX-Collaboration/Singularity
Launcher and update macro for the EIC Singularity container
container singularity fun4all
Shell 8 0 stars 0 issues 0 pull requests Updated 4 hours ago

doxygen
Software reference https://eic.github.io/doxygen via JenkinsCI
documentation daily-build
HTML 0 0 stars 0 issues 0 pull requests Updated 5 hours ago

eic-smear
C++ 0 0 stars 0 issues 0 pull requests Updated 7 hours ago

utilities
Forked from sPHENIX-Collaboration/utilities
the Fun4All bag of utilities
daily-build fun4all-core

Top languages
C++ C Shell HTML
Jupyter Notebook

Most used topics Manage
fun4all-core daily-build
fun4all-detector acts fun4all

People 12 >
Invite your teammates...
Invite

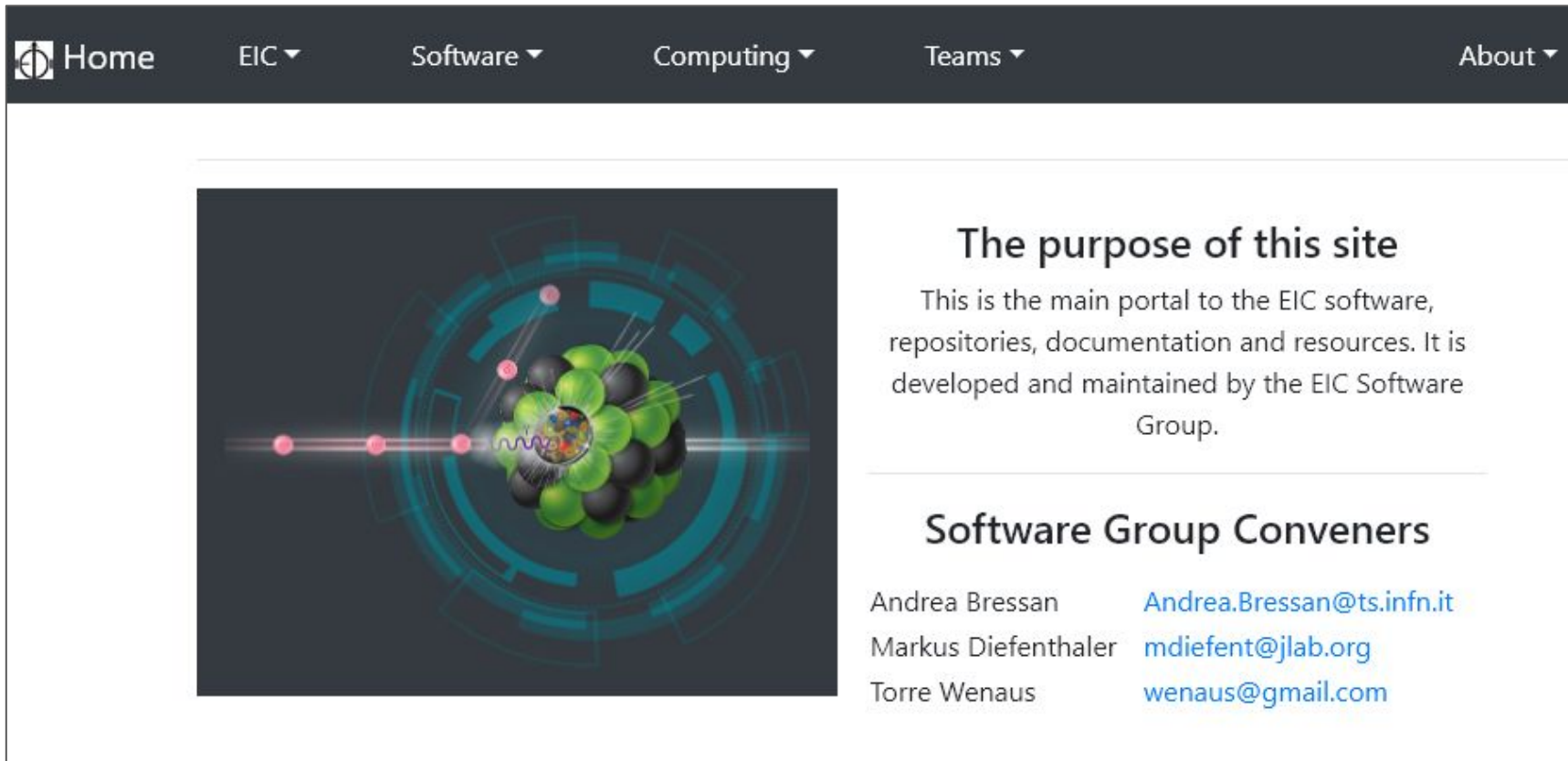
Overview

- Many thanks to Markus and others for getting the EIC Software GitHub organization in place and for the initial setup
- 28 repositories and 12 total participants as of April 22 2020
- It's already being put to good use
 - Steady flow of updates
- The group is working on how to best keep organized in the GitHub environment e.g. leverage features like teams, projects, project boards etc
