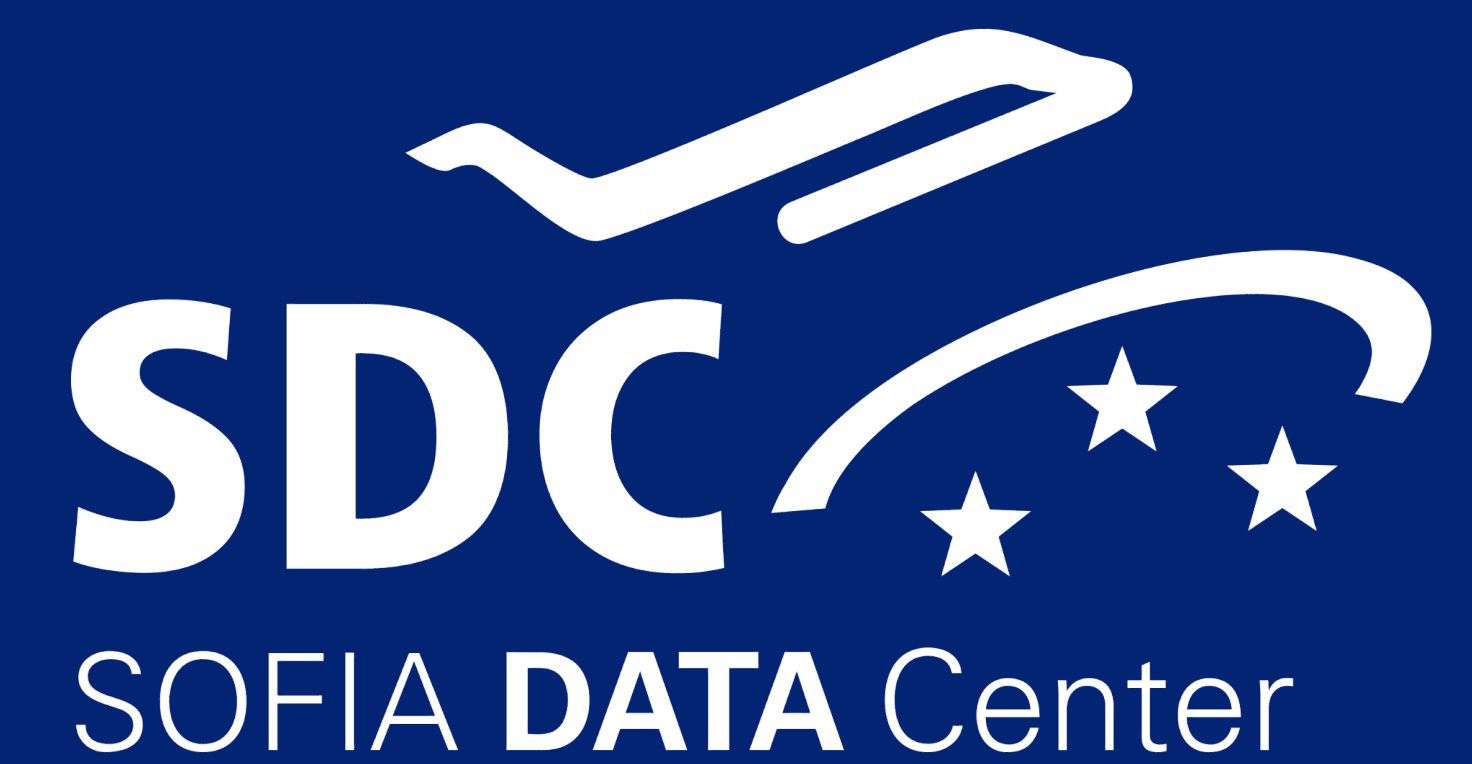




Maintaining SOFIA Redux



Benjamin Greiner, Aaron Bryant, Jonas Früh, Michael Hütwohl, Christof Iserlohe, Thomas Keilig, Bastian Knieling, Alfred Krabbe, Karsten Schindler, Bernhard Schulz, Manuel Wiedemann, Oliver Zeile

