

Update on the Monopole-Generator Review

Software Call 2019-10-30

Sebastian Fiedlschuster

<https://github.com/fiedl/monopole-generator/issues/1>

sebastian.fiedlschuster@fau.de

Erlangen Centre for Astroparticle Physics

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Resources

Previous talk:

<https://github.com/fiedl/monopole-generator-talk/releases/>
[https://github.com/fiedl/monopole-generator-talk/releases/download/v1.0.1/2019-10-16.
Monopole-Generator.Review.pdf](https://github.com/fiedl/monopole-generator-talk/releases/download/v1.0.1/2019-10-16.Monopole-Generator.Review.pdf)

Install instructions for icecube-combo with github actions:

<https://github.com/fiedl/icecube-combo-install>

Build and run monopole-generator tests on github actions:

<https://github.com/fiedl/monopole-generator-install>

Current state of the monopole-generator review:

<https://github.com/fiedl/monopole-generator/issues/1>

Monopole-generator source code:

<http://code.icecube.wisc.edu/svn/projects/monopole-generator>
<https://github.com/fiedl/monopole-generator>


\LaTeX version of these presentation slides:

<https://github.com/fiedl/monopole-generator-talk>

Overview of the review

- State of the review:
 - ✓ First glance: Documentation, example scripts, unit tests, build
 - ✓ Directory structure
 - ⇒ Build, run, and review tests
 - ⇒ Review code structure and readability
 - ☐ Review documentation
 - ☐ Review coding standards
 - ☐ Review usability

See also: http://software.icecube.wisc.edu/documentation/general/code_reviews.html

- Current state documented in  <https://github.com/fiedl/monopole-generator/issues/1>.
Results will be published to [resources/docs](#) after completing the review.
- This talk: **Tests**

How to run the tests

- There are **python tests** in `resources/test` and **cxx tests** in `private/test` as expected.
- How to run the **python tests**:

```
[2019-10-29 23:16:56] fiedl@fiedl-mbp ~/icecube/software/icecube-combo-stable-2019-10-29/debug_build
./env-shell.sh python ../src/monopole-generator/resources/test/test_monopole_generator.py
./env-shell.sh python ../src/monopole-generator/resources/test/test_monopole_propagator.py
```

- How to run the **cxx tests**:

```
[2019-10-29 23:16:56] fiedl@fiedl-mbp ~/icecube/software/icecube-combo-stable-2019-10-29/debug_build
make test-bins
./env-shell.sh bin/monopole-generator-test --all
```

- There is also a `make monopole-generator-test` in the `monopole-generator/Makefile`.

```
[2019-10-30 00:08:42] fiedl@fiedl-mbp
↪ ~/icecube/software/icecube-combo-stable-2019-10-29/debug_build/monopole-generator
./env-shell.sh make monopole-generator-test
```

❓ Is this the same as in `make test-bins` from the root directory?

Running the tests & test results

- **Last time:** Tests did not run due to a **missing** `./env-shell.sh`
<https://github.com/fiedl/monopole-generator/issues/2>
- **Now:** **Python tests** do run and **succeed**.

```
[2019-10-29 21:21:04] fiedl@fiedl-mbp ~/icecube/software/icecube-simulation-V06-01-01
debug_build/env-shell.sh python src/monopole-generator/resources/test/test_monopole_generator.py
-----
Ran 40 tests in 159.557s
OK

[2019-10-29 21:24:00] fiedl@fiedl-mbp ~/icecube/software/icecube-simulation-V06-01-01
debug_build/env-shell.sh python src/monopole-generator/resources/test/test_monopole_propagator.py
-----
Ran 4 tests in 0.014s
OK
```

- **Cxx tests** do **run**, but **some fail**.

```
[2019-10-29 21:18:46] fiedl@fiedl-mbp ~/icecube/software/icecube-simulation-V06-01-01/debug_build
./env-shell.sh bin/monopole-generator-test --all
=====
Pass: 10
Fail: 4
THESE TESTS FAIL
  SlowMonopoleTest.cxx/DefaultSecondariesTest
  SlowMonopoleTest.cxx/GeneralSecondariesTest
  SlowMonopoleTest.cxx/TestMFP
  SlowMonopoleTest.cxx/TestScaling
```

Why do tests fail?

- Failure message:

```
FATAL (I3MonopoleGenerator): Requested less than 1 event to be generated. Abort! (I3MonopoleGenerator.cxx:92 in  
↪ virtual void I3MonopoleGenerator::Configure())
```

- There are consistency checks in the code:

```
// src/monopole-generator/private/monopole-generator/I3MonopoleGenerator.cxx  
GetParameter("NEvents", Nevents_);  
GetParameter("TreeName", treeName_);  
GetParameter("Mass", mass_);  
// ...  
if (Nevents_ <= 0){  
    log_fatal("Requested less than 1 event to be generated. Abort!");  
}
```

- Maybe the consistency checks were not present when the tests were created.
- Not sure why the CI did not complain when introducing the consistency checks.

Fixing the tests

- Setting `NEvents` in the test fixes the issue, but then the test runs in the next consistency check.