 - Comments, ideas and suggestions are welcome
- We started using the GitHub Pages platform to host the EIC Software Group Website: <https://eic.github.io/>

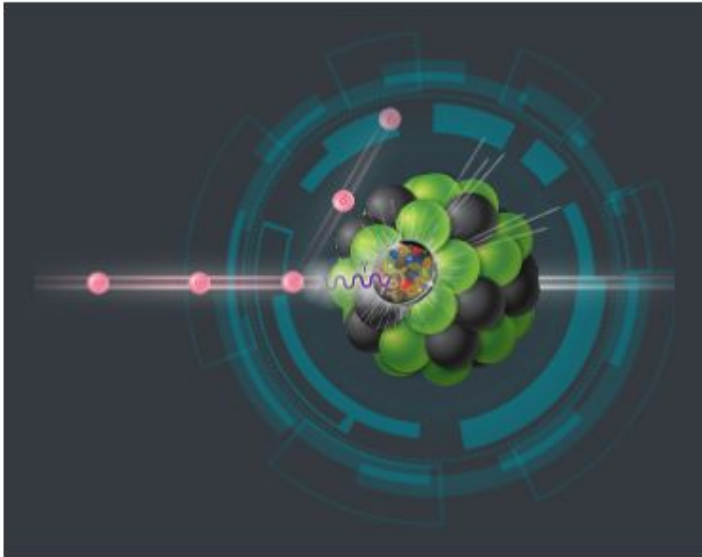
Migration

- Prior to the EIC Organization on GitHub, we had a mix of solutions which prominently included GitLab, which is also a good platform
- The idea was create a unified and future-proof resource for the EIC community to use
 - Avoid fragmentation of repos, documentation and tools (which are many)
 - Comments?
- Need a clear policy on migration to GitHub and notify the community
- The new website (next slide) is a good tool to guide the user through the repo, provide documentation etc

<https://eic.github.io/>



Home EIC Software Computing Teams About



The purpose of this site

This is the main portal to the EIC software, repositories, documentation and resources. It is developed and maintained by the EIC Software Group.

Software Group Conveners

Andrea Bressan	Andrea.Bressan@ts.infn.it
Markus Diefenthaler	mdiefent@jlab.org
Torre Wenaus	wenaus@gmail.com

