

Astrophysics Source Code Library, version 3.1

Alice Allen¹, G. Bruce Berriman², Kimberly DuPrie³, Jessica Mink⁴, Robert Nemiroff⁵, Thomas Robitaille⁶, Lior Shamir⁷, Keith Shortridge⁸, Mark Taylor⁹, Peter Teuben¹⁰, and John Wallin¹¹

¹*Astrophysics Source Code Library*

²*Infrared Processing and Analysis Center, California Institute of Technology*

³*Space Telescope Science Institute*

⁴*Harvard-Smithsonian Center for Astrophysics*

⁵*Michigan Technological University*

⁶*Max Planck Institute for Astronomy*

⁷*Lawrence Technological University*

⁸*Australian Astronomical Observatory*

⁹*University of Bristol*

¹⁰*University of Maryland*

¹¹*Middle Tennessee State University*

Abstract. The Astrophysics Source Code Library, started in 1999, moved to a new infrastructure in 2014 with enhancements developed in response to feedback from users and publishers. With one-click author search, flexible browsing options, and a simple form-based submission process, the ASCL offers a better experience for users. Since the introduction of the new platform in mid-2014, users have submitted over 100 codes, more than in all previous years combined. The ASCL now houses information on more than 1,100 codes and its entries are increasingly used for citation, with over 17% of its entries cited, up from 7.5% in January of last year. Exciting opportunities to collaborate have been presented to the ASCL, including participation in the 3rd Workshop on Sustainable Software for Science: Practice and Experiences and a request from the AAS to form a special interest group on software publishing. This poster showed some of the new capabilities of the ASCL, its growth, and recent outreach.

1. Introduction

The Astrophysics Source Code Library (ASCL)¹ is a free online citable registry for source codes that are used in refereed astronomy and astrophysics research. One of its drivers is the desire to make software used in research more discoverable to increase

¹<http://ascl.net/>

the transparency and falsifiability of research. The ASCL also supports software reuse and advocates strongly for better citation of software and recognition of its contribution to science. The ASCL has over 1,100 entries and is indexed by the SAO/NASA Astrophysics Data System (ADS) and will soon be indexed by Thomson-Reuters' Data Citation Index.² Though the ASCL is primarily a registry, it can and does serve as a repository for some software.

2. New capabilities

With a move to a new infrastructure in July 2014, the ASCL gained new capabilities and flexibility that allows for continual improvement, including a listing of the most recent additions to the ASCL on the home page, one-click author search similar to that on other sites astronomers use, and more flexible browsing. We attribute an increase in software author submissions in part to the easy-to-use submissions form that was built into the new infrastructure; it also offers significant improvements for administrators, including improved and more flexible reporting that makes it easier to collaborate with indexers, automatic bibcode and ascl ID generation, and tracking of information that previously was stored separately by the editors.

In October 2015, the ASCL released a form for suggesting changes and additions to a software entry to help satisfy additional needs identified by users, such as listing the authors' preferred citation method for a code and disambiguating software description papers from the research for which a code was used.

3. Growth

Since 2010, the ASCL has added an average of over 200 codes per year, and as mentioned above, we have seen an increase in the number of author submissions. The number of views of ASCL entries in ADS is up 76% in 2015 so far over 2014, and over 17% of ASCL entries have been cited, up from 7.5% in January of 2014. Over 30 journals have citations to ASCL entries, demonstrating that publishers are allowing, and in many cases, are advocating, the use of the ASCL to cite some codes, particularly software that does not have a paper describing it. Journals with citations to the ASCL include *Monthly Notices of the Royal Astronomical Society*, *Nature*, *The Astronomical Journal*, *Astronomy and Astrophysics*, *Science*, *Astronomy and Computing*, *The Astrophysical Journal*, and *Computational Astrophysics and Cosmology*. As shown in Figure 1, as of early October 2014, 84% of citations to ASCL entries came from four sources.

