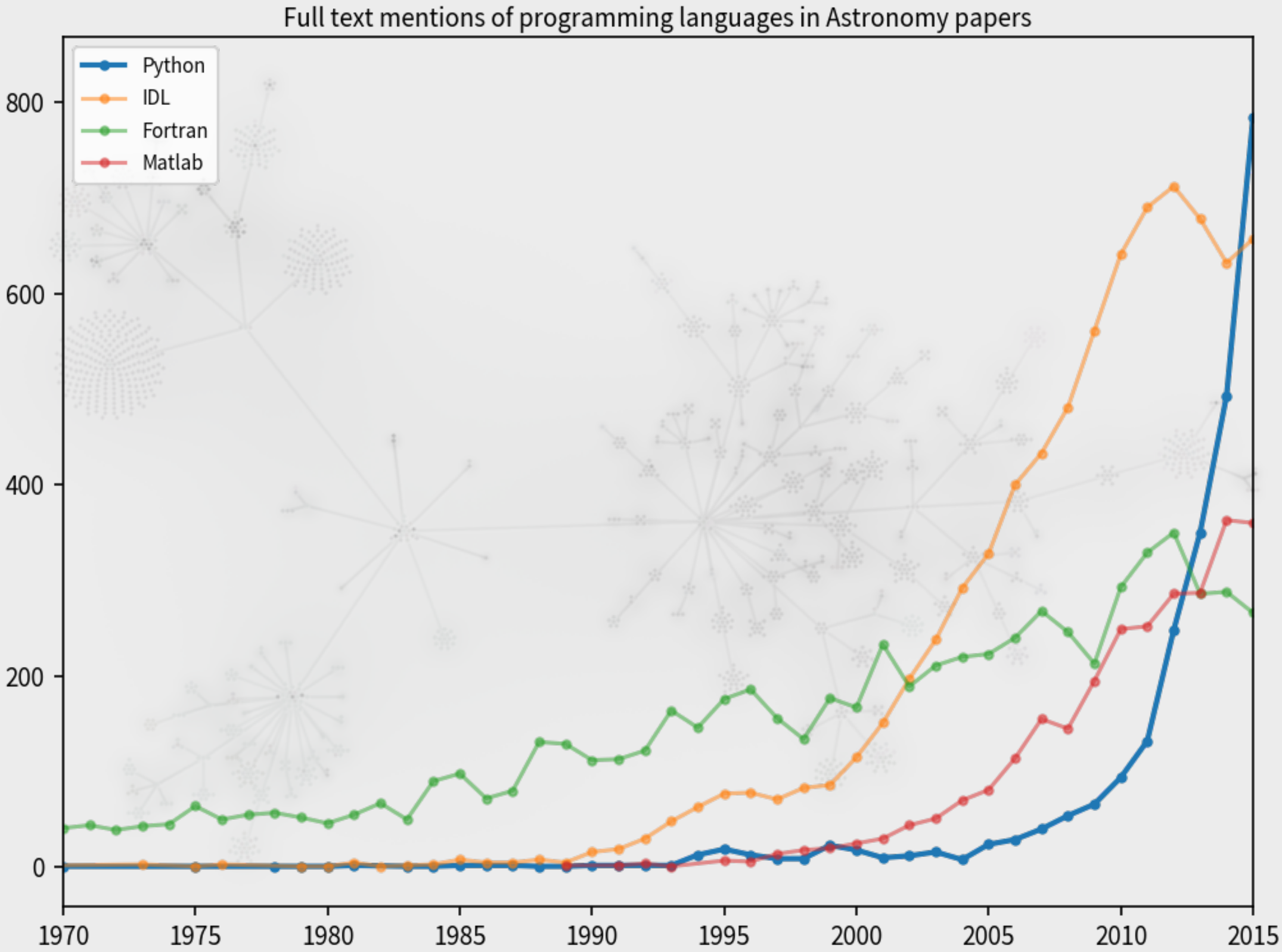
The rise of Python and the open-development

Revoluti☆n

in Astronomy

Tom Robitaille (@astrofrog)

Freelance | *The Astropy Project*


Full text mentions of programming languages in Astronomy papers
Python
IDL
Fortran
Matlab
800
600
400
200
0
1970
1975
1980
1985
1990
1995
2000
2005
2010
2015

Software Use in Astronomy: an Informal Survey

Momcheva & Tollerud, 2015

67% of Astronomers use Python

https://arxiv.org/abs/1507.03989

this change has been tightly coupled with the rise in

openly developed software

in Astronomy, in particular **grassroots** projects

Open

Closed

Open

:’(

Binaries

Examples: Keynote, PowerPoint, etc.

Closed

Open

:|

Source Code

Note: No license does not mean free/open source!

Examples: PGPLOT, any unlicensed code, etc.

:’(

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Open Source/Free Software

Includes license that gives right to study, change, redistribute

Examples: CASA, IRAF, DS9, etc.

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Open development

Discussion is done in the open and anyone can join in!

Examples: ENZO, yt, SunPy, Astropy, etc.

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This talk

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:'(

Binaries

Examples: Keynote, PowerPoint, etc.

Closed

The yt project

yt is an open-source, permissively-licensed python package for analyzing and visualizing volumetric data.

Started in **2007** by Matt Turk

~100 contributors to date

Note: not just a Python package, contains significant sections in C/C++!

http://yt-project.org

@yt_astro

SunPy

The community-developed, free and open-source solar data analysis environment for Python.

