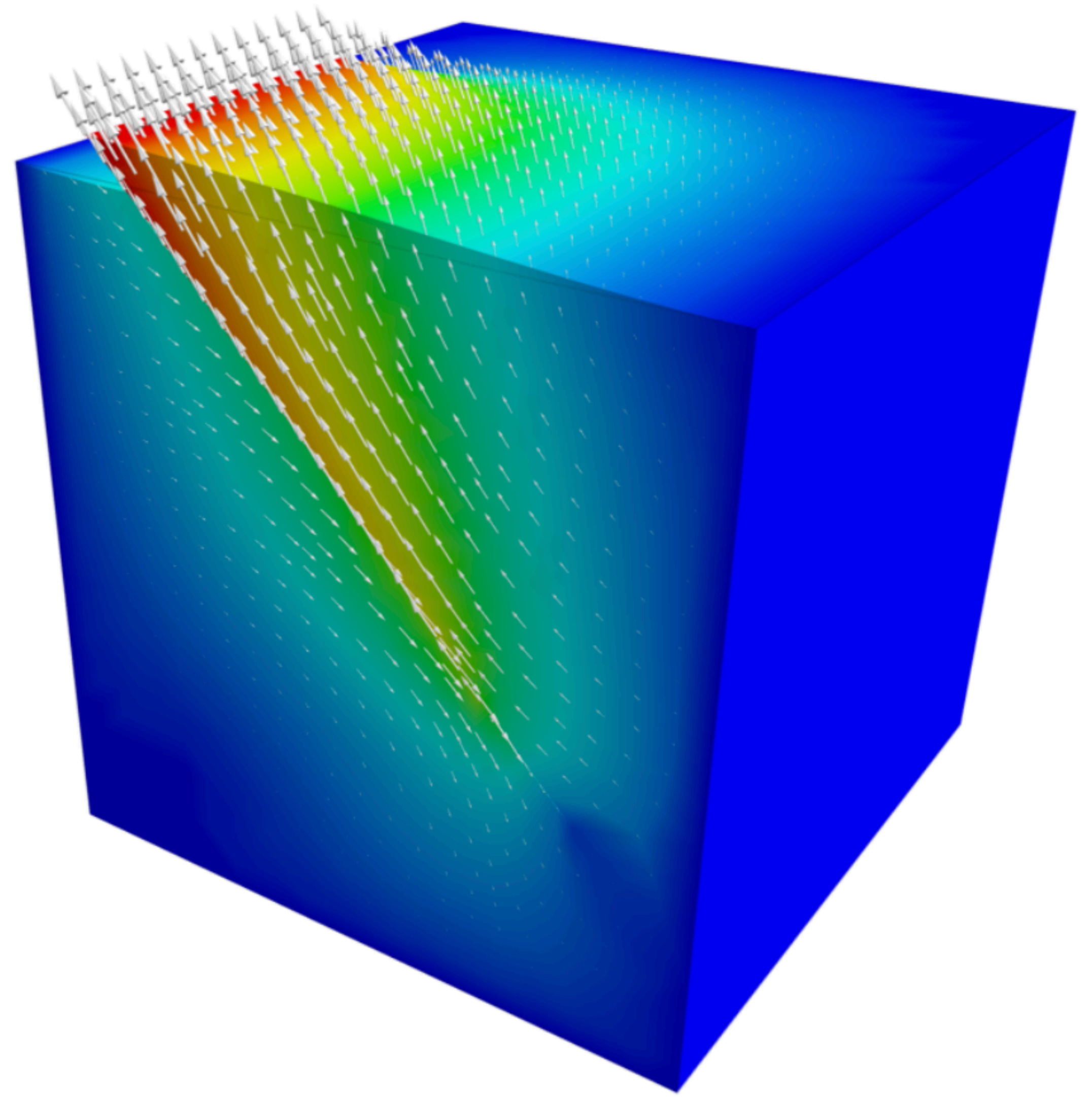