



2015 ANNUAL REPORT

ASTROPHYSICS SOURCE CODE LIBRARY

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Written by Alice Allen, ASCL Editor; March 2016

The cover image is an average of the central 10 velocity planes of a mosaic of five data cubes released as part of the Galactic Arecibo L-band Feed Array HI (GALFA-HI) survey (Peek et al., 2011, Ap J Suppl, 194, 20; DOI 10.1088/0067-0049/194/2/20; ADS Bibcode 2011ApJS..194...20P). The mosaic was created with computed version 4.0 of the Montage Image Mosaic Engine (ascl:1010.036). Image courtesy John Good and Bruce Berriman, California Institute of Technology.

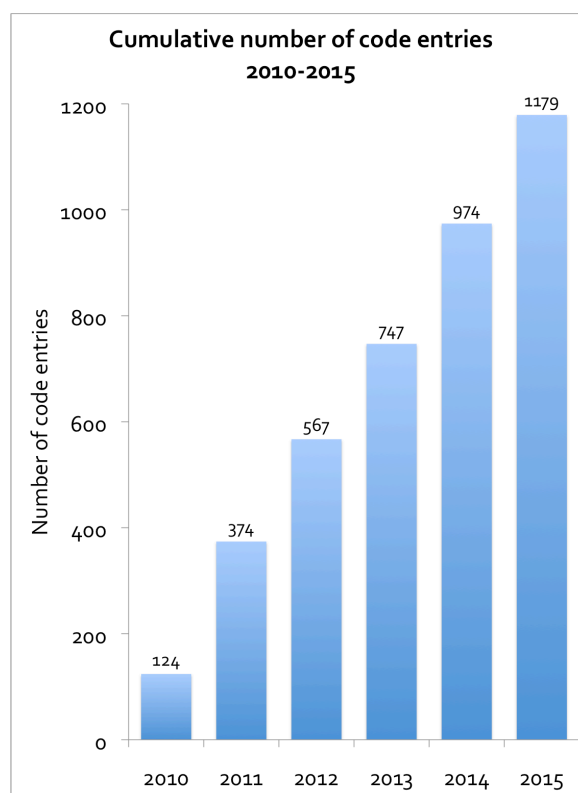
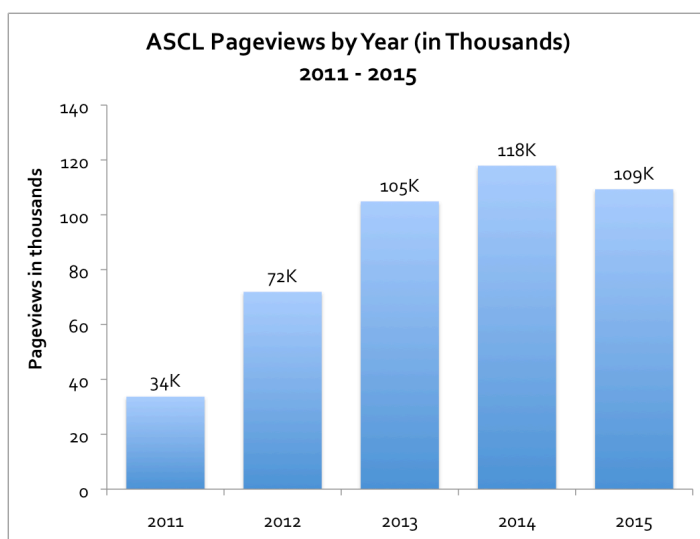
Background

The Astrophysics Source Code Library (ASCL), founded in 1999 by Robert Nemiroff (Michigan Technological University) and John Wallin (Middle Tennessee State University), is a free online registry for source codes of interest to astronomers and astrophysicists. ASCL source codes have been used to generate results published in or submitted to a refereed journal. The ASCL website (<http://ascl.net>) is housed at Michigan Technological University and lists the ten most recent entries on its home page; the site offers information about the resource and research software, access to code entries, a news blog, and a discussion forum.