Started in **2011** by a group of solar physicists

~60 contributors to date

http://sunpy.org

@SunPyProject

The Astropy project

The Astropy Project is a community effort to develop a single ***core package for Astronomy*** *in Python and* ***foster interoperability*** *between Python astronomy packages.*

http://astropy.org @astropy

Developers/Contributors for the Astropy core package (as of 14th October 2016):

Ryan Abernathey
Shailesh Ahuja
Tom Aldcroft
Anthony Horton
Anne Archibald
Cristian Ardelean
Matteo Bachetti
Kyle Barbary
Geert Barentsen
Pauline Barmby
Paul Barrett
Andreas Baumbach
Chris Beaumont
Daniel Bell
Elijah Bernstein-Cooper
Kristin Berry
Francesco Biscani
Thompson Le Blanc
Christopher Bonnett
Joseph Jon Booker
Médéric Boquien
Azalee Bostroem
Matthew Bourque
Larry Bradley
Gustavo Bragança
Erik M. Bray
Eli Bressert
Hannes Breytenbach
Hugo Buddelmeijer
Doug Burke
Mihai Cara
Patti Carroll
Mabry Cervin
Pritish Chakraborty
Alex Conley
Jean Connelly
Simon Conseil
Ryan Cooke
Yannick Copin
Matthew Craig
Steven Crawford
Neil Crighton
Robert Cross
Kelle Cruz
Dan P. Cunningham
Daniel Datsev
Matt Davis
Christoph Deil
Nadia Dencheva
Jörg Dietrich
Axel Donath
Michael Droettboom
Zach Edwards
Jonathan Eisenhamer
Thomas Erben
Henry Ferguson
Jonathan Foster
Ryan Fox
Lehman Garrison
Simon Gibbons
Adam Ginsburg
Christoph Gohlke
Danny Goldstein
Perry Greenfield
Dylan Gregersen
Austen Groener
Frédéric Grollier
Karan Grover
Kevin Gullikson
Hans Moritz Günther
Chris Hanley
Alex Hagen
Paul Hirst
Moataz Hisham
Michael Hoenig
Emma Hogan
Derek Homeier
Anthony Horton
JC Hsu
Lingyi Hu
Eric Jeschke
Eric Depagne
Joseph Jon Booker
Sarah Kendrew
Marten van Kerkwijk
Wolfgang Kerzendorf
Lennard Kiehl
Rashid Khan
Aleh Khvalko
David Kirkby
Dominik Klaes
Kacper Kowalik
Roban Hultman Kramer
Arne de Laat
Antony Lee
Daniel Lenz
Simon Liedtke
Pey Lian Lim
Stuart Littlefair
Joseph Long
Joe Lyman
Curtis McCully
Vinayak Mehta
Aaron Meisner
Serge Montagnac
José Sabater Montes
Francesco Montesano
Brett Morris
Michael Mueller
Stuart Mumford
Demitri Muna
Prasanth Nair
Bogdan Nicula
Joe Philip Ninan
Asra Nizami
Bryce Nordgren
Miruna Oprescu
Carl Osterwisch
Luigi Paioro
Asish Panda
Madhura Parikh
Neil Parley
Sergio Pascual
Rohit Patil
David Perez-Suarez
Ray Plante
Orion Poplawski
Adrian Price-Whelan
J. Xavier Prochaska
David Pérez-Suárez
QuanTakeuchi
Tanuj Rastogi
Juan Luis Cano Rodríguez
Evert Rol
Alex Rudy
Joseph Ryan
Eloy Salinas
Gerrit Schellenberger
Michael Seifert
David Shiga
Albert Y. Shih
David Shupe
Jonathan Sick
Leo Singer
Brigitta Sipocz
Shivan Sornarajah
Shantanu Srivastava
Ole Streicher
Matej Stuchlik
Bernardo Sulzbach
James Taylor
Jeff Taylor
Kirill Tchernyshyov
Víctor Terrón
Scott Thomas
James Turner
Miguel de Val-Borro
Jonathan Whitmore
Julien Woillez
Jake VanderPlas
Lisa Walter
Benjamin Alan Weaver
Jonathan Whitmore
Julien Woillez
Víctor Zabalza

Astropy Core Package

6 major public releases (first release February 2013)

Latest stable version: **v1.2.1** (released 22nd June 2016)

~180 individual contributors so far!

Over **16,000** commits (as of 17th October 2016)

Core data structures and transformations

- Constants (**`astropy.constants`**)
- Units and Quantities (**`astropy.units`**)
- N-dimensional datasets (**`astropy.nddata`**)
- Data Tables (**`astropy.table`**)
- Time and Dates (**`astropy.time`**)
- Astronomical Coordinate Systems (**`astropy.coordinates`**)
- World Coordinate System (**`astropy.wcs`**)
- Models and Fitting (**`astropy.modeling`**)
- Analytic Functions (**`astropy.analytic_functions`**)

Connecting up: Files and I/O

- Unified file read/write interface
- FITS File handling (**`astropy.io.fits`**)
- ASCII Tables (**`astropy.io.ascii`**)
- VOTable XML handling (**`astropy.io.votable`**)
- Miscellaneous Input/Output (**`astropy.io.misc`**)

Astronomy computations and utilities

- Convolution and filtering (**`astropy.convolution`**)
- Data Visualization (**`astropy.visualization`**)
- Cosmological Calculations (**`astropy.cosmology`**)
- Astrostatistics Tools (**`astropy.stats`**)
- Virtual Observatory Access (**`astropy.vo`**)

http://docs.astropy.org

Astropy-affiliated packages

photutils
An Astropy Package for Photometry

A Python package for gamma-ray astronomy

sncosmo
A Python Library for Supernova Cosmology

Observation planning

Image reprojection

Publication-quality image plotting

Machine learning

Photometry

Interface to many web services/archives

Gamma-ray data analysis

CCD image reduction

Spectroscopic analysis

‘Big’ spectral cube analysis (e.g. ALMA, etc.)