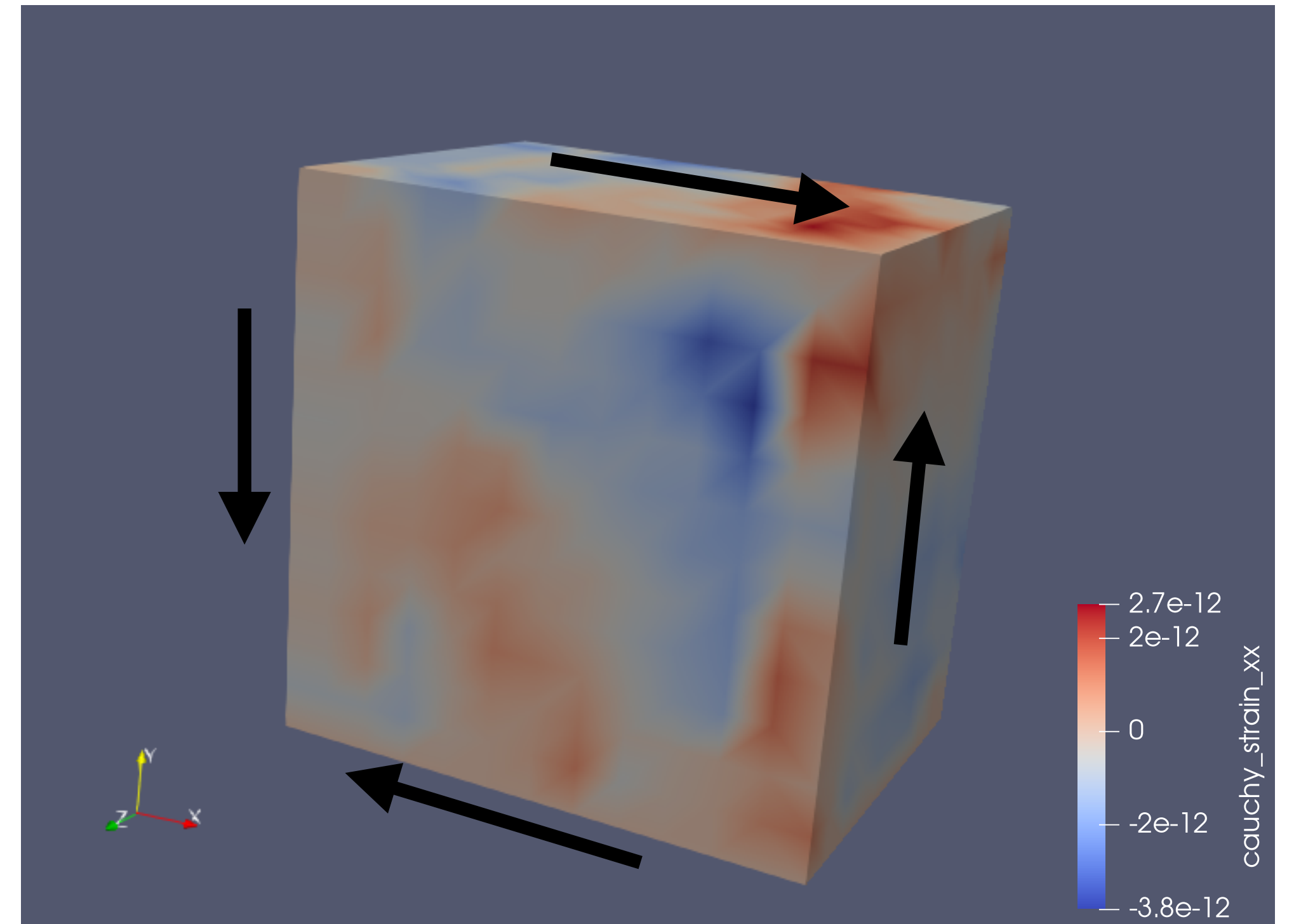# Community Contribution