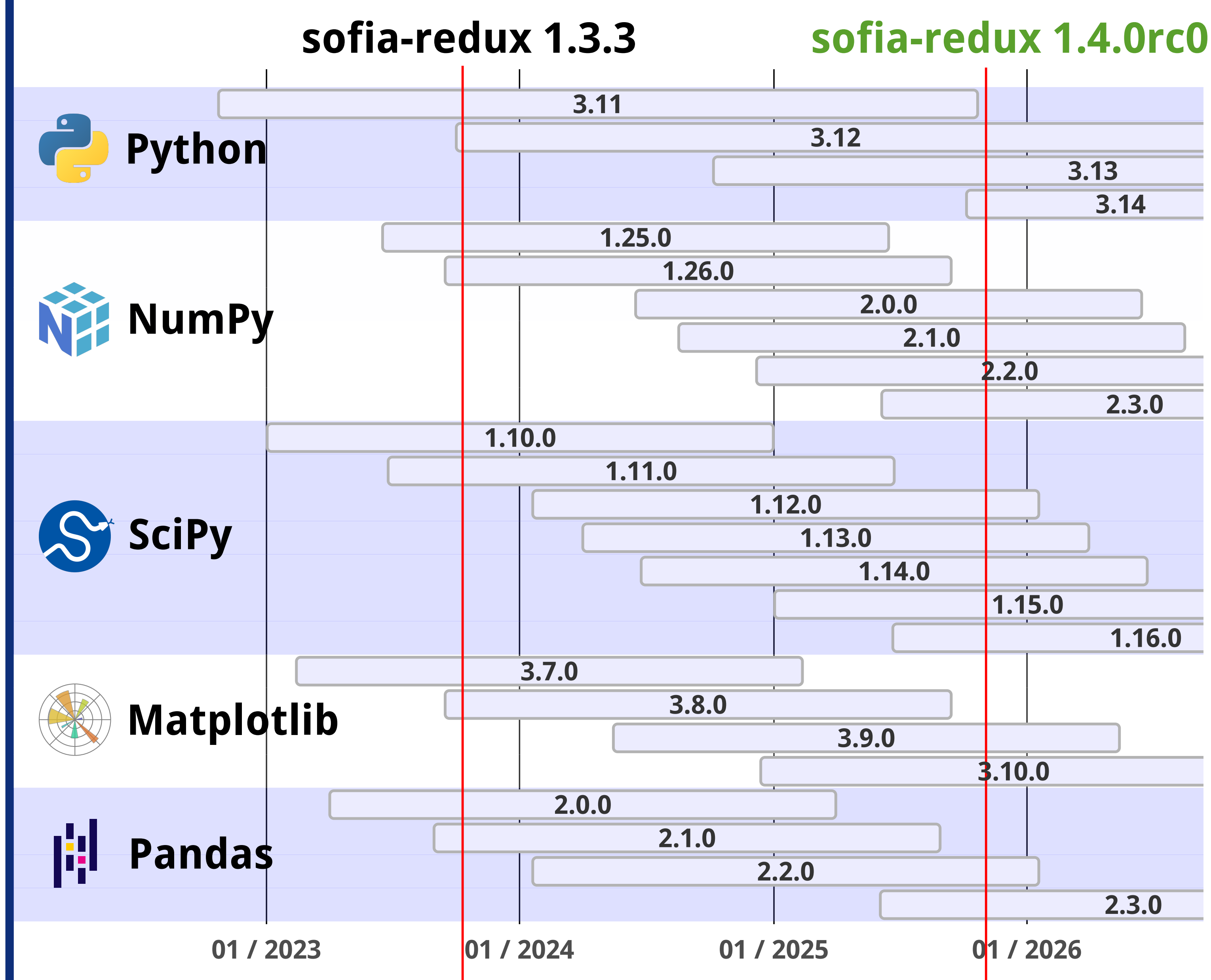
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The Stratospheric Observatory for Infrared Astronomy (SOFIA) has gathered a considerable amount of scientific data between first light in May 2010 to the final observing flight in September 2022. The joint mission by NASA and DLR produced a diverse set of astronomical data from several science instruments.

While the mission was still active, the SOFIA Data Processing Software Team worked in cooperation with experts from the science instrument teams in order to write and maintain the reduction software suite "SOFIA Redux". The framework written in Python provides general purpose data reduction functions and dedicated modules for the SOFIA instruments EXES, FIFI-LS, FLITECAM, FORCAST, and HAWC+. It was continually improved and maintained until the end of the mission, with a most recent release of patch updates in August 2023. The SOFIA Data Center has forked the open source code base from GitHub and continues to keep the code fresh, accommodating API changes for underlying Python libraries. Furthermore, new features and improved reduction techniques are being implemented into the instrument reduction pipelines (see *SDC FIFI-LS poster from A. Bryant*)

Fighting Software Rot / Dependency Drift

The Scientific Python Ecosystem Coordination document **SPEC 0** defines minimum supported dependency versions. The old sofia-redux has fallen out of the windows.