Spectral cube slicing

<your package here!>

etc.

http://affiliated.astropy.org


PyWCS
PyAstro
cosmics.py
PyNOVAS
PyGuide
PyEphem
astropysics
kapteyn
python-montage
pyregion
CosmoPy
astrogui
volib
APLpy
XAssist
NTV
AsPyLib
sunpy
coords
ATpy
pyavm
python-ds9
pySLALIB
RO
EphemPy
pyTPM
pywcsgrid2
asciitable
PyFITS
idlsave
PyRAF
pyastronomy
vo
PyMIDAS
chantipy
astlib
yt
python-sao
SAMPy
python-avm

[AstroPy] PyAstronomy *Stefan Czesla*

- [AstroPy] Proliferating py-astro-libs *Marshall Perrin*
  - [AstroPy] Proliferating py-astro-libs *Wolfgang Kerzendorf*
    - [AstroPy] Proliferating py-astro-libs *Stefan Czesla*
    - [AstroPy] Proliferating py-astro-libs *Erik Tollerud*
    - [AstroPy] Proliferating py-astro-libs *Erik Bray*
  - [AstroPy] Proliferating py-astro-libs *Taro Sato*
    - [AstroPy] Proliferating py-astro-libs *Thomas Robitaille*
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    - [AstroPy] Proliferating py-astro-libs *Tom Aldcroft*
    - [AstroPy] Proliferating py-astro-libs *Matthew Turk*
    - [AstroPy] Proliferating py-astro-libs *Mubdi Rahman*
    - [AstroPy] Proliferating py-astro-libs *Perry Greenfield*
    - [AstroPy] Proliferating py-astro-libs *Tommy Grav*
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    - [AstroPy] Proliferating py-astro-libs *Thomas Robitaille*
    - [AstroPy] Proliferating py-astro-libs *Victoria G. Laidler*
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    - [AstroPy] Proliferating py-astro-libs *Erik Tollerud*
    - [AstroPy] Proliferating py-astro-libs *Marcel Haas*
    - [AstroPy] Proliferating py-astro-libs *Neil Crighton*
    - [AstroPy] organizing meetings to organize astropy *Marshall Perrin*
    - [AstroPy] Proliferating py-astro-libs *Mark Sienkiewicz*
    - [AstroPy] Proliferating py-astro-libs *Thomas Robitaille*

etc ...

astropy

Wiki Home
Pages and Files
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All Pages
home
2011 Coordination Meeting Poll
archive
Astropy Coding Guidelines
Astropy Documentation Guidelines
Astropy Testing Guidelines
developers
distribution
SciPy 2011
VCS and hosting poll
vision
vision-polls
Navigation Options
edit navigation

developers

Edit 0 0 109 ...

Note: A Copy of this page now exists on the github astropy project wiki. It is recommended that further changes/additions/etc. be made there.

This page lists all developers interested in contributing to various aspects of a potential common astronomy python package.

Add your name to any of the sections. Feel free to suggest new sections!

The sections are not in any order (no indication of priority, and some of these things are probably too advanced to make it into a common package)

Moderation of the discussions/decisions and coordination of the efforts

- Erik Tollerud
- Perry Greenfield
- Thomas Robitaille

15th June 2011: We (Erik, Perry, and Thomas) would like to suggest that we try moderating the discussions and coordinating the efforts as a group of three rather than picking a single person. Please take the following poll to let us know whether you would be happy with this. The poll will remain open until Friday 17th at 9pm EST.

18th June 2011: The final poll results were 53 'yes' votes, and 2 'no' votes, so the three of us will form a coordination team

Overall planning/Big picture stuff

- Thomas Robitaille
- James Turner (not necessarily speaking for Gemini)
- Tom Aldcroft

First Astropy Coordination Meeting - Center for Astrophysics, 2011
(followed by STScI in 2012, Yale in 2013)