Ren Stengel, Fall 2021 CSCI 5636

Project goals

- Implement Pylith example 3D box step 03 in Ratel (library-ized libCEED solid mechanics mini-app

  - Involved adding a quasi static solver to Ratel

  - Required modifying how boundary conditions

Barriers to contributions

PyLith development version was difficult to install

```
docker run -u root -ti --volumes-from pylith-data
registry.gitlab.com/cig-pylith/pylith_installer/pylith-devenv
apt-get update && apt-get install -y wget
apt install libffi-dev
apt-get install -y pkg-config
apt install zlib1g
apt-get install -y libcurl4-openssl-dev
pip install --upgrade numpy
apt-get install -y libssl-dev
apt-get install -y libtiff-dev
mkdir -p src/pylith
cd src/pylith/
git clone git@github.com:geodynamics/pylith_installer.git
cd
mkdir -p build/pylith
git clone git@github.com:geodynamics/autoconf_cig.git
git clone git@github.com:geodynamics/pylith.git
cp autoconf_cig/* src/pylith/pylith_installer/m4/
cd src/pylith/pylith_installer/
autoreconf -s -i
cd
sh config.sh
source setup.sh
change cig/Makefile to have main branch instead of master, line
392
make
```
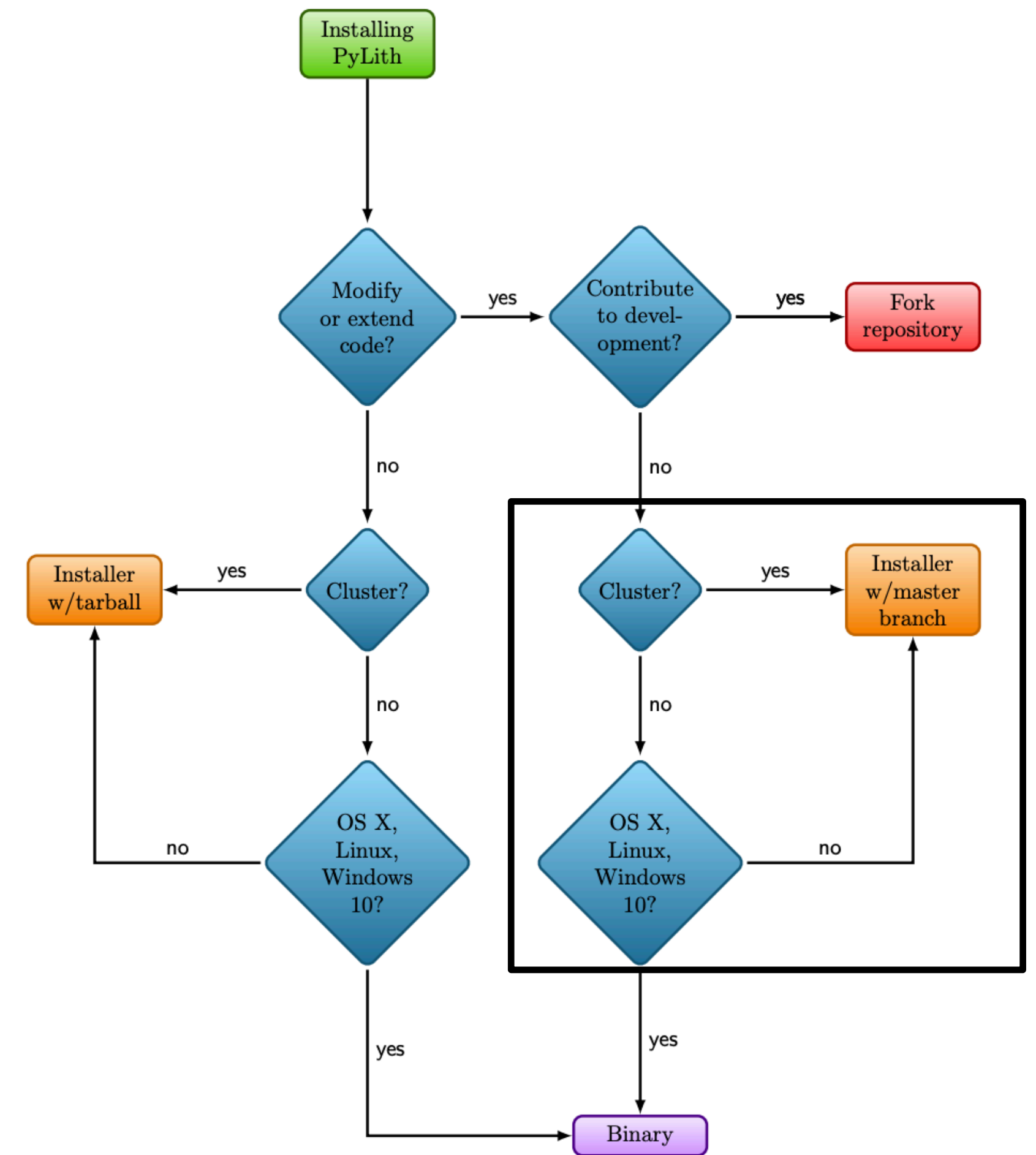

Figure 3.1: Guide for selecting the appropriate installation choice based on a hardware and intended use. The installation options are discussed in more detail in the following sections.

Barriers to contributions

Ratel is a new library

- Since it's only a few months old, software design is still being sorted out
- Adding new features takes longer since new design decisions require discussion
- Ratel is built on top of PETSc and libCEED so figuring out where changes need to be made can take awhile

Meme courtesy of Jed Brown

"Everything in HPC takes longer than you think it will" - Jed Brown, 12/01/2021

Relevant links and references

- https://community.geodynamics.org/

- https://wiki.geodynamics.org/software:pylith:start

- https://geodynamics.org/cig/software/pylith/

- Aagaard, B., Knepley, M., Williams C., (2017) PyLith v2.2.1, Computational Infrastructure for Geodynamics, doi: 10.5281/zenodo.886600, url: https://geodynamics.org.cig/software/pylith

- https://gitlab.com/micromorph/ratel