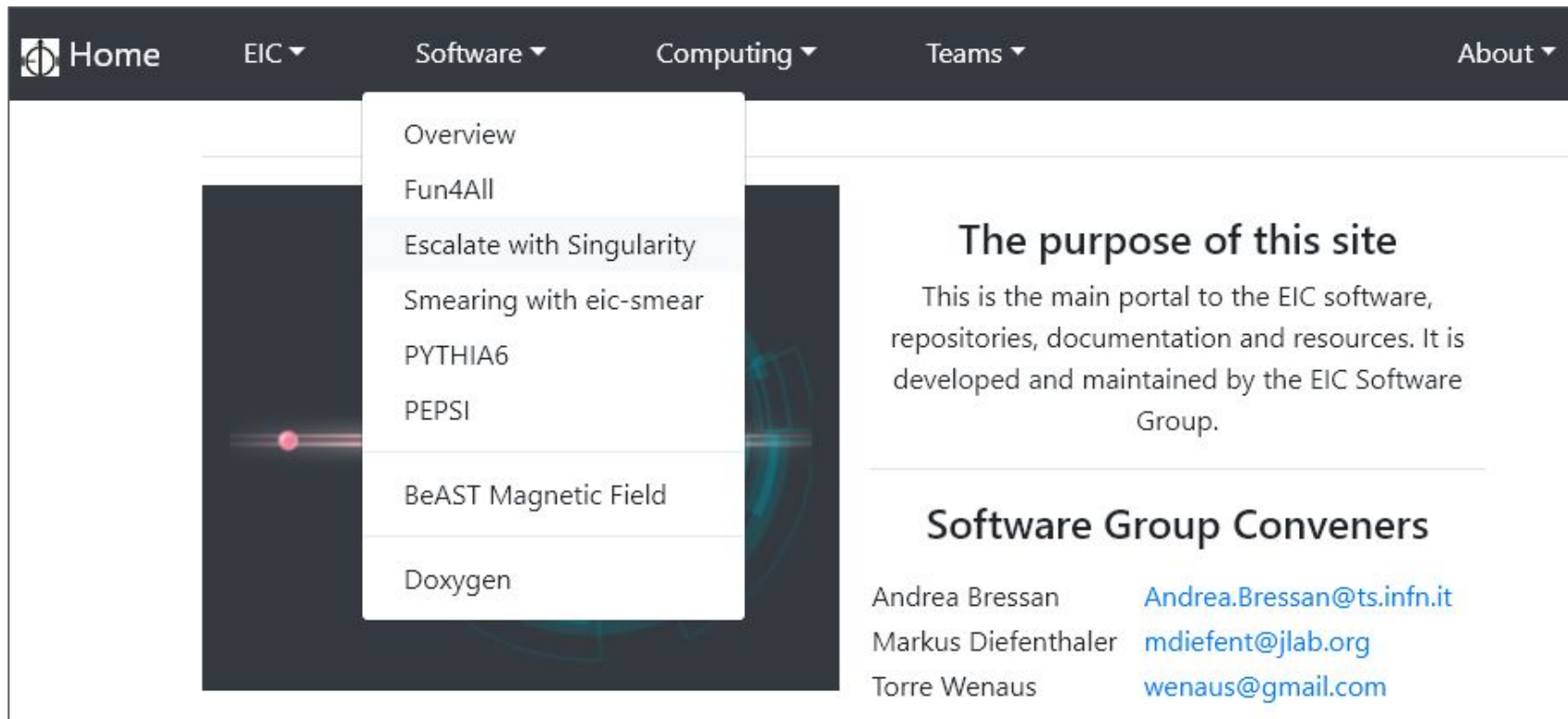
The EIC Software Website on GitHub

- Repo: <https://github.com/eic/eic.github.io>
- Inspiration for the toolkit and layout/navigation scheme came from the *HEP Software Foundation* website: <https://hepsoftwarefoundation.org/>
 - However the code of the EIC site is new and different from its predecessors with emphasis on ease of maintenance and facilitating users' contributions
 - Updated with the latest versions of third-party components
 - Purposely lean design
- Based on Jekyll/Liquid + Bootstrap for layouts and navigation
 - Users/contributors are **insulated** from intricacies of both unless they want to contribute to the mechanics of the site
 - Very basic familiarity with Markup is the only requirement for someone who wants to contribute

The Platform

- Advantages of static websites:
 - Security
 - Ease of maintenance (no dependencies on PHP etc)
 - Portability (down to a USB stick) and compatibility with data preservation
 - Performance (no DB queries)
 - Reliable version control
 - GitHub (and other sites) integration + free hosting
- Jekyll is a static website generator
- Key features
 - Structured storage of the content/data with consistent references across sites (YAML)
 - e.g. can help systematize simulations
 - DB-like features without using an actual database (i.e. do a “join” on data structures)
 - Solid web page templating functionality and filters, flow control, includes etc
 - No straight HTML - editing Markdown is a lot more palatable

Navigation (dropdowns)