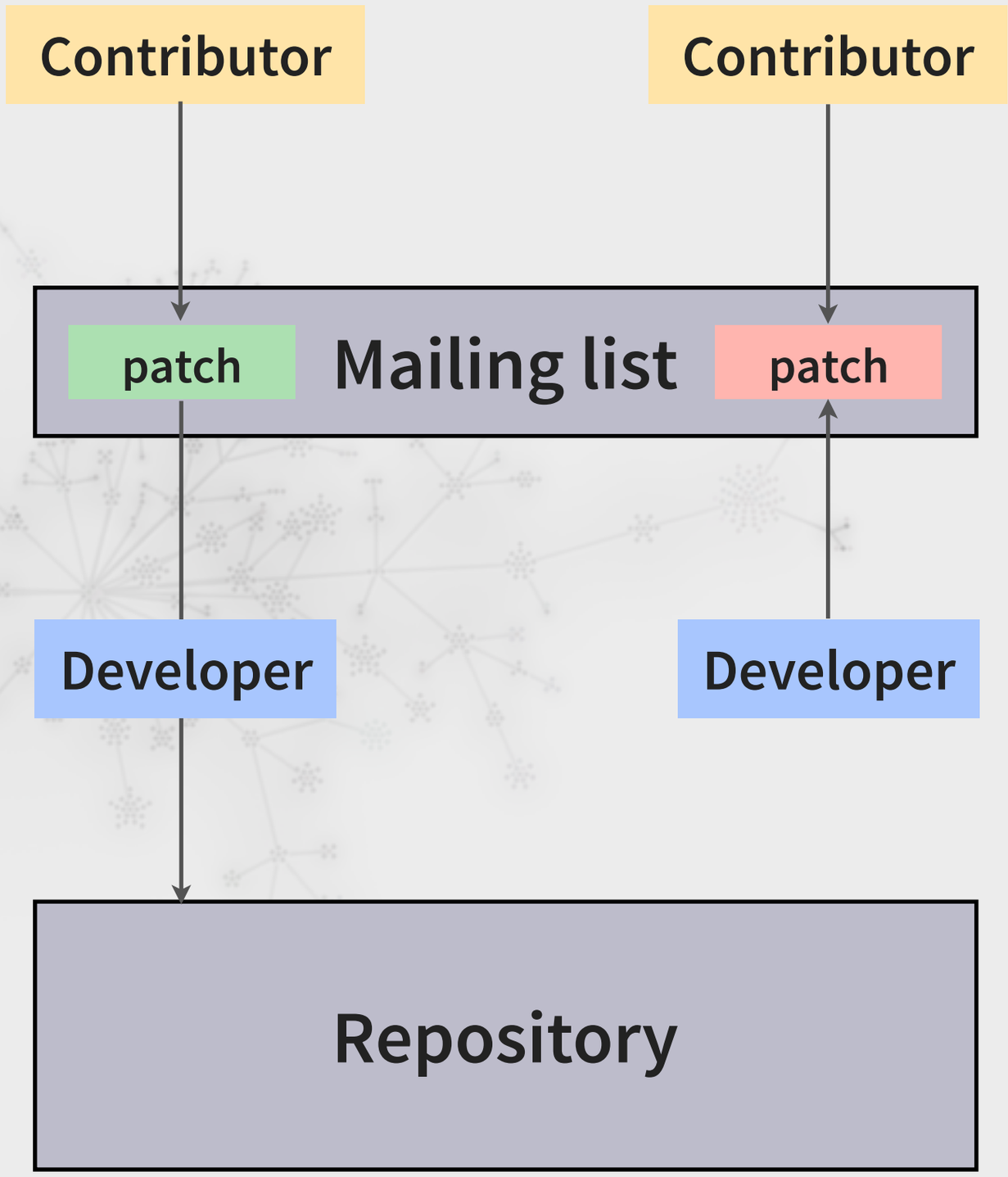
In-person meetings are **crucial**

Open Development in 2016

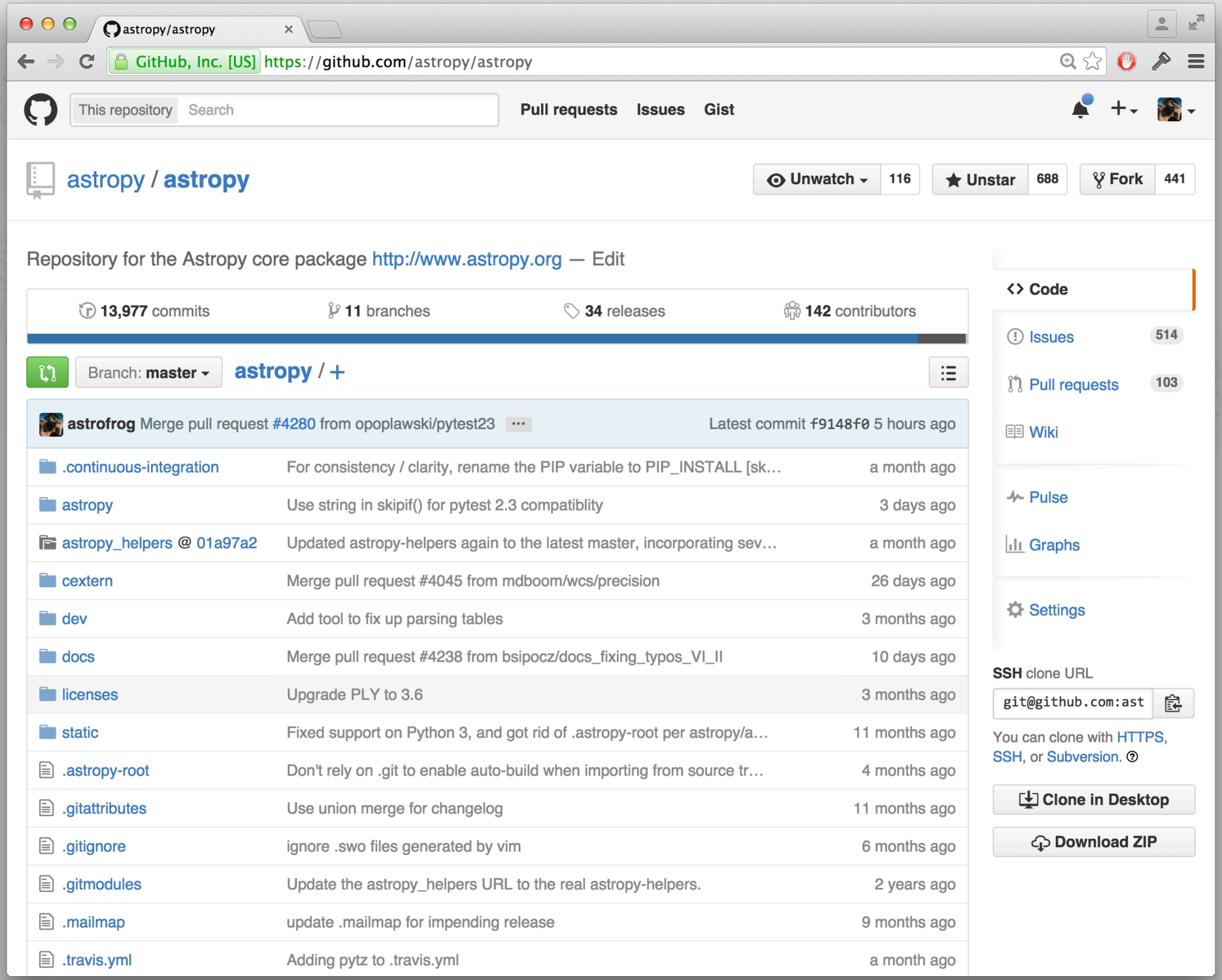
[PATCH] Clear upper bits during sign extension