2015 Growth

The number of codes indexed in ASCL grew an average of 17.1 entries per month, up from the average growth of 16.7 codes per month over the 2012-2014 timeframe, but down from the 19 codes per month average for 2014. 205 codes were added in 2015. According to Google Analytics, use of the site in 2015 decreased by 7.6% over 2014; the site was viewed 117,923 times in 2014 and 109,314 times in 2015. We cannot account for the decrease in pageviews.

Submissions of codes by authors, and occasionally code users, have greatly increased; 56 of the 205 codes (27%) assigned IDs in 2015 were submitted using the online form. This number does not include other submitted codes that did not meet the criteria for inclusion in the ASCL.

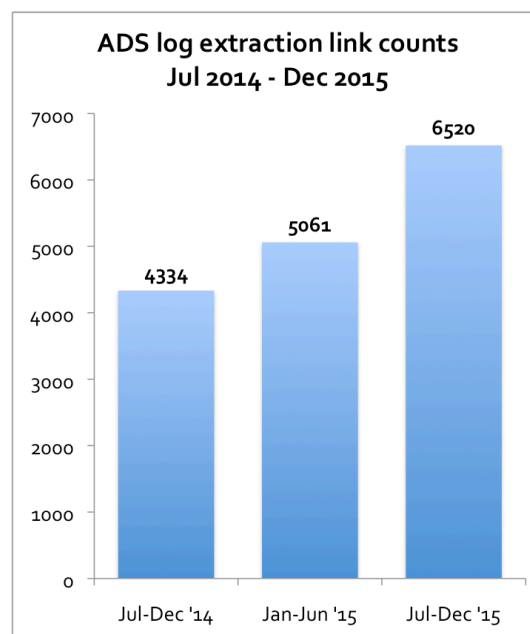


In July 2014, ADS started providing statistics for views of ASCL ADS records and clickthroughs from them to ASCL entries. These statistics indicate greater use of ASCL entries over time from that resource. Citations to the ASCL have also increased; this is discussed in the section below titled “Impact on the community.”

People

The Advisory Committee had one resignation and one addition in 2015. Robert Hanisch resigned from the Advisory Committee in October. After discussion among Advisory Committee members, Thomas Robitaille was invited that same month to serve on the Committee through 2016; Robitaille accepted. The current members of the Advisory Committee are:

Peter Teuben, University of Maryland, *Chair*
 Bruce Berriman, Infrared Processing and Analysis Center/Caltech
 Jessica Mink, Center for Astrophysics
 Robert Nemiroff, Michigan Technological University
 Thomas Robitaille, Freelance software developer
 Lior Shamir, Lawrence Technological University
 Keith Shortridge, Australian Astronomical Observatory
 Mark Taylor, University of Bristol, UK
 John Wallin, Middle Tennessee State University



Alice Allen and Kimberly DuPrie (Space Telescope Science Institute) are Editor and Associate Editor, respectively. Judy Schmidt provides development and design work for the ASCL, and Wesley Rian provides development work and support for citation and other statistics tracking.

Funding

The ASCL was unfunded for much of 2015. In January, the American Astronomical Society (AAS) provided support in the form of two one-day registrations for the AAS meeting (Washington, DC) for non-AAS members speaking at the Special Session the ASCL, Moore-Sloan Data Science Environment at NYU, and AAS Working Group on Astronomical Software (WGAS) organized on software licensing; AAS also provided travel support for one speaker. The Moore-Sloan Data Science Environment at NYU supported Allen’s participation in the AAS meeting. We are very grateful for the support received for participation in the AAS meeting.