The image shows a website header with a dark navigation bar. The navigation items are: Home (with a logo), EIC, Software, Computing, Teams, and About. The 'Software' dropdown menu is open, displaying a list of software tools: Overview, Fun4All, Escalate with Singularity (highlighted), Smearing with eic-smear, PYTHIA6, PEPSI, BeAST Magnetic Field, and Doxygen. The main content area features a section titled 'The purpose of this site' with a paragraph explaining it as the main portal to EIC software, repositories, documentation, and resources, developed and maintained by the EIC Software Group. Below this is a section titled 'Software Group Conveners' with a list of names and their email addresses: Andrea Bressan (Andrea.Bressan@ts.infn.it), Markus Diefenthaler (mdiefent@jlab.org), and Torre Wenaus (wenaus@gmail.com).

Home EIC Software Computing Teams About

Overview
Fun4All
Escalate with Singularity
Smearing with eic-smear
PYTHIA6
PEPSI
BeAST Magnetic Field
Doxygen

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Contributing to the Website

- The navigation bar on top contains items named consistently with folders in the codebase, making it easier for contributors to get orientated:
 - *Software* → ”_software”
 - *About* → ”_about”etc
- To add a page one needs to do the following
 - Add a Markdown-formatted file (with the mandatory “*front matter*” section on top) to the appropriate folder e.g. if it’s a software-related page add it to the “_software”, if it’s about teamwork add it to “_teams” etc (*see next slide*)
 - Register your page in the file “_data/menu.yml” to position the link (created automatically) in the menu structure, with the “name” attribute matching one in the “front matter”
- Existing code is clear enough to provide working examples, no need to guess
- There is a “how-to” page with more information:
<https://eic.github.io/about/howto.html>

Front Matter (actual example)

```
# Only two first attributes are mandatory
```

```
---
```

```
title: Smearing with eic-smear
```

```
name: eicsmear_1
```

```
category: eicsmear
```

```
layout: default
```

```
level: 0
```

```
---
```

```
### The EIC Smear Content here
```

```
# menu.yml (defines menu content)
```

```
- name: software
```

```
  full: Software
```

```
  submenus:
```

```
    -
```

```
      name: overview
```

```
      full: Overview
```

```
    -
```

```
      name: fun4all_tutorial_1
```

```
      full: Fun4All
```

```
    -
```

```
      name: escalate_singularity_1
```

```
      full: Escalate with Singularity
```

```
    -
```

```
      name: eicsmear_1
```

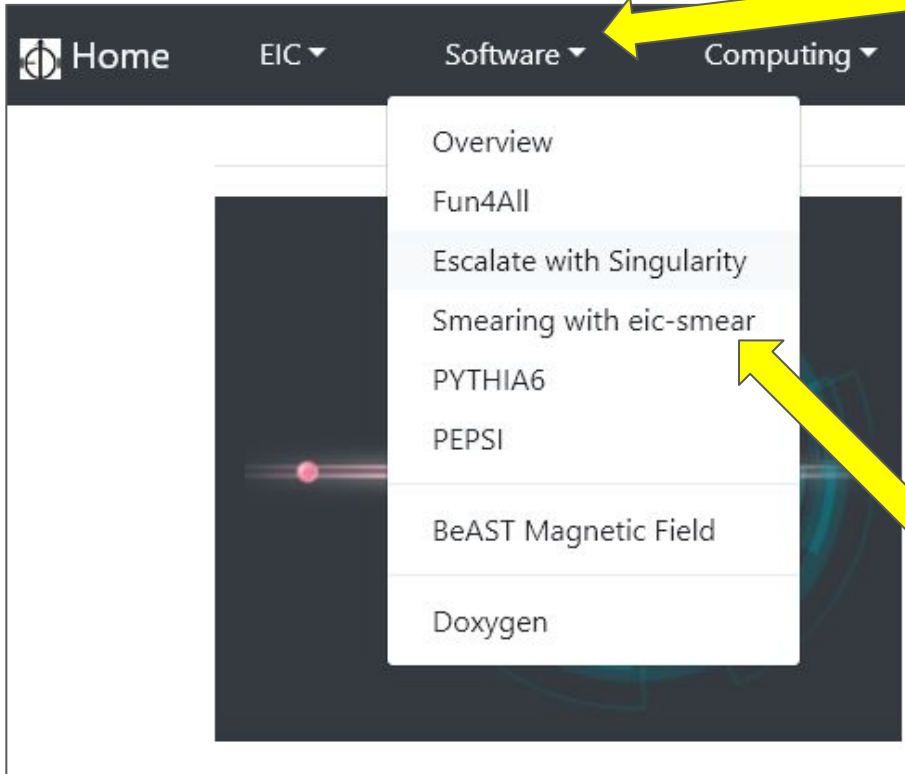
```
      full: Smearing with eic-smear
```

```
    -
```

```
      name: pythia6
```

```
      full: PYTHIA6
```