- *From*: Yao Qi <yao at codesourcery dot com>
- *To*: <gdb-patches at sourceware dot org>
- *Date*: Mon, 29 Dec 2014 09:12:49 +0800
- *Subject*: [PATCH] Clear upper bits during sign extension
- *Authentication-results*: sourceware.org; auth=none

```
I see the error message "access outside bounds of object referenced
via synthetic pointer" in the two fails below of mips gdb testing

print d[-2]^M
access outside bounds of object referenced via synthetic pointer^M
(gdb) FAIL: gdb.dwarf2/implptrconst.exp: print d[-2]
(gdb) print/d p[-1]^M
access outside bounds of object referenced via synthetic pointer^M
(gdb) FAIL: gdb.dwarf2/implptrpiece.exp: print/d p[-1]

in the first test, 'd[-2]' is processed by GDB as '* (&d[-2])'.  'd'
is a synthetic pointer, so its value is zero, the address of 'd[-2]'
is -2.  In dwarf2loc.c:indirect_pieced_value,

  /* This is an offset requested by GDB, such as value subscripts.
     However, due to how synthetic pointers are implemented, this is
     always presented to us as a pointer type.  This means we have to
     sign-extend it manually as appropriate.  */
  byte_offset = value_as_address (value);                 <---- [1]
  if (TYPE_LENGTH (value_type (value)) < sizeof (LONGEST))
    byte_offset = gdb_sign_extend (byte_offset,           <---- [2]
                                   8 * TYPE_LENGTH (value_type (value)));
  byte_offset += piece->v.ptr.offset;

on MIPS target, after [1], byte_offset is -2 (0xfffffffffffffffe),
because 32-bit -2 (as an address) is sign extended to 64-bit.  After
[2], we manually sign extend byte_offset too, and then it becomes
0xfffffffeffffffe, which is wrong.  Function gdb_sign_extend
sign-extends VALUE on bit BIT, and assumes upper bits from bit BIT are
all zero.  That is why the code works well on targets on which address
is zero extended, such as x86.  On these targets, byte_offset is
0xfffffffe (zero extended from 32-bit address -2).

The patch is to clear upper bits of VALUE in gdb_sign_extend first.
Regression tested on mips-linux-gnu, and fixes two fails above.

gdb:

2014-12-29  Yao Qi  <yao@codesourcery.com>

        * utils.c (gdb_sign_extend): Clear bits from BIT in VALUE.
---
 gdb/utils.c | 9 +++++++++
 1 file changed, 9 insertions(+)

diff --git a/gdb/utils.c b/gdb/utils.c
index 47adb67..e029863 100644
--- a/gdb/utils.c
+++ b/gdb/utils.c
@@ -3031,6 +3031,15 @@ gdb_sign_extend (LONGEST value, int bit)
   if (((value >> (bit - 1)) & 1) != 0)
     {
       LONGEST signbit = ((LONGEST) 1) << (bit - 1);
+      LONGEST mask = 1;
+      int i;
+
+      /* Generate a mask in which bits [0, BIT - 1] are one.  */
+      for (i = 0; i < bit; i++)
+       mask = mask << 1;
+      mask--;
+      /* Clear bits from bit BIT.  */
+      value &= mask;

       value = (value ^ signbit) - signbit;
     }
--
1.9.3
```



GitHub


astropy/astropy
GitHub, Inc. [US] https://github.com/astropy/astropy
This repository Search
Pull requests Issues Gist
astropy / astropy
Unwatch 116
Unstar 688
Fork 441
Repository for the Astropy core package http://www.astropy.org — Edit
13,977 commits
11 branches
34 releases
142 contributors
Branch: master
astropy / +
astrofrog Merge pull request #4280 from opoplawski/pytest23
Latest commit f9148f0 5 hours ago
.continuous-integration For consistency / clarity, rename the PIP variable to PIP_INSTALL [sk… a month ago
astropy Use string in skipif() for pytest 2.3 compatiblity 3 days ago
astropy_helpers @ 01a97a2 Updated astropy-helpers again to the latest master, incorporating sev… a month ago
cextern Merge pull request #4045 from mdboom/wcs/precision 26 days ago
dev Add tool to fix up parsing tables 3 months ago
docs Merge pull request #4238 from bsipocz/docs_fixing_typos_VI_II 10 days ago
licenses Upgrade PLY to 3.6 3 months ago
static Fixed support on Python 3, and got rid of .astropy-root per astropy/a… 11 months ago
.astropy-root Don't rely on .git to enable auto-build when importing from source tr… 4 months ago
.gitattributes Use union merge for changelog 11 months ago
.gitignore ignore .swo files generated by vim 6 months ago
.gitmodules Update the astropy_helpers URL to the real astropy-helpers. 2 years ago
.mailmap update .mailmap for impending release 9 months ago
.travis.yml Adding pytz to .travis.yml a month ago
Code
Issues 514
Pull requests 103
Wiki
Pulse
Graphs
Settings
SSH clone URL
git@github.com:ast
You can clone with HTTPS, SSH, or Subversion.
Clone in Desktop
Download ZIP

Pull Requests · astropy/ast

GitHub, Inc. [US] https://github.com/astropy/astropy/pulls?page=2&q=is%3Apr+is%3Aopen

This repository Search Pull requests Issues Gist

astropy / astropy

Unwatch 116 Unstar 688 Fork 441

Issues Pull requests Labels Milestones

Filters is:pr is:open New pull request

103 Open ✓ 2,685 Closed Author Labels Milestones Assignee Sort

Fix for issue [3739] ✕ Affects-release Enhancement io.fits
#4065 opened on Aug 11 by anizami — 11

Editing modeling docs ✕ Docs modeling
#4064 opened on Aug 11 by anizami — 12

Handle sorting NaNs and masked values in jsviewer ✓ Affects-release Bug table
#4052 opened on Aug 7 by sargas — 14

Some polynomial model refactoring (WIP?) ✕ Affects-release modeling
#4049 opened on Aug 7 by embray — 9

Update `bounding_box` property and new `Model.render()` method in `astropy.modeling` ✓ Affects-dev modeling
#4040 opened on Aug 5 by patti v1.1.0 5 of 5 — 45

Add sample plots to built-in models ✓ Docs modeling
#4008 opened on Jul 25 by sYnfo — 9

Retry --open-files check once after garbage collection ✓ Affects-release Bug testing
#4002 opened on Jul 24 by embray — 18

POC: tables within tables within tables! Affects-dev table
#3963 opened on Jul 15 by taldcroft — 3

Pull Requests · astropy/ast

GitHub, Inc. [US] https://github.com/astropy/astropy/pulls?page=2&q=is%3Apr+is%3Aopen

This repository Search Pull requests Issues Gist

astropy / astropy

Unwatch 116 Unstar 688 Fork 441

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```python
def test_constellations():

