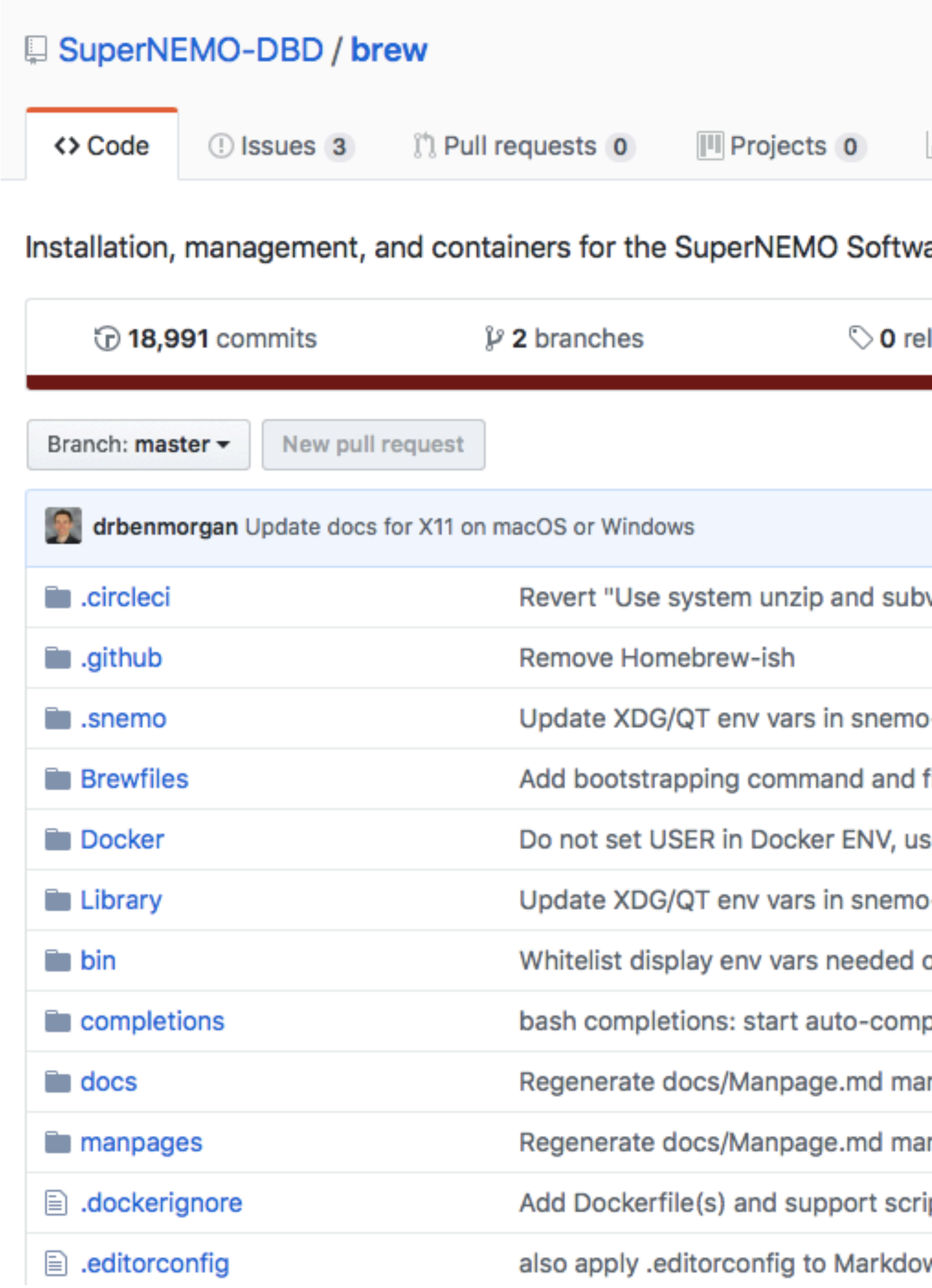
Spack for SuperNEMO

Ben Morgan

Homebrew to Spack

- Homebrew going full binary and fewer build/configure options
- Binaries are “full fat”, so can quickly bloat an install (particularly X11/GL)
- As experiment moves towards production with updates to core software, will need more than simple rolling release
- **Spack chosen as minimally invasive replacement**