4. Professional outreach

The ASCL engages the astronomy community through social media, presentations, discussion sessions, articles, personal correspondence, and news items on its own website and elsewhere. In addition to participating in ADASS XXV, the ASCL has in the past twelve months participated in ADASS XXIV in Calgary, astronomy in Chicago, the 225th AAS meeting in January 2015, the University of Maryland Graduate Resources

²http://wokininfo.com/products_tools/multidisciplinary/dci/

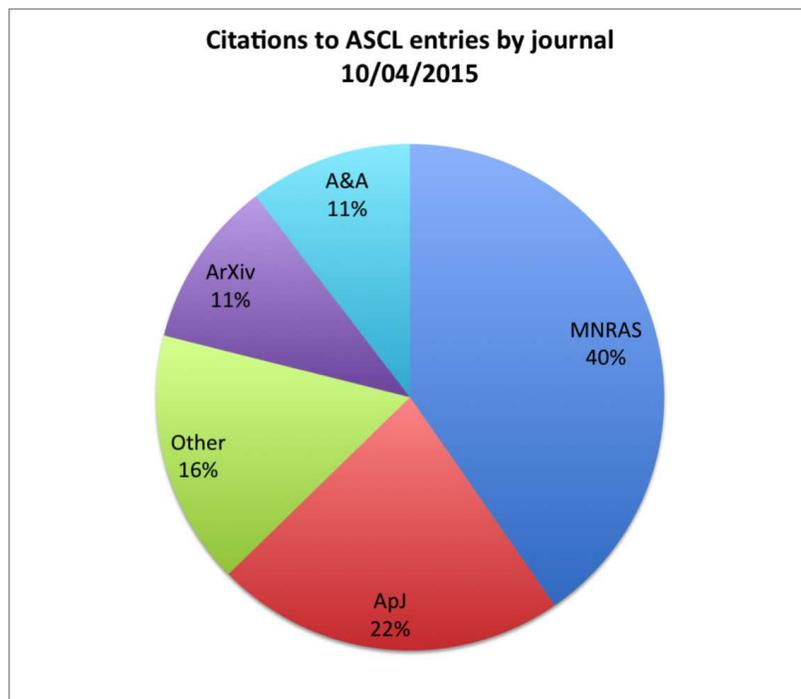


Figure 1. Citations to ASCL entries by journals.

Advancing Diversity with Maryland Astronomy and Physics (GRAD-MAP) Spring Symposium, the 3rd DC/MD/VA Astrophysics Meeting in Washington, DC, Python in Astronomy in Leiden, and has presented at the University of Massachusetts (Lowell). We also reach beyond astronomy and have participated in the 2nd and 3rd Workshops on Sustainable Software for Science: Practice and Experiences (WSSSPE) in New Orleans and Boulder respectively and presented at the U.S. National Institute of Standards and Technology in Gaithersburg, MD. Future outreach events include a presentation at the U.S. National Library of Medicine in Bethesda, MD in early 2016, and we seek additional outreach opportunities outside the U.S.

5. Conclusion

ASCL is changing to better meet the needs of the community while still registering software and advocating for better citation of codes and recognition of those who write it.

A. Appendix

Over 1,100 codes! **Astrophysics Source Code Library, ver 3.0**
<http://ascl.net>
Free online citable registry of astrophysics source codes

Ten newest codes on home page

More browsing options

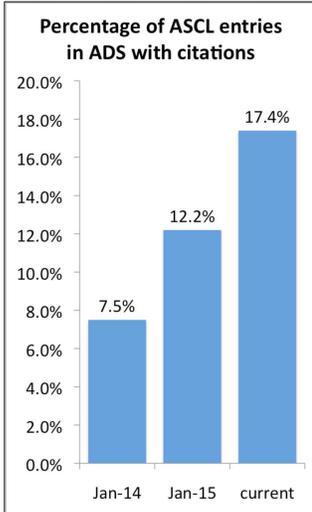
Link for changes or additions to record

ASCL Code Record

ASCL Code Record

Cited in MNRAS, A&A, ApJ, PASP, PASJ, and other journals!

ADS-trackable citations!



Searching for codes credited to 'Portegies Zwart, Simon F.'

One-click expandable author search

Easy submissions form!

Recent outreach presentations

- Working towards Sustainable Software for Science 2 & 3 (New Orleans, LA and Boulder, CO)
- University of Massachusetts (Lowell, MA)
- 3rd DC/MD/VA Summer Astrophysics Meeting (Washington, DC)
- Python in Astronomy (Leiden, Netherlands)
- National Institute of Standards and Technology (Gaithersburg, MD)
- American Astronomical Society (Seattle, WA)
- .astronomy (Chicago, IL)

Image: Hubble Heritage

Alice Allen (ASCL), Bruce Berriman (IPAC, Caltech), Kimberly DuPrie (STScI/ASCL), Jessica D. Mink (SAO), Robert J. Nemiroff (MTU), Judy Schmidt (ASCL), Lior Shamir (LTU), Keith Shortridge (AAO), Mark B. Taylor (UBristol), Peter J. Teuben (UMD), John F. Wallin (MTSU)

Figure 2. ASCL poster displayed at ADASS XXV