    # the actual test for accuracy is in test_funcs - this is just meant
    # to make sure we get sensible answers

    sc = SkyCoord(135*u.deg, 65*u.deg)
    assert sc.get_constellation() == 'Ursa Major'
    assert sc.get_constellation(short_name=True) == 'UMa'

    scs = SkyCoord([135]*2*u.deg, [65]*2*u.deg)
    npt.assert_equal(scs.get_constellation(), ['Ursa Major']*2)
    npt.assert_equal(scs.get_constellation(short_name=True), ['UMa']*2)
```

(x 10,000)

travis-ci.org (Linux and OSX testing)

MacOS X

Documentation

Python 3

Style

✓	# 10757.1	</> no language set	PYTHON_VERSION=2.6 SETUP_CMD='egg_info'	1 min 4 sec
✓	# 10757.2	</> no language set	PYTHON_VERSION=2.7 SETUP_CMD='egg_info'	1 min 9 sec
✓	# 10757.3	</> no language set	PYTHON_VERSION=3.3 SETUP_CMD='egg_info'	1 min 6 sec
✓	# 10757.4	</> no language set	PYTHON_VERSION=3.4 SETUP_CMD='egg_info'	1 min 12 sec
✓	# 10757.5	</> no language set	PYTHON_VERSION=3.5 SETUP_CMD='egg_info'	1 min 5 sec
✗	# 10757.6	</> no language set	PYTHON_VERSION=2.7 SETUP_CMD='test' OPTIONAL	14 min 56 sec
✓	# 10757.7	</> no language set	PYTHON_VERSION=2.7 SETUP_CMD='build_sphinx -W	9 min 26 sec
✗	# 10757.8	</> no language set	PYTHON_VERSION=2.6 SETUP_CMD='test --open-files	11 min 49 sec
✗	# 10757.9	</> no language set	PYTHON_VERSION=2.7 SETUP_CMD='test --open-files	12 min 51 sec
✗	# 10757.10	</> no language set	PYTHON_VERSION=3.3 SETUP_CMD='test --open-files	11 min 37 sec
✗	# 10757.11	</> no language set	PYTHON_VERSION=3.4 SETUP_CMD='test --open-files	11 min 39 sec
✗	# 10757.12	</> no language set	PYTHON_VERSION=3.5 SETUP_CMD='test --open-files	11 min 40 sec
✗	# 10757.13	</> no language set	PYTHON_VERSION=2.7 SETUP_CMD='test --coverage'	17 min 49 sec
✗	# 10757.14	</> no language set	PYTHON_VERSION=3.4 SETUP_CMD='test' OPTIONAL	1 min 53 sec
✗	# 10757.15	</> no language set	PYTHON_VERSION=2.7 NUMPY_VERSION=1.8 SETUP_	11 min 27 sec
✗	# 10757.16	</> no language set	PYTHON_VERSION=2.7 NUMPY_VERSION=1.7 SETUP_	11 min 32 sec
✗	# 10757.17	</> no language set	PYTHON_VERSION=2.7 NUMPY_VERSION=1.6 SETUP_	10 min 53 sec
✓	# 10757.19	</> no language set	PYTHON_VERSION=2.7 MAIN_CMD='pep8 astropy --c	1 min 15 sec

ci.appveyor.com (Windows testing)

AppVeyor PROJECTS ENVIRONMENTS DOCS SUPPORT THOMAS ROBITAILLE

astropy

LATEST BUILD HISTORY DEPLOYMENTS SETTINGS NEW BUILD RE-BUILD PR

Pull request #4255 - Change ordering of GCRS/ITRS transforms to make more sense

change ordering of GCRS/ITRS transforms to make more sense 1.0.2670

18 hours ago by Erik Tollerud master 69eef6c0 14 hours ago in 37 min 32 sec

JOBS

Environment: PYTHON_VERSION=2.6, NUMPY_VERSION=1.9.1 16 min 4 sec

Environment: PYTHON_VERSION=3.4, NUMPY_VERSION=1.9.1 21 min 24 sec

FILES

SEARCH:

ALL 333 | CHANGED 3 | SOURCE CHANGED 1 | COVERAGE CHANGED 2

SHOW 10 ENTRIES

COVERAGE	FILE	LINES	RELEVANT	COVERED	MISSED	HITS/LINE
20.11	astropy/_erfa/core.py	22997	5545	1115	4430	1.0
55.41	astropy/cosmology/scalar_inv_efuncs.c	7694	2597	1439	1158	6660.0
100.0	astropy/wcs/src/docstrings.c	5424	0	0	0	0.0
85.31	astropy/io/votable/tree.py	3653	1845	1574	271	1.0
78.28	astropy/wcs/src/wcslib_wrap.c	3493	1432	1121	311	176.0
80.55	astropy/wcs/wcs.py	3174	1013	816	197	1.0
96.48	astropy/cosmology/core.py	2948	681	657	24	1.0
70.94	astropy/table/_column_mixins.c	2764	554	393	161	31517.0
91.91	astropy/modeling/core.py	2752	976	897	79	1.0
90.89	astropy/table/table.py	2579	878	798	80	1.0
94.74	astropy/units/core.py	2326	856	811	45	1.0

SHOWING 1 TO 10 OF 333 ENTRIES

All checks have passed
3 successful checks

Hide all checks

✓ **continuous-integration/appveyor** — AppVeyor build succeeded — Details

✓ **continuous-integration/travis-ci/pr** — The Travis CI build passed — Details

✓ **coverage/coveralls** — Coverage increased (+0.002%) to 76.546% — Details

This branch is up-to-date with the base branch
Merging can be performed automatically.

Merge pull request You can also open this in GitHub Desktop or view command line instructions.

Some checks were not successful
1 errored and 1 successful checks

Hide all checks

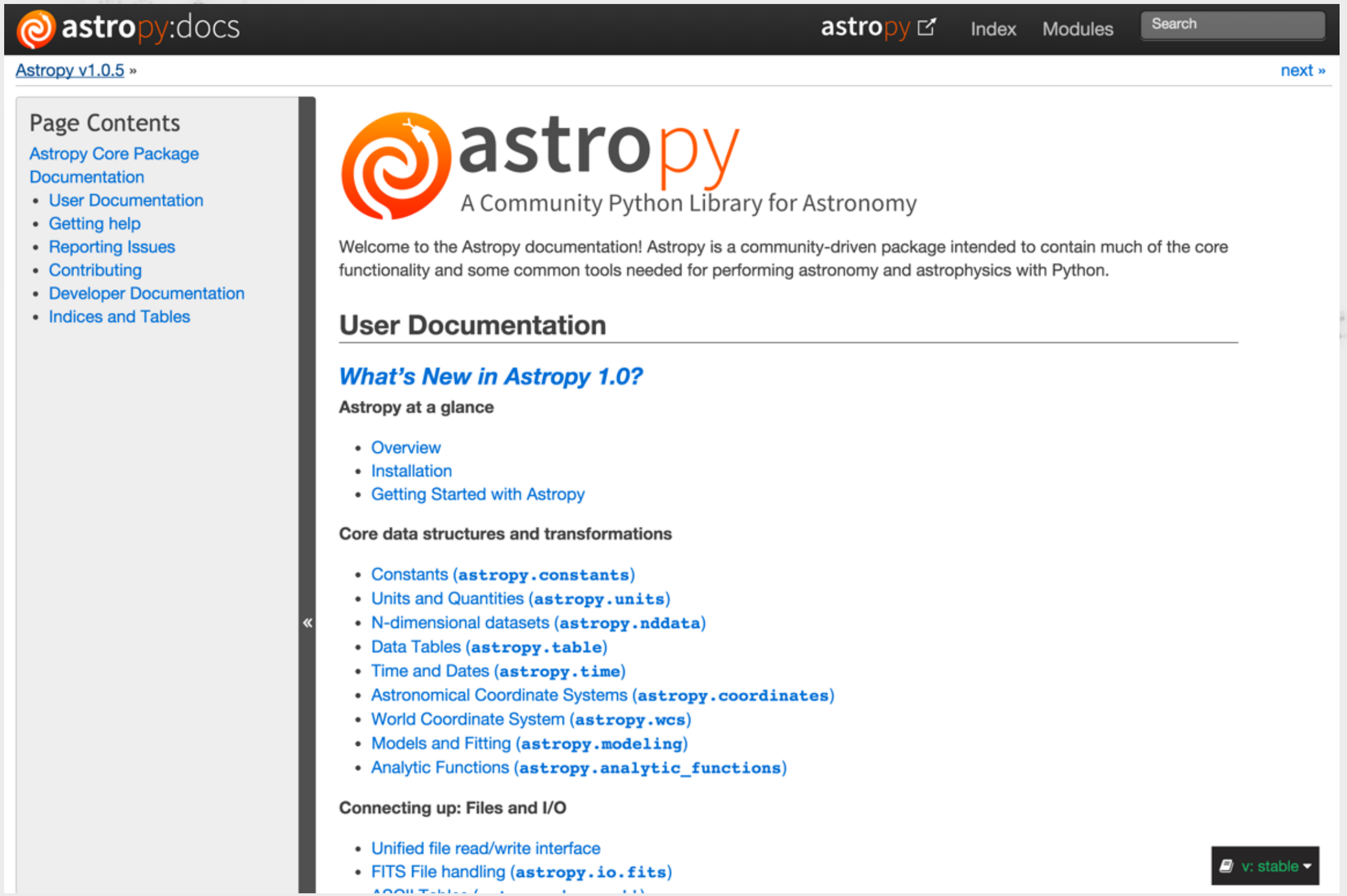
✗ **continuous-integration/travis-ci/pr** — The Travis CI build could not complete… — Details

✓ **continuous-integration/appveyor** — AppVeyor build succeeded — Details

This branch is up-to-date with the base branch
Merging can be performed automatically.

Merge pull request You can also open this in GitHub Desktop or view command line instructions.

readthedocs.org (Documentation)



Challenges for openly developped projects

(in no specific order)