SuperNEMO-DBD / **brew**

Installation, management, and containers for the SuperNEMO Softwa

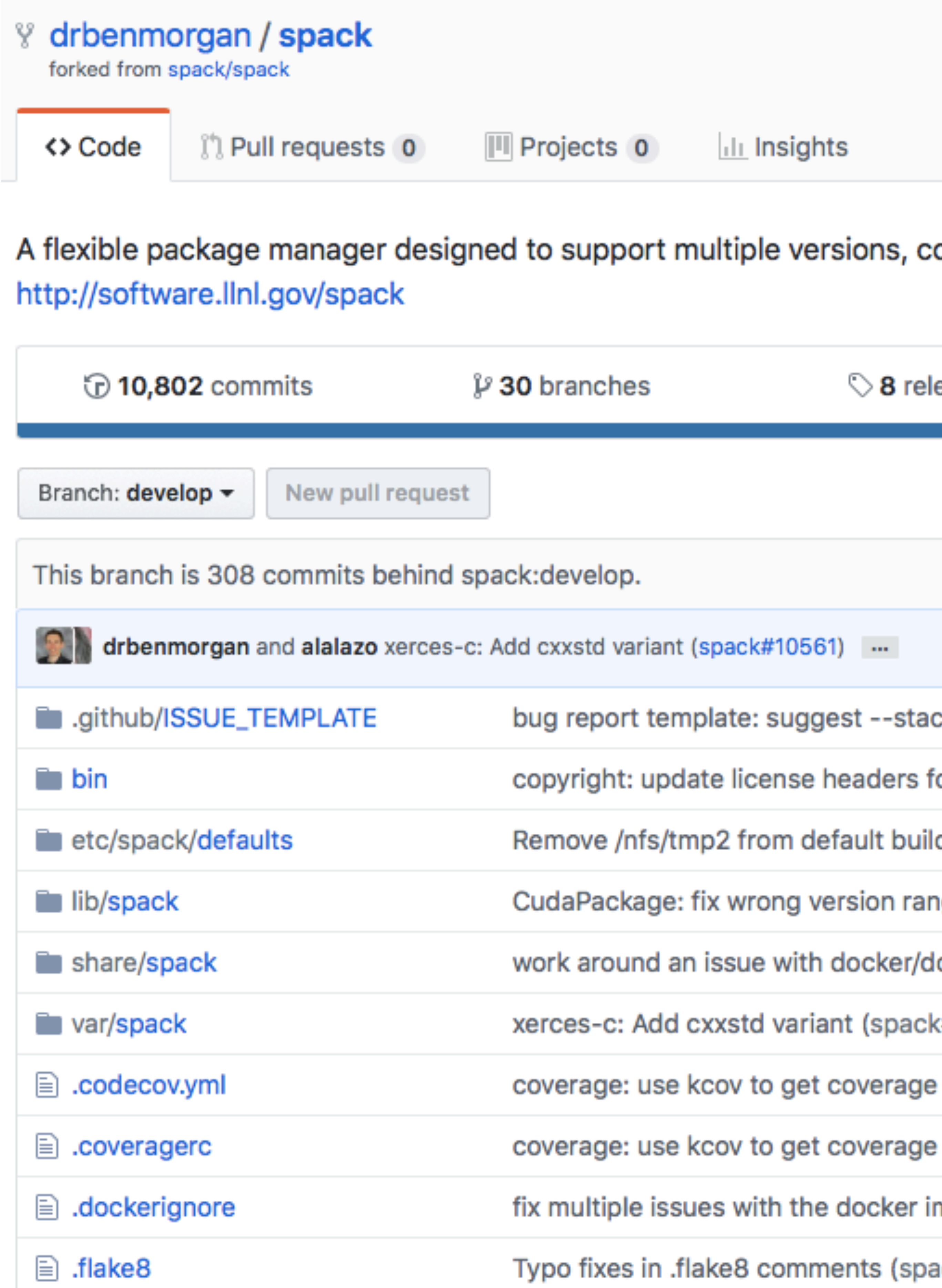
18,991 commits | **2** branches | **0** rel