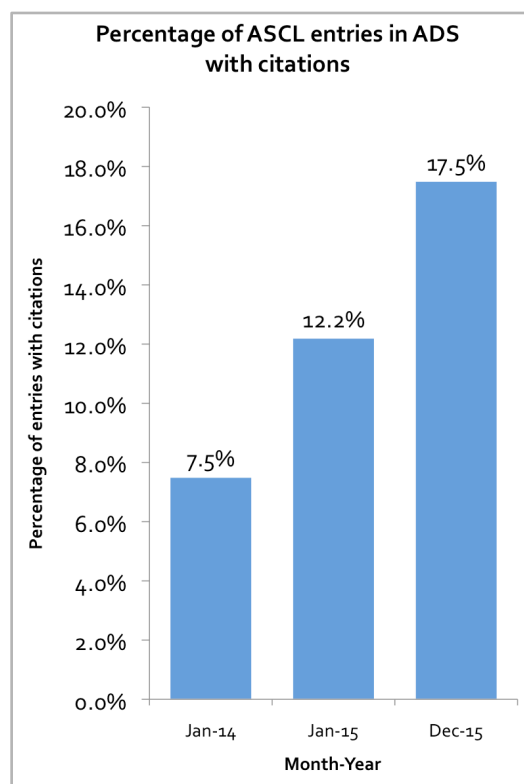
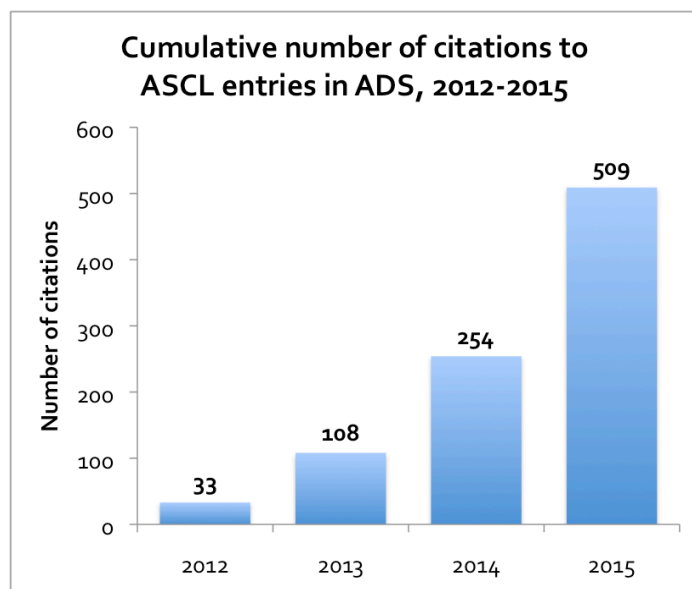
As stated in last year’s annual report, the Sloan Foundation had tentatively planned a meeting on software citation and indexing in April at GitHub’s headquarters in San Francisco. The editor was invited to participate in the workshop and was funded by Sloan (through the AAS) to attend. The primary result of this meeting was to be an AAS-headed collaboration on a proposal to improve software indexing and citation to be submitted to Sloan initially in August 2015 but later postponed until early 2016. In September, the editor’s participation in the Third Workshop on Sustainable Software for Science: Practice and Experiences (WSSSPE3) meeting in Boulder

was supported by the organization sponsoring the event. The ASCL and its editor are very grateful for the support received for these activities.

Allen attended ADASS in October in Sydney. While there, Kai Polsterer from the Heidelberg Institute in Theoretical Studies (HITS) gave an unsolicited pledge to support the ASCL; a donation of €6,000 was received in December. The ASCL was and continues to be thrilled by and deeply grateful for this support.

Impact on the community

The ASCL uses various measures to try to determine its impact on and use by the community. Aside from wanting codes to be cited in a trackable way, the ASCL is agnostic on how codes are cited. That said, we use citation numbers as a metric to learn how and whether the ASCL is being used. Authors started using ASCL entries for citing codes in 2012, the first year the ASCL was indexed by ADS. At the end of 2012, 21 codes in the ASCL had been cited a total of 33 times. Citations are (understandably) increasing at a faster rate than



growth in the number of code entries. By the end of 2014, 116 ASCL entries collectively had 254 citations, meaning 12.1% of the 960 codes indexed in ADS at that time having citations, up from 7.5% in January of 2014. By the end of 2015, 198 codes had been cited a total of 509 times; this was 17.5% of ASCL entries indexed by ADS at that time. All major astronomy and astrophysics journals accept citations to the ASCL, with an increasing number having improved their internal processes to provide better support for these citations in their BibTeX style files and publishing workflow.

Since the development of the new infrastructure in mid-2014, 138 codes in the ASCL were submitted by users via the improved submissions page; this represents 39% of codes added to the ASCL in this time period. We take this as an indication that software authors see value in registering their codes with the ASCL.