Challenge #1:

Reaching critical mass

Challenge #2:

Keeping the barrier of entry low

Challenge #3:

Heterogeneous development

Challenge #4:

Saying NO (to feature creep)

Challenge #5:

Giving credit to contributors

Title: Astropy: A community Python package for astronomy

Authors: Astropy Collaboration; Robitaille, Thomas P.; Tollerud, Erik J.; Greenfield, Perry; Droettboom, Michael; Bray, Erik; Aldcroft, Tom; Davis, Matt; Ginsburg, Adam; Price-Whelan, Adrian M.; Kerzendorf, Wolfgang E.; Conley, Alexander; Crighton, Neil; Barbary, Kyle; Muna, Demitri; Ferguson, Henry; Grollier, Frédéric; Parikh, Madhura M.; Nair, Prasanth H.; Unther, Hans M.; Deil, Christoph; Woillez, Julien; Conseil, Simon; Kramer, Roban; Turner, James E. H.; Singer, Leo; Fox, Ryan; Weaver, Benjamin A.; Zabalza, Victor; Edwards, Zachary I.; Azalee Bostroem, K.; Burke, D. J.; Casey, Andrew R.; Crawford, Steven M.; Dencheva, Nadia; Ely, Justin; Jenness, Tim; Labrie, Kathleen; Lim, Pey Lian; Pierfederici, Francesco; Pontzen, Andrew; Ptak, Andy; Refsdal, Brian; Servillat, Mathieu; Streicher, Ole

Affiliation: AB(Max-Planck-Institut für Astronomie, Königstuhl 17, 69117, Heidelberg, Germany robitaille@mpia.de), AC(Department of Astronomy, Yale University, PO Box 208101, New Haven, CT, 06510, USA), AD(Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD, 21218, USA), AE(Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD, 21218, USA), AF(Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD, 21218, USA), AG(Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA, 02138, USA), AH(Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD, 21218, USA), AI(Center for Astrophysics and Space Astronomy, University of Colorado, Boulder, CO, 80309, USA), AJ(Department of Astronomy, Columbia University, Pupin Hall, 550W 120th St., New York, NY, 10027, USA), AK(Department of Astronomy and Astrophysics, University of Toronto, 50 Saint George Street, Toronto, ON, M5S3H4, Canada), AL(Center for Astrophysics and Space Astronomy, University of Colorado, Boulder, CO, 80309, USA), AM(Max-Planck-Institut für Astronomie, Königstuhl 17, 69117, Heidelberg, Germany), AN(Argonne National Laboratory, High Energy Physics Division, 9700 South Cass Avenue, Argonne, IL, 60439, USA), AO(Department of Astronomy, Ohio State University, Columbus, OH, 43210, USA), AP(Space Telescope Science Institute, 3700 San Martin Drive, Baltimore, MD, 21218, USA), AQ(Independent developer), AR(S.V.National Institute of Technology, 395007, Surat., India), AS(Independent developer), AT(Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA, 02138, USA), AU(Max-Planck-Institut für Kernphysik, PO Box 103980, 69029, Heidelberg, Germany), AV(European Southern Observatory, Karl-Schwarzschild-Str. 2, 85748, Garching bei München, Germany), AW(Laboratoire d'Astrophysique de Marseille, OAMP, Université Aix-Marseille et CNRS, 13388, Marseille, France), AX(ETH Zürich, Institute for Astronomy, Wolfgang-Pauli-Strasse 27, Building HIT, Floor J, 8093, Zurich, Switzerland), AY(Gemini Observatory, Casilla 603, La Serena, Chile), AZ(LIGO Laboratory, California Institute of Technology, 1200 E.

Challenge #6:

Improving diversity

Challenge #7:

Building good governance models

SEP-0002 - SunPy Organization Definition

SEP	2
title	SunPy Organization Definition
author(s)	Steven Christe
contact email	steven.d.christe@nasa.gov
date-creation	2014/02/16
type	process
discussion	Unavailable
status	accepted

Abstract

The SunPy organization currently lacks a formal organization structure. This proposal defines the SunPy organization which manages the code and related properties (e.g. docs, website, etc.)

Detailed Description

The organization of SunPy is modeled on that usually adopted by non-profit organizations (e.g. 501c. This organization structure is tried and tested and has the added advantage that it should provide a smooth transition to incorporating a SunPy foundation if it becomes necessary in the future (e.g. for funding purposes). The primary role of the organization is to *facilitate and promote the use and development of a community-led, free and open-source solar data-analysis software based on the scientific Python environment*. This includes but is not limited to the following tasks

- developing the SunPy software library
- manage and protect the SunPy brand and identity
- promote SunPy to the community
- managing SunPy assets, i.e. github account, domain name etc.

The organization consists of an executive director, a board, and the developer community. The goal of the proposed structure to provide and promote community input into the project.