⇒ Need to fix the tests by adding the minimum of required parameters.

- ❓ Should I fix the tests?
- ❓ When should the tests be fixed? During the review or afterwards?
- ❓ Where should the tests be fixed? What's our workflow?

I would fix them in a branch on  <https://github.com/fiedl/monopole-generator>. Should I mirror the fixes to a feature branch on the svn? What's our svn workflow?

Testing against combo

- On Monday, I've learned that `icecube-simulation` is discontinued and everyone should switch to `icecube-combo`. \Rightarrow Better test against combo rather than simulation.
- ❓ What is Combo? Where can I find documentation?
- `icecube-combo` has a `trunk`, a `stable`, `candidates`, and `releases`.
 - ❓ What is `stable`? Is it pointing to the latest release or is it just `trunk` as soon as the tests are passing?
 - ❓ How often are there new releases? How long are releases supported? By *supported* I mean that they are supposed to work when installing on a fresh system, i.e. they get patches when something upstream (boost, ...) would break them.
 - ❓ Is there already CI in place for `trunk`, `stable` and `candidates`? I wasn't sure on <http://builds.icecube.wisc.edu>.
 - ❓ How can I find the version numbers of projects included within a combo release? For example: The version of `clsim` that is included in `icecube-combo-V00-00-00-RC2`? From the `src/clsim/RELEASE_NOTES` it looks like there is code from the `clsim trunk` inside `icecube-combo-V00-00-00-RC2` that has not been inside a `clsim` release.

Testing against combo with github actions

- Github actions will be released on 13 November 2019.
- With a beta account, I've already setup:
 - <https://github.com/fiedl/icecube-combo-install> — builds icecube-combo on ubuntu and macOS
 - <https://github.com/fiedl/monopole-generator-install> — builds and tests the monopole generator against combo.
- ❓ Can I somehow use webhooks to trigger a build when something is pushed to the `trunk` or the `stable` on the svn?

CI results with github actions

- Building icecube-combo

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: ✓	build: ✓	build: failed
ubuntu 18.04	build: ✓	build: ✓	build: failed

How does it fail?

```
# ubuntu
/usr/lib/gcc/x86_64-linux-gnu/7/../../../../x86_64-linux-gnu/libboost_python.so: undefined reference to
↳ 'PyString_Size'
collect2: error: ld returned 1 exit status
make[2]: [bin/clsim-make_safeprimes] Error 1
make[1]: [clsim/CMakeFiles/clsim-make_safeprimes.dir/all] Error 2

# macOS
error: 'dispose' is missing exception specification 'noexcept'
```

- Building `monopole-generator` and `test-bins` against combo
- Monopole-generator python tests
- Monopole-generator cxx tests

CI results with github actions

- Building icecube-combo

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: ✓	build: ✓	build: failed
ubuntu 18.04	build: ✓	build: ✓	build: failed

- Building `monopole-generator` and `test-bins` against combo

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: ✓	build: ✓	?
ubuntu 18.04	build: failed	build: failed	?

How does it fail?

```
Python version mismatch found:
IceTray was compiled with 3.6.8
Currently running with 2.7.15+

Environment not (re)loaded.
[error]Process completed with exit code 2.
```

Probably did something wrong with `env-shell.sh` again. But does work locally.

- Monopole-generator python tests
- Monopole-generator cxx tests

CI results with github actions

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ubuntu 18.04	build: ✓	build: ✓	build: failed

- Building `monopole-generator` and `test-bins` against combo

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: ✓	build: ✓	?
ubuntu 18.04	build: failed	build: failed	?

- Monopole-generator python tests

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: ✓	build: ✓	?
ubuntu 18.04	?	?	?

- Monopole-generator cxx tests

CI results with github actions

- Building icecube-combo

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: ✓	build: ✓	build: failed
ubuntu 18.04	build: ✓	build: ✓	build: failed

- Building `monopole-generator` and `test-bins` against combo

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: ✓	build: ✓	?
ubuntu 18.04	build: failed	build: failed	?

- Monopole-generator python tests

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: ✓	build: ✓	?
ubuntu 18.04	?	?	?

- Monopole-generator cxx tests

	trunk	stable	V00-00-00-RC2
macOS Mojave	build: 4 fail	build: 4 fail	?
ubuntu 18.04	?	?	?

CI results with github actions

- There are warnings like *'Some parts of test disabled until I figure out what the actual avalues here should be'* in the tests. ⇒ I'll ignore them for now, until I'm familiar with the tool.

Repository migration

- Currently the source code lives in:
<http://code.icecube.wisc.edu/svn/projects/monopole-generator>
<https://github.com/fiedl/monopole-generator>
- ❓ What's the migration plan to get it to
<https://github.com/icecubeopensource/monopole-generator>
- ❓ What about <https://github.com/icecube/> Can't we get this?

Thanks for your attention!

Any input you might have is welcome:

<https://github.com/fiedl/monopole-generator/issues>

<https://github.com/fiedl/monopole-generator-install/issues>

<https://github.com/fiedl/icecube-combo-install/issues>

`sebastian.fiedlschuster@fau.de`

Slack: @fiedl