 **Astropy** (currently **v7.1.1**) guarantees stable major release and deprecation periods of 1 year (APE21)

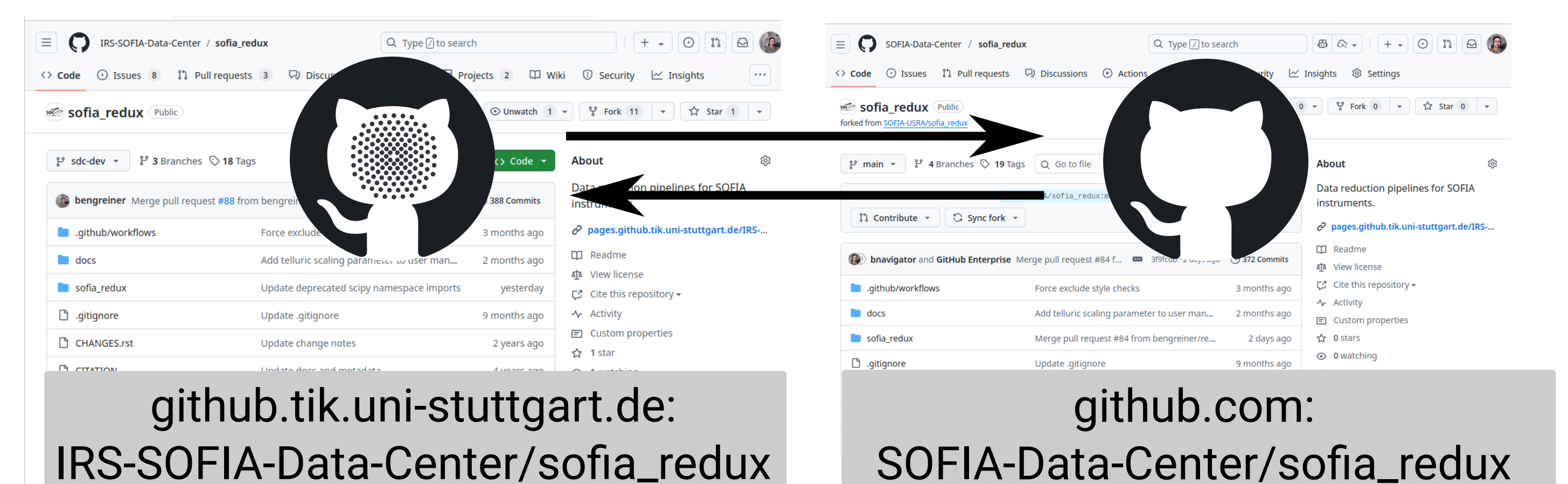
 Moved from PyQt5 to **PyQt6**

 pyds9 replaced by **ds9samp** for interaction with SAOImageDS9

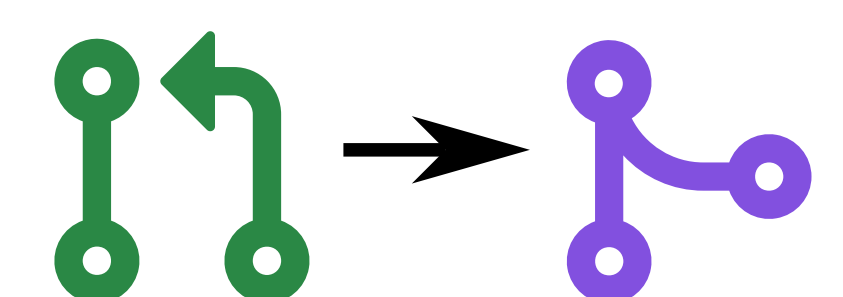
SDC's sofia-redux 1.4.0rc0 is up to date with current APIs

Development Workflow

The SDC's development takes place on an internal instance but is synced to the public repository