Role	Sub-role	Lead	Deputy
Coordination committee member		Tom Aldcroft	
		Kelle Cruz	
		Tom Robitaille	
		Erik Tollerud	
Astropy.org web page maintainer		Erik Tollerud[1]	*Unfilled*
Astropy-helpers maintainer		*Unfilled*	Erik Tollerud, Brigitta Sipocz, Erik Bray
Astropy GSoC coordinator	2016	Tom Aldcroft	Erik Tollerud
CI-helpers maintainer		Brigitta Sipocz	*Unfilled*
Community engagement coordinator	Overall	Kelle Cruz	*Unfilled*
	Twitter	Adrian Price-Whelan	Tom Robitaille
	Facebook	Kelle Cruz	Tom Robitaille, Erik Tollerud
	Conferences	Adrian Price-Whelan	Erik Tollerud, Tom Robitaille, Kelle Cruz
Core package release coordinator		Erik Tollerud[1]	Tom Robitaille[2]
Distribution coordinator	Conda	Matt Craig	*Unfilled*
	Debian	Ole Streicher	*Unfilled*
	Fedora	Sergio Pascual	*Unfilled*
	ArchLinux	*Unfilled*	*Unfilled*
	MacPorts	Tom Robitaille[1]	*Unfilled*
Package-template maintainer		Tom Robitaille[1]	Brigitta Sipocz, Larry Bradley, Adrian Price-Whelan
Sub-package maintainer	astropy.analytic_functions	Pey Lian Lim	Larry Bradley
	astropy.constants	*Unfilled*	*Unfilled*
	astropy.convolution	Adam Ginsburg	Axel Donath, Larry Bradley

Astropy Community Code of Conduct

The community of participants in open source Astronomy projects is made up of members from around the globe with a diverse set of skills, personalities, and experiences. It is through these differences that our community experiences success and continued growth. We expect everyone in our community to follow these guidelines when interacting with others both inside and outside of our community. Our goal is to keep ours a positive, inclusive, successful, and growing community.

As members of the community,

- We pledge to treat all people with respect and provide a harassment- and bullying-free environment, regardless of sex, sexual orientation and/or gender identity, disability, physical appearance, body size, race, nationality, ethnicity, and religion. In particular, sexual language and imagery, sexist, racist, or otherwise exclusionary jokes are not appropriate.
- We pledge to respect the work of others by recognizing acknowledgment/citation requests of original authors. As authors, we pledge to be explicit about how we want our own work to be cited or acknowledged.
- We pledge to welcome those interested in joining the community, and realize that including people with a variety of opinions and backgrounds will only serve to enrich our community. In particular, discussions relating to pros/cons of various technologies, programming languages, and so on are welcome, but these should be done with respect, taking proactive measure to ensure that all participants are heard and feel confident that they can freely express their opinions.
- We pledge to welcome questions and answer them respectfully, paying particular attention to those new to the community. We pledge to provide respectful criticisms and feedback in forums, especially in discussion threads resulting from code contributions.
- We pledge to be conscientious of the perceptions of the wider community and to respond to criticism respectfully. We will strive to model behaviors that encourage productive debate and disagreement, both within our community and where we are criticized. We will treat those outside our community with the same respect as people within our community.
- We pledge to help the entire community follow the code of conduct, and to not remain silent when we see violations of the code of conduct. We will take action when members of our community violate this code such as contacting confidential@astropy.org (all emails sent to this address will be treated with the strictest confidence) or talking privately with the person.

This code of conduct applies to all community situations online and offline, including mailing lists, forums, social media, conferences, meetings, associated social events, and one-to-one interactions.

Parts of this code of conduct have been adapted from the PSF code of conduct.

Online communities:

GitHub

Mailing lists (astropy, yt-users, sunpy, etc.)

Facebook (*Python users in Astronomy*)

Twitter

In-person community events

Dedicated conferences (e.g. #pyastro)

Hack days (Astro Hack Week, AAS Hack Day)

Python in Astronomy 2017

8 - 12 May 2017

Lorentz Center, Leiden

http://openastronomy.org/pyastro/2017/

Apply Now! (Deadline: 9th December)

BoF B4 today @ 17:30

Thank you

to all the **users** and **contributors** of **open projects!**