

Make your code famous!  
(or at least discoverable)

Alice Allen

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Astrophysics Source Code Library (ASCL)

# 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 cover what the Astrophysics Source Code Library (ASCL, [ascl.net](http://ascl.net)) is, how to submit software to the resource, and the benefits of doing so. I will share what happens after software is submitted, 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 cover good and bad ways to cite software, avenues for publishing software, and how journals are changing to include and recognize the contribution software makes to our discipline.

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# Schroedinger's Code

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

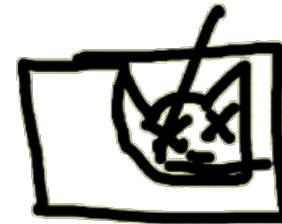
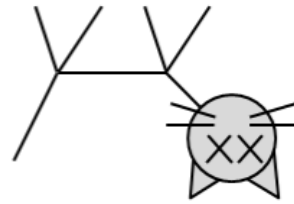
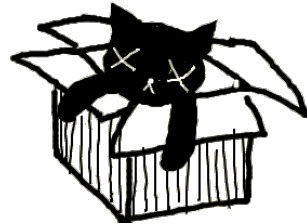
We opened the boxes...



# Schroedinger's Code

The good news: 58% were alive!

The rest...



“... anything less than release of actual source code is an indefensible approach for any scientific results that depend on computation...”

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Ince, Hatton, & Graham-Cumming, *The case for open computer programs*, *Nature*, v. 482, Feb. 23, 2012

# 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

*M. Zorotovic, M. R. Schreiber and S. G. Parsons, A&A, Aug 2014*

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# 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](http://ascl.net)

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# ASCL registers codes used in

- refereed articles
- articles submitted for refereeing
- accepted PhD theses

**AND which has**

- **source** code available for download without barriers





# What do you get out of registering your software?

Unique identifier

ADS (Web of Science, Google Scholar...)  
entry

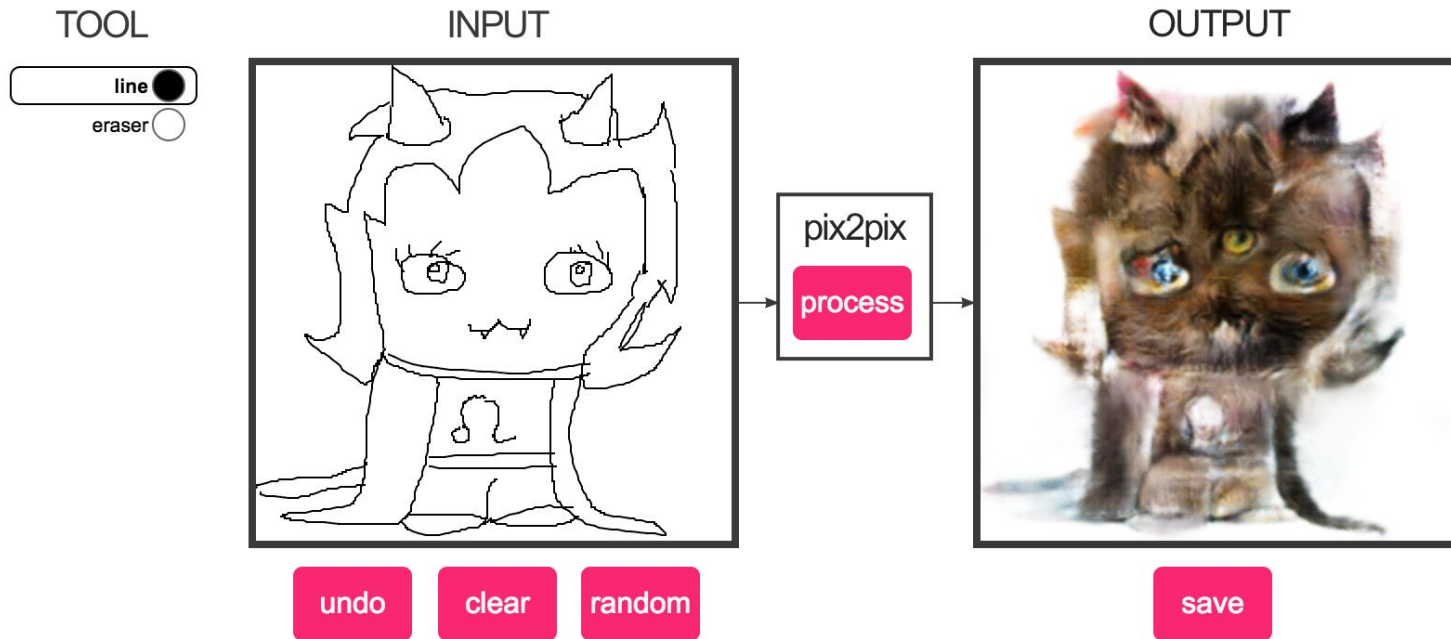
Trackable citation method

Increased discoverability

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# Live dangerously: Live demo here

edges2cats



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Image credit: Fiora Aeterna; pix2pix software: Christopher Hesse

