

Documenting Analyses for Reproducibility

**IceCube BootCamp 2017
WIPAC, UW-Madison
June 7, 2017**

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- **Analyses documentation on svn**
 - Analyses software documentation
 - Scripts documentation
 - Tech notes
 - Data documentation on /data/ana/ (not on svn)
- **How to create a ticket**
- **Coding standards for readability**
- **IceCube project documentation**

- Analyses software documentation**

Exact procedure is still under development...

<http://code.icecube.wisc.edu/projects/icecube/browser/IceCube>

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source: IceCube

View revision: View diff against:

Name ▲	Size	Rev	Age	Author	Last Change
▶ analyses		155823	3 weeks	dxu	creating a repository for documenting the anlysis software and scripts ...
▶ Attic		147624	12 months	olivas	i think we can safely move this to the attic
▶ ctest		47838	9 years	blaufuss	The offline-trunk no longer has the needed dart goodies and all dart ...
▶ meta-projects		156291	37 hours	olivas	using the latest filterscripts
▶ papers		156276	39 hours	claudio.kopper	update contours and overview plot with new plot versions
▶ projects		156326	5 hours	markw04	comments and doc updates
▶ sandbox		156325	6 hours	cweaver	Changes requested by C. Wiebusch
▶ tools		110391	4 years	nwhitehorn	Add some missing headers to make this compile against libc++.

View changes...

- **Scripts documentation**

- ▶ Well documented:
 - ▶ *Processing scripts*
 - ▶ *Plotting scripts*

- **Tech notes**

Some guidelines:

- ▶ *Explain physics motivation*
- ▶ *Comparison to other existing similar analyses*
- ▶ *Collecting relevant references will be helpful*
- ▶ *Technical steps: how certain quantities were defined, how certain plots were made, etc*
- ▶ *Recommend PDF format (use latex, e.g. online [overleaf](#))*

- **Data documentation on /data/ana/ and linked to svn**
 - ▶ *Describe the data samples in a **README** file*

1. Analyses documentation on svn

- **Analyses software documentation**

Exact procedure is still under development...

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source: IceCube / analyses

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Name ▲	Size	Rev	Age	Author	Last Change
..					
▶ Fast_Radio_Bursts_2017		155823	3 weeks	dxu	creating a repository for documenting the anlysis software and scripts

View changes...

**~100 MB
per directory,
can request more**

- 1. Frozen analysis software with externals**
- 2. Analysis scripts**
- 3. Documentation (data explanation and tech notes)**

2. How to Make a Ticket

http://software.icecube.wisc.edu/documentation/general/submitting_tickets.html

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Create New Ticket

Properties

Summary:

Description:

B I A

You may use [WikiFormatting](#) here.

Type:

Milestone:

Keywords:

Owner:

Priority:

Component:

Cc:

please login as yourself, not icecube

I have files to attach to this ticket

- Preview
- Create ticket



3. Coding standards for readability

Style guide for python code: <https://www.python.org/dev/peps/pep-0008/>

More style guide for python code:

<http://python-guide-pt-br.readthedocs.io/en/latest/>

<http://python-guide-pt-br.readthedocs.io/en/latest/writing/documentation/>

Sphinx Python Documentation Generator

Python docstring convention: <https://www.python.org/dev/peps/pep-0257/>

Google style docstrings: <http://www.sphinx-doc.org/en/stable/ext/napoleon.html>

Creating a standalone sphinx project

Example: <http://www.sphinx-doc.org/en/stable/ext/autodoc.html>

```
class Foo:
    """Docstring for class Foo."""

    #: Doc comment for class attribute Foo.bar.
    #: It can have multiple lines.
    bar = 1

    flox = 1.5    #: Doc comment for Foo.flox. One line only.

    baz = 2
    """Docstring for class attribute Foo.baz."""

    def __init__(self):
        #: Doc comment for instance attribute qux.
        self.qux = 3

        self.spam = 4
        """Docstring for instance attribute spam."""
```

Copy and paste this block of code into a script called `test.py`

Creating a standalone sphinx project

<http://www.sphinx-doc.org/en/stable/tutorial.html>

- ▶ Install sphinx (if not exist yet): `pip install --user sphinx`
- ▶ Under the same `test.py` directory:
 - ▶ Run `sphinx-quickstart`, and finish the configuration
 - ▶ In `conf.py`, specify the extensions.
For example, `extensions = ['sphinx.ext.autodoc', 'sphinx.ext.napoleon', 'sphinx.ext.autosummary']`
Uncomment: `sys.path.insert(0, os.path.abspath('.'))`
- ▶ Modify `index.rst` to add the modules, classes, etc that you want to document
- ▶ Then run `make html`

Creating project documentation in IceCube

- ▶ Check out the docs project to your meta-project `src` directory. In `src`:

```
svn co http://code.icecube.wisc.edu/icetray/projects/docs/trunk/ docs
```

- ▶ In `build`: `make rebuild_cache`
- ▶ Load `env-shell` in `build` by running `./env-shell.sh`, then run `docs-build --project <yourproject> --open --no-doxygen`
- ▶ The document is in `/build/docs/build/html/index.html`
- ▶ If you are on `cobalt`, view the html files via:
<http://convey.icecube.wisc.edu/<your build dir on cobalt>/docs/build/html/index.html>