drbenmorgan Update docs for X11 on macOS or Windows

.circleci	Revert "Use system unzip and subv
.github	Remove Homebrew-ish
.snemo	Update XDG/QT env vars in snemo
Brewfiles	Add bootstrapping command and f
Docker	Do not set USER in Docker ENV, us
Library	Update XDG/QT env vars in snemo
bin	Whitelist display env vars needed c
completions	bash completions: start auto-comp
docs	Regenerate docs/Manpage.md man
manpages	Regenerate docs/Manpage.md man
.dockerignore	Add Dockerfile(s) and support scrip
.editorconfig	also apply .editorconfig to Markdov

Spack Itself

- Follow what others have done and fork Spack
  - NB: all done on my own GitHub for now
- Test systems are CentOS7, Ubuntu 18.04, macOS Mojave
- Spack config by hand and confined to packages.yaml at Site Scope
  - Use system openssl, X11, GL, perl, etc on Linux



drbenmorgan / spack
forked from spack/spack

A flexible package manager designed to support multiple versions, co
http://software.llnl.gov/spack

10,802 commits   30 branches   8 rele

This branch is 308 commits behind spack:develop.

drbenmorgan and alalazo xerces-c: Add cxxstd variant (spack#10561) ...

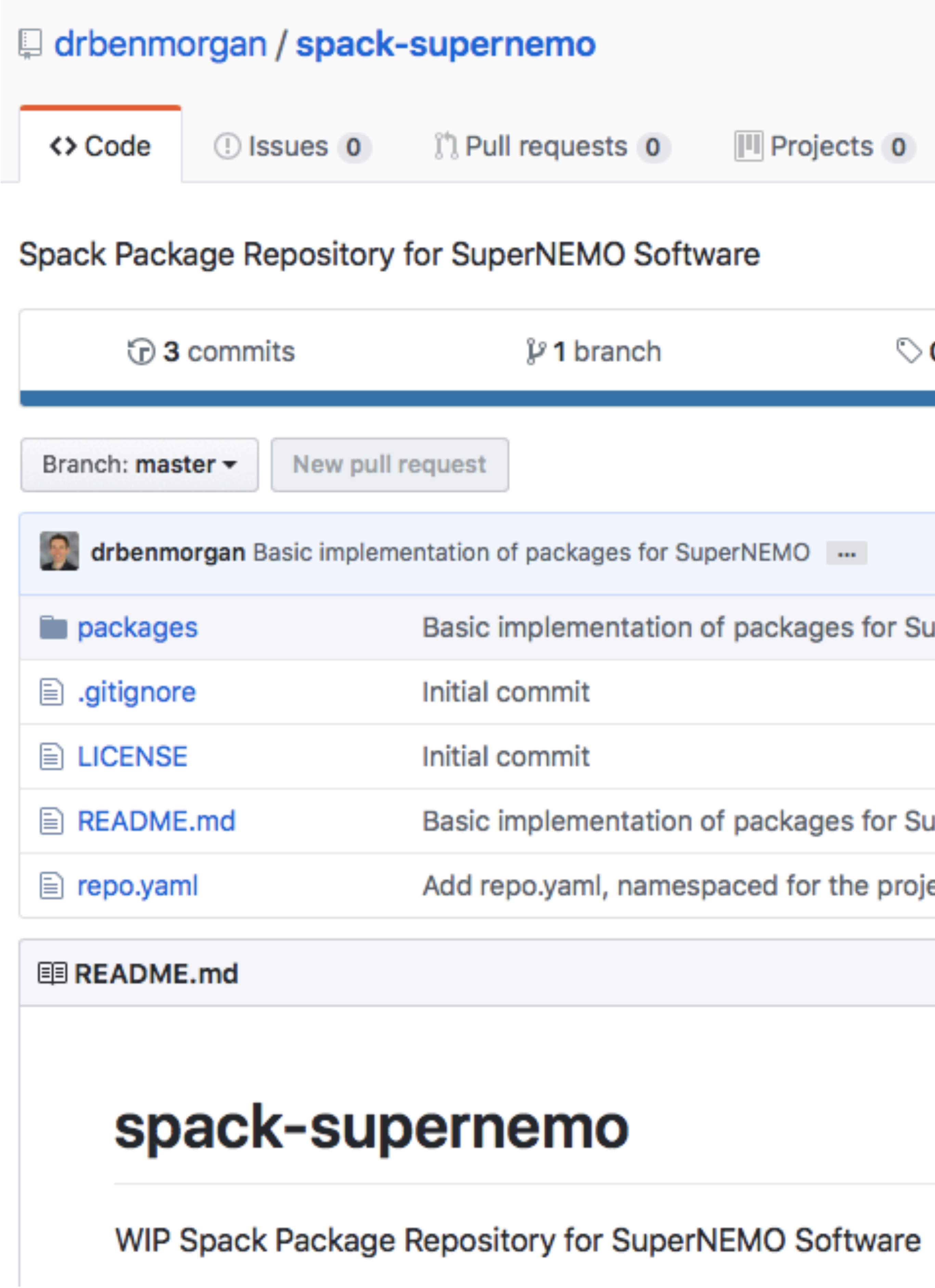
.github/ISSUE_TEMPLATE	bug report template: suggest --stac
bin	copyright: update license headers fo
etc/spack/defaults	Remove /nfs/tmp2 from default builc
lib/spack	CudaPackage: fix wrong version ran
share/spack	work around an issue with docker/do
var/spack	xerces-c: Add cxxstd variant (spack
.codecov.yml	coverage: use kcov to get coverage
.coveragerc	coverage: use kcov to get coverage
.dockerignore	fix multiple issues with the docker in
.flake8	Typo fixes in .flake8 comments (spa

