Make your research software famous!
(or at least discoverable)

Alice Allen
Astrophysics Source Code Library (ASCL)/UMD
@owlice  @asclnet  aallen@ascl.net
Abstract

Abstract: Source codes are increasingly important for the advancement of science in general and astrophysics in particular. Journal articles detail the general logic behind new results and ideas, but often the source codes that enable these results remain hidden from public view. In this presentation, I will discuss our recent study on the availability of source codes used for published research and how this affects the transparency and reproducibility of astro research; I will also share initial results of our recent work on making NASA astro research software easier to find and to cite. I will cover what the Astrophysics Source Code Library (ASCL, ascl.net) is and the benefits of submitting your software to it, how ASCL entries are indexed by ADS, the links between literature and software entries, and how an ASCL ID can be used for citing your code. I will also share some of the ways journals are changing to include and recognize the contribution software makes to our discipline.
Software is the most used instrument in astronomy
Schroedinger’s Code

It’s not until you open the box that you know whether the code is alive or dead.

We opened the boxes...
Schroedinger’s Code

The good news: 58% were alive!

The rest…

Image credits: tisKapot, Peter Kaptein, Olivia Cales
“... anything less than release of actual source code is an indefensible approach for any scientific results that depend on computation...”

Code release improves research

...“a hidden coding error fueled a seven-year dispute between two of condensed matter’s top theorists.” Physics Today, 22 Aug 2018

...a change in a code researchers had not noticed led to incorrect results

HEASoft

A Unified Release of the FTOOLS and XANADU Software Packages

The current version of HEAsot is 6.25

(23 October 2018)

XANADU: High-level, multi-mission tools for X-ray astronomical spectral, timing, and imaging data analysis
FTOOLS: General and mission-specific tools to manipulate FITS files
FITSIO: Core library responsible for reading and writing FITS files (distributed with FTOOLS)
Changing this... 😞

...to this! 🤗

Your search returned 0 results.

Your search returned 55 results with 155 total citations.
What is the ASCL?

Registry of codes used in research
Can serve as a repository
Indexed by ADS, Web of Science, and other indexers

ascl.net
ASCL registers codes used in
- refereed articles
- articles submitted for refereeing
- accepted PhD theses

AND which has
- source code available for download without barriers
Live dangerously; do a live demo
Registering your software gets you …

… a unique identifier
… entries about your software in ADS (Web of Science, Google Scholar…)
… a trackable citation method
… increased discoverability
Submit your code!

Use handy online form
Email info to editor@ascl.net
Submit via CodeMeta.JSON file
Already in ASCL?

- Yes, Editor sends submitter ASCL ID/link
- No, Meets ASCL criteria?

- Yes, Conforms to style guide?
  - Yes, Editor assigns ID, publishes entry, emails submitter, the code is citable in trackable way, birds sing, and science is saved!!
  - No, Editor sequesters entry and edits submission
- No, Editor requests additional info

- No, Editor sequesters entry
Indexing

ADS: weekly
Web of Science: quarterly
Google: almost as it happens
Google Scholar: no idea
ADS search results

Quick Field: Author, First Author, Abstract

Start New Search

doctype:software keyword:nasa

Your search returned 55 results with 155 total citations
Code entry

- Code site: [https://spdf.gsfc.nasa.gov](https://spdf.gsfc.nasa.gov)
- Appears in: [http://adsabs.harvard.edu](http://adsabs.harvard.edu)
- Bibcode: 2012ascl.soft07008C

Keyword search page

- **Keywords:** NASA
- **Codes associated with 'NASA':**
  - [asc1:9909.004] CMBFAST: A microwave anisotropy
    Seljak, U.; Zaldarriaga, M.
open source project and contributions of new tasks or enhance existing tasks by the community are welcome.

Publication:  Astrophysics Source Code Library, record ascl:1208.004

Pub Date:  August 2012

Bibcode:  2012ascl.soft08004S

Keywords:  Software; NASA
GREATER RECOGNITION
By registering your code...

... your code is discoverable!
... ADS links your code to research it enabled, and research to your code
... your code is citable!
... ADS tracks citations to your code from literature it indexes
ASCL citation format

Barnes, J. E., 2011, Astrophysics Source Code Library, record ascl:1102.027

OR

Barnes, J. E., 2011, ZENO, Astrophysics Source Code Library, record ascl:1102.027
Citation methods

Software itself via ASCL, JOSS, DOI from archiving service

Article using or describing the code
GitHub, SourceForge, BitBucket repo URL **NO!**
URL to personal institutional page **NO!**
URLs in general **NO!**
New journals

2012 – JORS
  Journal of Open Research Software

2013 - A&C
  Astronomy and Computing

2014 – ComAC
  Computational Astrophysics and Cosmology

2015 - SoftX
  Software X

2016 – JOSS
  Journal of Open Source Software

2017 – RNAAS
  Research Notes of the AAS
Changes in existing journals

Encourage or require software citations

Allow software articles without research results

Encourage or require code release
Community resources

More places to put software and information about software

Indexers capture/track software citations

Broader efforts cross disciplines and influence others
Using ADS to find software

Doctype field value “software”

Can be combined with other fields, such as keyword
Secrets of the ASCL!

Random code link on Browse page
Author name links can pull up other codes
“Short name” can be used to pull up an entry
Can download all ASCL public data
RSS feed for news items
List o’ articles and posts about software
You can change the world!*  

Release your software  
Specify how you want your software cited  
   Make this info easy to find!  
Assign a license  
Register your code  
Archive your code  
Cite other people’s codes well  

* At least a small part of it, which is still cool!