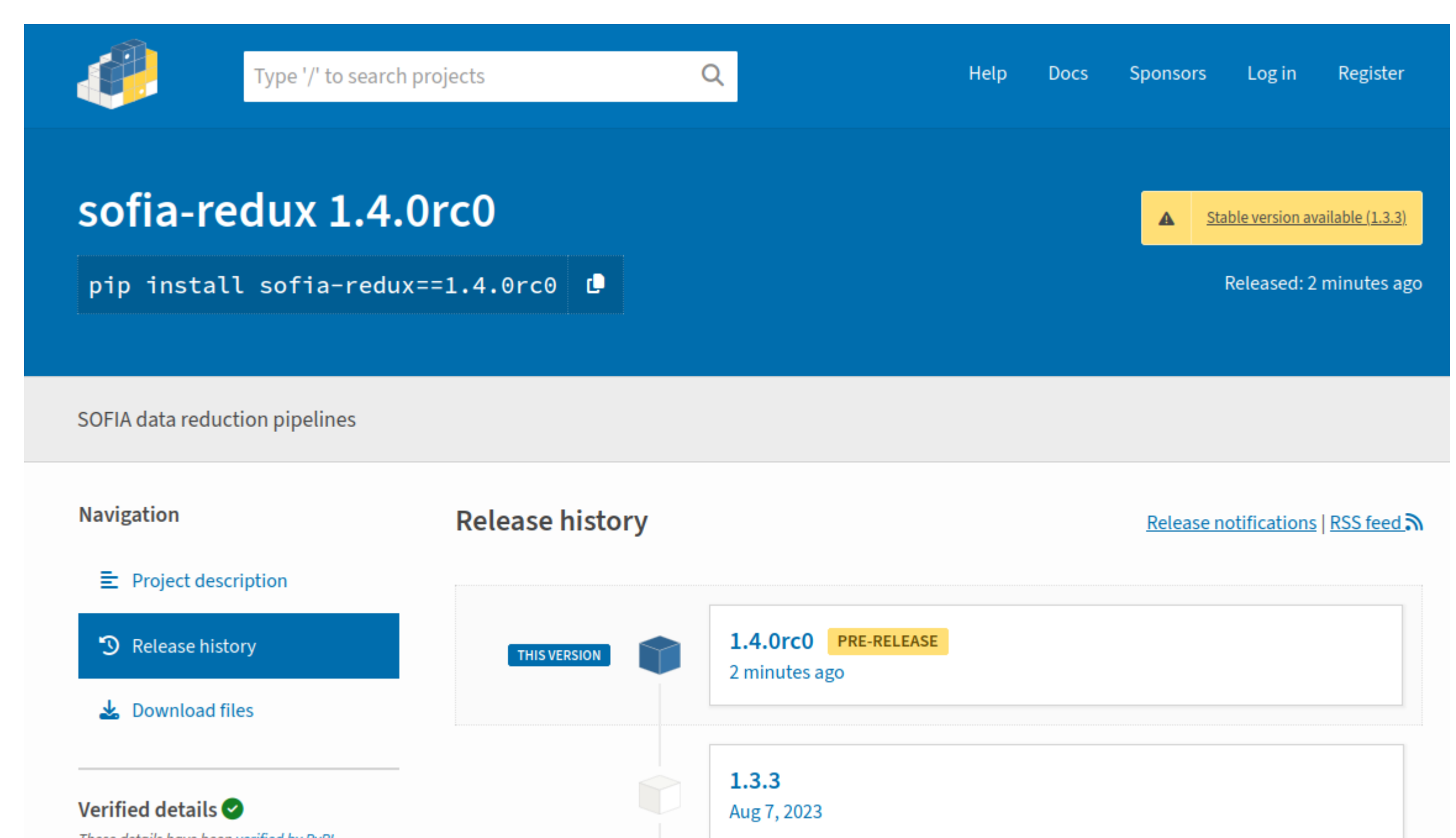
- Git statistics:
- More than 200 commits
- More than 50 pull requests
- 285 files changed
- 9912 insertions(+)
- 4982 deletions(-)



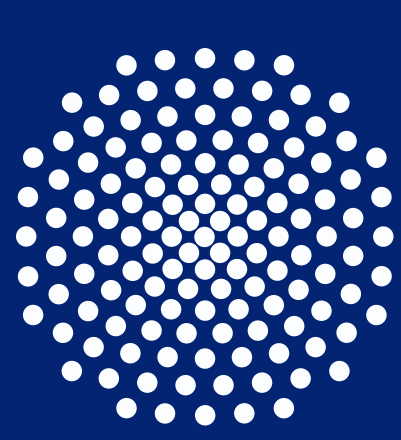
Contributions welcome!

- GitHub Actions CI/CD workflows:
- Unit tests with current and minimum dependencies
- Automated Sphinx documentation
- Manuals
- API docs

sofia-redux 1.4.0rc0 is published on PyPI under the established handle sofia-redux



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