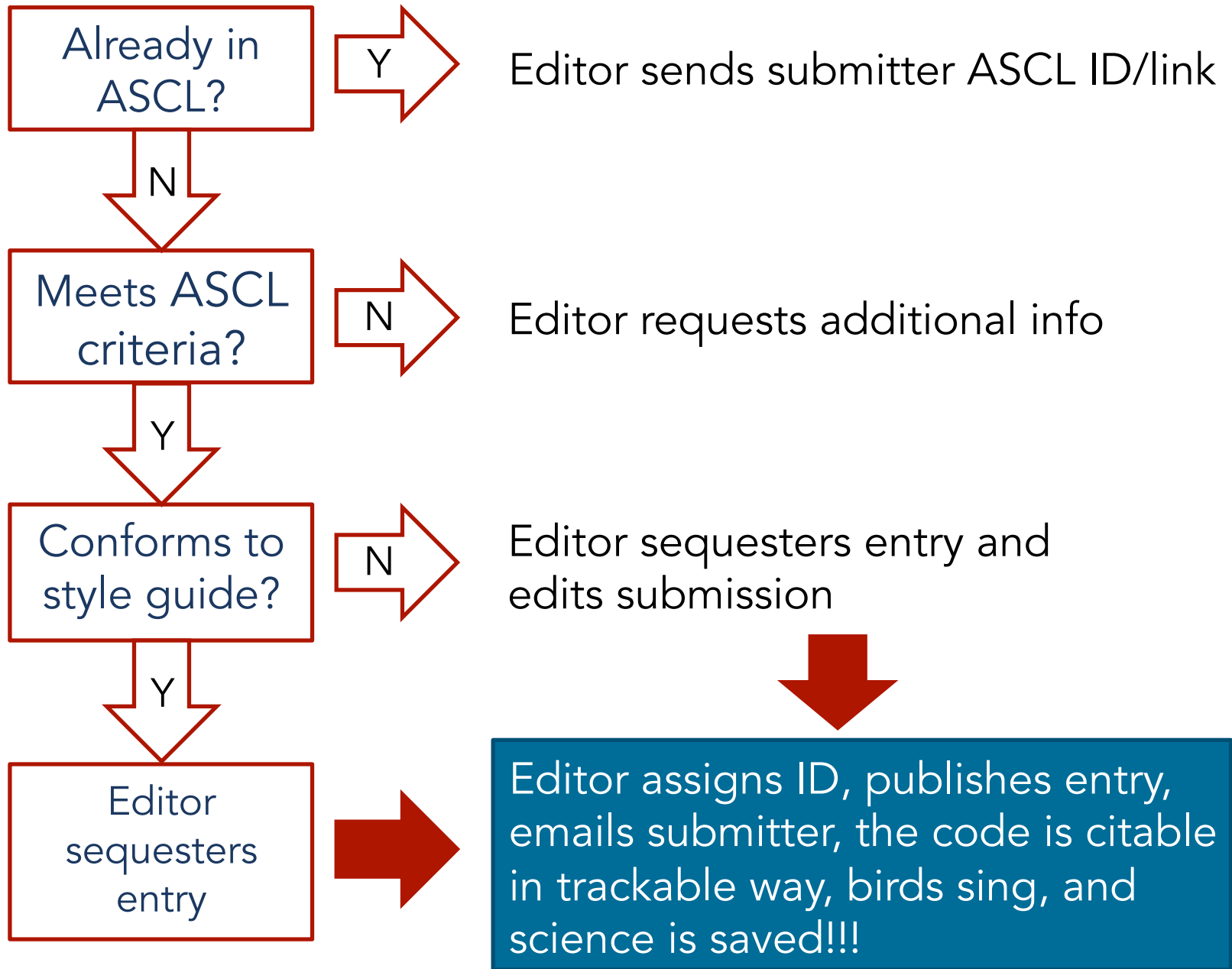
# Submit your code!

Use handy online form

Email info to [editor@ascl.net](mailto:editor@ascl.net)

Submit via CodeMeta.JSON file





# Indexing

ADS: weekly

Web of Science: quarterly

Google: almost as it happens

Google Scholar: no idea!



# Results

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

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# 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

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# Other citation methods

Article using or describing the code

ADS can track if it ingests journal article is in

Does not meet Force11 Software Citation Guidelines

DOI from Figshare, Zenodo, other archive

ADS cannot track (yet)

Will soon be able to

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# Not great\* citation methods

GitHub, SourceForge, BitBucket repo URL

URL to personal institutional page

URLs in general

\*Use *in addition to* other method, or if no alternative

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# New journals

2012

Journal of Open Research Software (JORS)

2013

Astronomy and Computing (A&C)

2014

Computational Astrophysics and Cosmology (ComAC)

2015

Software X

2016

Journal of Open Source Software (JOSS)

2017

Research Notes of the AAS

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# Changes in existing journals

Encourage or *require* software citations

More and more, requiring 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

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# 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

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