Menu rendering



- name: software
full: Software
submenus:
 - - name: overview
full: Overview
 -
 - name: fun4all_tutorial_1
full: Fun4All
 -
 - name: escalate_singularity_1
full: Escalate with Singularity
 -
 - name: eicsmear_1
full: Smearing with eic-smear
 -
 - name: pythia6
full: PYTHIA6

Contributing to the Website (cont'd)

- The site is automatically re-generated on GitHub on every “push”
 - Latency varies from seconds to minutes
- It is entirely possible to just edit a file and commit, or even do it right on the GitHub site in the Web UI - this is a plus
- However for optimal productivity it is recommended to install Jekyll (and before that a recent version of Ruby) on your machine - not too hard but will take a few minutes
- Once this is done, you get a development server on your machine on port 4000 which allows you to check all changes immediately
- Initial feedback from contributors is positive i.e. the system is fairly easy to use (~5 contributors active)

<https://github.com/eic/eic.github.io>

📁 _about	modified "how to" to reflect recent changes in organization	18 hours ago
📁 _computing	modified "how to" to reflect recent changes in organization	18 hours ago
📁 _data	Added pythia-rad-corr	9 hours ago
📁 _includes	Cleaned up retired MD files	19 hours ago
📁 _layouts	created a basic cross-reference structure for software pages	15 days ago
📁 _software	updated eicsmear	7 hours ago
📁 _teams	converted the navbar center lines into a loop iterating over YAML	19 hours ago
📁 assets/images/site	Correct BeAST field map picture uploaded	8 days ago
📄 .gitignore	Updated the "ignore"	18 days ago
📄 Gemfile	Added all of the stubs (for now)	18 days ago
📄 LICENSE	Initial commit	21 days ago
📄 README.md	Update README.md	8 hours ago
📄 _config.yml	Migrating more material to the new drop menu generation scheme	19 hours ago
📄 index.html	Added all of the stubs (for now)	18 days ago

GitHub integration with Zenodo

- Zenodo is a CERN-based digital repository: <https://zenodo.org/>
 - It is not a new product but in fact an evolution of CDS i.e. one of the cornerstones of the CERN infrastructure and a myriad information services
 - “Invenio RDM” is in the works which is a portable version of this CERN-based system
 - Vibrant community, solid CERN affiliation, good support at many levels including the lead developer
- It can serve as a drop-in replacement for DocDB which is an aging product
 - Metadata support
 - But can also do so much more e.g. store datasets, code or any other digital products
 - Generates and supports official DOIs
- It definitely **deserves a separate discussion** about its potential use for EIC
 - The current need to manage documents in EICUG is not addressed properly
- Today’s focus is on one aspect of it: the GitHub integration

GitHub/Zenodo mechanics

- A snapshot of a GitHub repository can be included in Zenodo organically, and a DOI generated
 - Prepares and preserves tarballs of your releases
 - Makes your code easy to find (using the metadata) and to reference by a unique ID
 - Nice GUI
 - Potential utility for the Yellow Report and beyond
- Easy to use
 - I tested this functionality and it was quite simple
 - DOIs take some time $O(10\text{min})$ to propagate to the DOI.org system

