Using the Astrophysics Source Code Library

Find, cite, download,
parse, study, and submit

You will learn:

- what the ASCL is
- common and alternate ways to bring up ASCL records
- how to find software using different methods and tools
- how citation tracking and preferred citation work
- how to find a code's preferred citation (where one exists)
- how to create a metadata file that lets others how to cite your code
- the best place(s) to put preferred citation information

If time permits, we'll also cover:

- what metadata is contained in the ASCL and how it is structured
- how to download the ASCL's contents for your own projects
- how to submit software to the ASCL
- the differences between ASCL and ZENODO, and how, why, and when to submit to each

Browser tabs

https://ascl.net – Astrophysics Source Code Library (ASCL)

https://ui.adsabs.harvard.edu/ – NASA's Astrophysics Data System (ADS)

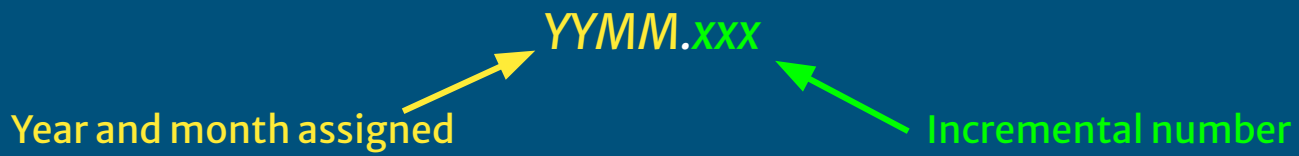
https://www.google.com/ – Google

The ASCL is

Software registry and repository of software used in *refereed* research

Generally links to the software's download site

Provides unique identifier (the ASCL ID) with the structure *ascl:YYMM.xxx*



ascl.net

Welcome to the ASCL

The Astrophysics Source Code Library (ASCL) is a free online registry for source codes of interest to astronomers and astrophysicists, including solar system astronomers, and lists codes that have been used in research that has appeared in, or been submitted to, peer-reviewed publications. The ASCL is indexed by the SAO/NASA Astrophysics Data System (ADS) and Web of Science and is citable by using the unique ascl ID assigned to each code. The ascl ID can be used to link to the code entry by prefacing the number with ascl.net (*i.e.*, ascl.net/1201.001).

Most Recently Added Codes

2022 Oct 30

[ascl:2210.030] cuvarbase: fast period finding utilities for GPUs

Hoffman, John

cuvarbase provides a Python library for performing period finding (Lomb-Scargle, Phase Dispersion Minimization, Conditional Entropy, Box-least squares) on astronomical time-series datasets. Speedups over CPU implementations depend on the algorithm, dataset, and GPU capabilities but are typically ~1-2 orders of magnitude and are especially high for BLS and Lomb-Scargle.

[ascl:2210.029] paltas: Simulation-based inference on strong gravitational lensing systems

Wagner-Carena, Sebastian; Aalbers, Jelle; Birrer, Simon; Nadler, Ethan O.; Darragh-Ford, Elise; Marshall, Philip J.; Wechsler, Risa H.

paltas conducts simulation-based inference on strong gravitational lensing images. It builds on lenstronomy (ascl:1804.012) to create large datasets of strong lensing images with realistic low-mass halos, Hubble Space Telescope (HST) observational effects, and galaxy light from HST's COSMOS field. paltas also includes the capability to easily train neural posterior estimators of the parameters of the lensing system and to run hierarchical inference on test populations.

ASCL Code Record

[ascl:2210.023] BornRaytrace: Weak gravitational lensing effects simulator

Jeffrey, Niall; Alsing, Justin; Lanusse, François

BornRaytrace uses neural data compression of weak lensing map summary statistics to simulate weak gravitational lensing effects. It can raytrace through overdensity Healpix maps to return a convergence map, include shear-kappa transformation on the full sphere, and also include intrinsic alignments (NLA model).