Some community members at the December 2014 astronomy were looking to the ASCL to help resolve issues around software citation and gain greater recognition for code authors. The ASCL stepped up efforts to engage publishers and improve software citation throughout 2015 and will continue these efforts in 2016. Also in 2014, the new chair of the AAS's Working Group on Astronomical Software (WGAS), Frossie Economou, asked the ASCL to create and lead a Special Interest Group (SIG) on software publishing; a meeting of this SIG was held at the January 2015 meeting in Seattle and was well attended by publishers, editors, code authors, indexers, code authors, and researchers. A lack of meeting space for this endeavor has hampered it, and as of the end of 2015, the fate of the SIG is in limbo.

In July 2015, a representative of Thomson Reuters contacted the ASCL editor about including ASCL entries in the Data Citation Index. As of this writing, ASCL records are queued for loading to that resource.

2015 Highlights

January	Special session on software licensing held at 225 rd AAS meeting (Seattle, WA) Poster presented at 225 rd AAS meeting (Seattle, WA) Software Publication Special Interest Group meeting organized and held at AAS meeting AAS reposts slightly shorter version of special session report
February	ASCL presentation at National Institute of Standards and Technology, Gaithersburg, MD 1000 th code registered
April	Participated in Indexing Astronomical Software workshop at GitHub headquarters in San Francisco Presentation at Python in Astronomy meeting (Leiden, Netherlands)
June	Presentation at 3rd DC/MD/VA Summer Astrophysics Meeting , Catholic University, Washington, DC (PowerPoint slides)
September	Presentation at University of Massachusetts (Lowell, MA) Participation in and lightning talk at Working towards Sustainable Software for Science meeting in (Boulder, CO) Old site closed out; redirection to new site implemented
October	Poster presentation on the ASCL (blog post) given and a Birds of a Feather (BoF) session on software citation held at ADASS in Sydney (blog post) Kai Polsterer from HITS offers funding to ASCL New AC member Thomas Robitaille introduced at AC breakfast at ADASS "Suggest a change or addition" feature added to ASCL; new fields (<i>Described in</i> , <i>Used in</i> , <i>Preferred citation method</i> , <i>See also</i>) for eventual display are added to database Blob post re: journals citing ASCL is published
November	WSSSPE2 paper published by Journal of Open Research Software (Looking before leaping: Creating a software registry) ASCL publishes a list of software events at upcoming AAS meeting
December	Funding of €6000 received from the Heidelberg Institute of Theoretical Studies (HITS) at the direction of Kai Polsterer <i>Nature</i> confirms it is implementing changes for better tracking of ASCL citations in ADS

2015 Plans Revisited

- Publish WSSSPE2 paper in Journal of Open Research Software - done
- Create ASCL index in 2014 ADASS proceedings - done
- Organize a session for AAS 227th meeting on software issues - done
- Present ASCL enhancements at ADASS XXV - done
- Work with publishers to improve software citation in journals - ongoing
- Close out old sites and employ redirects to the new site - done
- Sustain reasonable growth in number of entries (190-210 additions) - done
- Upgrade current site to add two new features - done
- Complete outstanding plans from previous years
 - Still outstanding: adding another two members to the Advisory Committee

2016 Plans

- Publish dashboard
- Create ASCL index in 2015 ADASS proceedings
- Organize a session for AAS 229th meeting on software issues
- Present ASCL at at least two conferences
- Work with publishers to improve software citation in journals
- Sustain reasonable growth in number of entries (190-210 additions)
- Upgrade current site to add two new features
- Complete outstanding plans from previous years

Press and bibliography

Improving Software Citation and Credit, Alice Allen *et al*, to be published in Proceedings of ADASS XXV, [arXiv pre-print](#), December 2015

[Looking before leaping: Creating a software registry](#)

Alice Allen, Judy Schmidt, Journal of Open Research Software, Volume: 3, Issue: 1, November 23, 2015

<http://doi.org/10.5334/jors.bv>

Astrophysics Source Code Library, ver 3.0

Alice Allen *et al*, Astronomical Data Analysis Software and Systems XXV, October 2015

[Poster](#)

[Astrophysics Source Code Library -- Now even better!](#)

Alice Allen *et al*, American Astronomical Society, AAS Meeting #225, January 2015, #336.57

[Poster](#)

[Licensing Astrophysics Codes Session at AAS 225](#)

AAS posts, February 20, 2015

AAS Poster, January 2015

Astrophysics Source Code Library – Now even better!