Zenodo - GitHub panel - repo selection

The screenshot displays the Zenodo user interface for the GitHub integration. At the top, the Zenodo logo is on the left, a search bar in the center, and 'Upload' and 'Communities' on the right. A user profile dropdown for 'potekhin@bnl.gov' is visible. Below the header, a breadcrumb trail shows 'Home / Account / GitHub'. On the left, a 'Settings' sidebar lists options: Profile, Change password, Security, Linked accounts, Applications, Shared links, and GitHub (which is selected). The main content area is titled 'GitHub Repositories' and includes a 'Sync now...' button. A 'Get started' section contains three numbered steps: 1. Flip the switch (with an 'ON' toggle), 2. Create a release, and 3. Get the badge (with an example DOI: 10.5281/zenodo.8475). Below this is a 'Repositories' section with a note about third-party access and a list of repositories with 'OFF' toggles: BNLNPPS/BNLNPPS.github.io, BNLNPPS/BirdView, BNLNPPS/tpc-rs, DUNE/FNALCore, DUNE/Sandbox-TDR, and DUNE/SpaceCharge.

Zenodo - GitHub panel - published release

The screenshot shows the Zenodo interface for a GitHub repository. The top navigation bar is blue with the Zenodo logo, a search bar, and links for Upload and Communities. The user's email, potekhin@bnl.gov, is displayed in the top right. Below the navigation bar is a breadcrumb trail: Home / Account / GitHub / Repository. On the left is a settings sidebar with options like Profile, Change password, Security, Linked accounts, Applications, Shared links, and GitHub (highlighted). The main content area shows the repository name PhenixCollaboration/web with a DOI of 10.5281/zenodo.3759876. A toggle switch is set to ON. Below this is a 'GitHub / Releases' section with a 'Create release ...' button. A single release is listed: 'v1.0 PhenixCollaboration/web: First release of the PHENIX DAP site', which is marked as 'Published' and was released '11 minutes ago'. The release details include the same DOI and a circular icon.

zenodo Search Upload Communities potekhin@bnl.gov

Home / Account / GitHub / Repository

Settings

- Profile
- Change password
- Security
- Linked accounts
- Applications
- Shared links
- GitHub

PhenixCollaboration/web ON

DOI 10.5281/zenodo.3759876

GitHub / Releases Create release ...

v1.0 PhenixCollaboration/web: First release of the PHENIX DAP site	Published
DOI: 10.5281/zenodo.3759876	11 minutes ago
First release of the PHENIX DAP site	

Zenodo - GitHub panel - published release browser

The screenshot shows the Zenodo interface for a software release. The header includes the Zenodo logo, a search bar, and links for 'Upload' and 'Communities'. The main content area displays the release title 'PhenixCollaboration/web: First release of the PHENIX DAP site' and the authors 'Maxim Potekhin; Ron Belmont; amolhj'. Below this is a 'Preview' section showing a file tree for 'web-v1.0.zip'. The file tree includes a root directory 'PhenixCollaboration-web-c9d991e' with subdirectories like '_about', '_analysis', and '_data', and various files such as 'LICENSE', 'README.md', and 'vars.yml'.

zenodo Search Upload Communities

April 21, 2020 Software Open Access

PhenixCollaboration/web: First release of the PHENIX DAP site

Maxim Potekhin; Ron Belmont; amolhj

This is the first release of the PHENIX DAP website

Preview

web-v1.0.zip

- PhenixCollaboration-web-c9d991e
 - .gitignore 216 Bytes
 - Gemfile 285 Bytes
 - LICENSE 11.4 kB
 - README.md 1.6 kB
 - _about
 - contact.md 324 Bytes
 - dap.md 1.3 kB
 - howto.md 6.9 kB
 - site.md 2.5 kB
 - _analysis
 - overview.md 114 Bytes
 - _config.yml 1.3 kB
 - _data
 - acc
 - vars.yml 1.4 kB
 - detectors.yml 2.6 kB
 - documents.yml 3.5 kB
 - gallery.yml 4.5 kB

GitHub/Zenodo integration benefits

- Not a core functionality by a long shot, however...
- ...provides a uniform way to reference digital products using DOI
- ...metadata is a good thing to have - better discoverability!
- ...can leverage the Zenodo “community” feature to organize materials and increase visibility
 - Cf. simulated data and the code used to produce it can be kept under the same umbrella
- Longer term - Data and Analysis Preservation