Package Repo

- Holds SuperNEMO specific stuff, plus … reinventions of some core packages (e.g. ROOT, Geant4)

- **Only done this way to reproduce the recipes we have in Homebrew**

- Repo added manually, but…
    - Add package(s) in spack builtins (any advice?)
    - https://github.com/spack/spack/issues/4934



drbenmorgan / **spack-supernemo**

Spack Package Repository for SuperNEMO Software

3 commits **1** branch

drbenmorgan Basic implementation of packages for SuperNEMO …

packages	Basic implementation of packages for Su
.gitignore	Initial commit
LICENSE	Initial commit
README.md	Basic implementation of packages for Su
repo.yaml	Add repo.yaml, namespaced for the proje

README.md

spack-supernemo

WIP Spack Package Repository for SuperNEMO Software

Installation Experience

- **It works!**
- Only teething issues were:
  - On macOS when full Xcode was needed (confined to Qt5)
  - Some cxxstd, install issues with specific packages but discussed on Slack, and submitted as PRs to Spack when appropriate

Use Experience

- Limited to “spack load -r falaise”
- Works fine on Linux, on macOS some issues with
  - DYLD_LIBRARY_PATH masking dependencies, but unsetting it fixes things
  - LIBRARY_PATH causing issues when building packages with CMake (changes RPath behaviour), again unsetting it fixes things
  - Needs further tests and checks
- **TODO: use of metapackages, views, and environments**

Install/Use in Docker/Singularity

- Currently in a very pre-alpha/hacked state, but very easy to create the image
    - Some, but very limited use of build caches here…
- Do end up with quite a large image, but likely several improvements possible:
    - Geant4 data shipped in Image (use CVMFS, or make the simulation component optional)
    - Use multistage builds and buildcache to remove build-only dependencies
- Certainly, Singularity+Homebrew is working very well for our users, so Singularity+Spack will be a priority

Upcoming Work

- Test driving views, environments, and more on CI/buildcaches
- Test driving spack-dev (apologies to Chris Green for lack of progress here)
  - Wearing HSF/DUNE/SuperNEMO hats at the same time!
- Spack chains and external commands
- Hosting for CVMFS (less packaging, more answering the question “where does a small experiment go for CVMFS hosting”?)