Code site: https://github.com/NiallJeffrey/BornRaytrace

Described in: https://ui.adsabs.harvard.edu/abs/2021MNRAS.501..954J

Bibcode: 2022ascl.soft10023J

Preferred citation method:
https://ui.adsabs.harvard.edu/abs/2021MNRAS.501..954J

Explain these fields?

Ways to bring up ASCL records

- ASCL ID
  - https://ascl.net/1812.013 or https://ascl.net/ascl:1812.013
- Short name (“alias”)
- Browsing
  - How many codes have ASCL IDs?
- Author name
  - Is an author of the entry you selected credited with other entries?
- Keywords
- Full-text search

Hands-on activity: Search for software

Use the full-text search box on the ASCL to find

- ASCL entry for NEMO, and from there, the GitHub repo for NEMO
- How many entries are for software written by Robert Nemiroff

How many entries in the ASCL have TESS as a keyword? What path did you take to find this information?

Use Google to find

- ASCL entry for NEMO
- ASCL entry for APLpy, and from there, the ADS entry for APLpy

How to find ASCL records in ADS

- doctype:
- bibstem:
- keyword:

How to find ASCL records in ADS

- doctype:software
- bibstem:ascl.soft
- keyword:nasa

Hands-on activity: Search for software (con't)

How many software entries in **ADS** have TESS as a keyword?

How many total software entries does ADS have (not just for those with keyword:TESS)?

BONUS QUESTION: What is the most cited software entry (doctype:software) in ADS?

Citation tracking and preferred citation

ADS tracks and tallies citations to resources it ingests

Choose a trackable citation method for your software

Trackable methods include ASCL ID, Zenodo DOI, published journal article

List your preferred citation where people will see it

Hands-on activity: Find preferred citation information

What is TurboSpectrum's preferred citation method? How many times has it been cited using this method?

How do the authors of NEMO want that software cited?

How do the authors of AplPy want that software to be cited?

Do the MADYS and comb (by Wilson *et al*) GitHub repos include citation information? If so, how do you know?

Metadata files

Metadata: “data that provides information about other data”

Information about software can be rendered in many different ways

codemeta.json and CITATION.cff are structured metadata file formats useful for listing citation information

You can create these files using the ASCL

Hands-on activity: Create metadata files

Create a CITATION.cff file for MADYS from the ASCL entry

https://ascl.net/2206.018/CITATION.cff

Does this differ from the CITATION.cff on the GitHub repo?

Create a codemeta.json file for comb from the ASCL entry

https://ascl.net/1911.024/codemeta.json

Does this differ from the codemeta.json on the GitHub repo?

Metadata schema and download

https://ascl.net/home/getwp/3297

https://ascl.net/code/json

Criteria for acceptance

1. source code available for immediate download for examination
2. used in:
   peer-reviewed astronomy/astrophysics research, or
   astronomy/astrophysics research submitted for peer review, or
   astronomy/astrophysics research published as an accepted thesis

Submit

https://ascl.net/code/submit

ASCL? Zenodo? What's the diff?

ASCL

Specific; astro research code
Registry ; accepts but doesn't require code deposit
Assigns ASCL ID to accepted entries, DOIs to deposited code
Submissions evaluated before ASCL ID assigned (human editors)
Actively curates records
Does not assign new ASCL IDs to versions*
Citations trackable

Zenodo

General; all digital research artifacts from all disciplines
Repository; requires code deposit
Assigns DOIs to all entries
Submissions assigned DOI automatically (no editor)
GitHub push to Zenodo
Does not curate entries
Assigns new DOIs to interim versions
Citations trackable

Thank you!


1885
Michigan Tech


Heidelberg Institute for
Theoretical Studies
HITS


UNIVERSITY OF
18
MARYLAND

Thank you!

Thank you!

Need more info? Want to talk? Want to work on ASCL?

aallen@ascl.net

https://ascl.net/wordpress/

https://ascl.net/about

https://ascl.net/wordpress/about-ascl/press-and-papers/