<http://ascl.net>

Over 950 codes!

[1] Ten newest codes on home page

Improved browsing

- abstract and compact views
- order by alpha, reverse alpha, newest or oldest additions

[2]

[3] Bibcode and discussion thread links in record

[4]

One-click author search that can be expanded

[5]

Simplified submission form with prompts

RSS feed for news, too!

The ASCL is a free online registry for source codes used in research and is indexed by ADS. Codes can be cited by their unique ascl ID.

Recent improvements include better technology and integration

- MySQL database for code records
- WordPress and phpbb discussion forums fully integrated into site

ASCL data available on GitHub in JSON and XML formats

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

The ASCL thanks the Moore-Sloan Data Science Environment at NYU for its generous support
Image: Hubble Heritage

ADASS Poster, October 2015



Astrophysics Source Code Library, ver 3.0

<http://ascl.net>

Free online citable registry of astrophysics source codes

ASCL.net
Astrophysics Source Code Library

Home About Resources Browse Submissions News Forum

Welcome to the ASCL

The Astrophysics Source Code Library (ASCL) is a free online registry for source codes of interest to astronomers and astrophysicists 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 ADS/NASA Astrophysics Data System (ADS) 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 prefixing the number with ascl.net (e.g., ascl.net/1309.001).

Most Recently Added Codes
2015 Sep 21

[ascl:1309.003] AFR (ASPFitsReader)
Friedman, Robert D.
AFR, or ASPFitsReader, reduces, processes, and
interactively explores radio frequency interferometry
(ascl:1309.003) and Tempo2 (ascl:1309.003) timing software.

[ascl:1309.002] Tempo: Pulsar timing data analysis
Manchester, R.; Taylor, J.; Peters, W.; Weisberg, M.; Wray, A.; Wray, N.; Stairs, J.; Demorest, P.; Nice, D.
Tempo analyzes pulsar timing data. Pulse times of arrival (TOAs), pulsar model parameters, and coded instructions are read from
one or more input files. The TOAs are fitted by a pulse timing model incorporating transformation to the solar-system barycenter,
pulsar rotation and spin-down rates, where necessary, one of several binary models. Program output includes parameter values and
uncertainties, residual pulse arrival times, and a visualization of the residuals. The residuals are also available in a format suitable for
ephemerides of pulse phase behavior.

Browsing Codes
2015 Sep 04

Results 701-800 of 918 (916 ASCL, 2 submitted)

Order: Title Date Abstract Per Page
Mode: Compact All

[ascl:1308.014] SPEX: High-resolution
[ascl:1308.015] Cepheid
[ascl:1308.016] JHelloworld: Visual
[ascl:1308.017] ChiantiPy: Python p
[ascl:1308.018] MoogStokes: Zeema
[ascl:1309.001] AstroImage: Image for Astronomy
[ascl:1309.002] VAPHOT: Precision differential aperture photometry package
[ascl:1309.003] LSP: Liège Orbital Solution Package

ASCL Code Record
[ascl:1106.007] MIRIAD: Multi-channel Image Reconstruction, Image Analysis, and Display
Sault, R. J.; Tresten, P. J.; Wright, M. C. H.
MIRIAD is a radio interferometry data-reduction package, designed for taking raw visibility data through calibration to the image
analysis stage. It has been designed to handle any interferometric array, with working examples for BIMA, CARMA, SMA, WSRT, and
ATCA. A separate version for ATCA is available at <http://www.atnf.csiro.au/astro/astromir/astromir.html>, which differs in a few minor ways from the CARMA version.

Website: <http://www.atnf.csiro.au/astro/astromir/astromir.html>
Appears in: <http://arxiv.org/abs/nine-physics>
Bibcode: 2011ascl.soft06007S
Discuss this record?

Discuss

View: 287
Suggest a change or addition

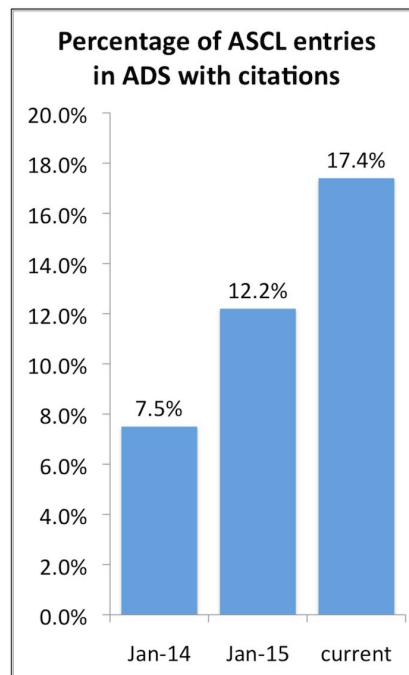
Ten newest codes
on home page

More browsing
options

Link for changes or
additions to record

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

ADS-trackable
citations!



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

Tip! Refine or expand your search. Authors are sometimes listed as 'Smith, J.' instead of 'Smith, John' so it is useful to search for last names only. Note this is currently a simple phrase search.

Portegies Zwart, Simon F. [Search](#)

[ascl:1201.002] Roche: Visualization and analysis tool for Roche-lobe geometry of evolving binaries
Portegies Zwart, Simon F.
Roche is a visualization and analysis tool for drawing the Roche-lobe geometry of evolving binaries. Roche can be used as a standalone
program reading data from the command line or from a file generated by Seba. Eventually Roche will be able to read data from any other
binary evolution program. Roche requires Starfish (version 4.1.1 or later) and the ggplot libraries. Roche creates a series of images, based on
the Seba output file Seba.data, displaying the evolutionary state of a binary.

[ascl:1401.001] Kirin: N-body simulation library
Belleman, Robert; Sefard, James
The use of graphics processing units offers an attractive alternative to traditional N-body simulations.

[ascl:1201.001] McScatter: Three-Body Scatter
Haggis, Douglas C.; Portegies Zwart, Simon F.; Hurley, Jarrod
McScatter illustrates a method of simulating stellar dynamics, especially the dynamical evolution of rich star clusters. The dynamical evolution and velocity dispersion, using the scattering method.

[ascl:1201.002] Roche: Visualization and analysis tool for Roche-lobe geometry of evolving binaries
Portegies Zwart, Simon F.
Roche is a visualization and analysis tool for drawing the Roche-lobe geometry of evolving binaries. Roche can be used as a standalone
program reading data from the command line or from a file generated by Seba. Eventually Roche will be able to read data from any other
binary evolution program. Roche requires Starfish (version 4.1.1 or later) and the ggplot libraries. Roche creates a series of images, based on
the Seba output file Seba.data, displaying the evolutionary state of a binary.

[ascl:1201.003] Seba: Stellar and binary evolution
Portegies Zwart, Simon F.; Verbesselt, E.
The stellar and binary evolution package Seba is fully integrated into the Kirin integrator, although it can also be used as a stand-alone
module for non-dynamical applications. Due to the interaction between stellar evolution and stellar dynamics, it is difficult to solve for
the evolution of both systems in a completely self-consistent way. The trajectories of stars are computed using a block timestep scheme,
as described earlier. Stellar and binary evolution is updated at fixed intervals (every 10% of a crossing time, typically a few thousand
years). Any feedback between the two systems may thus experience a delay of at most one timestep. Internal evolution time steps may
differ for each star and binary, and depend on binary period, perturbations due to neighbors, and the evolutionary state of the star. Time

ASCL Code Record
[ascl:1201.002] Roche: Visualization and analysis tool for Roche-lobe geometry of evolving binaries
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binary evolution program. Roche requires Starfish (version 4.1.1 or later) and the ggplot libraries. Roche creates a series of images, based on
the Seba output file Seba.data, displaying the evolutionary state of a binary.

Website: <http://www.manybody.org/manybody/roche/>
Bibcode: 2012ascl.soft06002P
Discuss this record?

Discuss

View: 38

Links to ADS entry
and discussion
thread in record

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)