

STARS

WCS Using Astrometry.Net





WCS Using Astrometry.Net

Overview

This lesson presumes you have reviewed the lesson discussing what WCS Coordinate are.

Here, we will outline how to use Astrometry.Net to insert WCS Coordinates into your images.

WCS Using Astrometry.Net

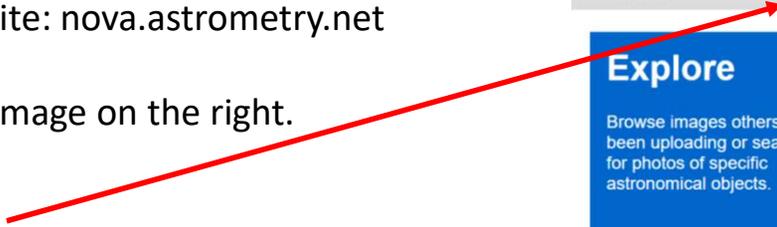


Using Astrometry.net

Go to their website: nova.astrometry.net

You will see the image on the right.

Click: **UPLOAD**



Astrometry.net

Home | **Upload** | API | Support

Home

Explore
Browse images others have been uploading or search for photos of specific astronomical objects.

Calibrate & Share
Upload your own images to get accurate calibrations and share them with the world.

Create
Take advantage of the API of this web service to program your own applications.

About Astrometry.net
If you have astronomical imaging of the sky with celestial coordinates you do not know—or do not trust—then Astrometry.net is for you. Input an image and we'll give you back astrometric meta-data, plus lists of known objects falling inside the field of view.
We have built this astrometric calibration service to create correct, standards-compliant astrometric meta-data for every useful astronomical image ever taken, past and future, in any state of archival disarray. We hope this will help organize, annotate and make searchable all the world's astronomical information.

Recently Submitted Images (See More)



WCS Using Astrometry.Net

Using Astrometry.net

You will see this page.

Click: CHOOSE FILE

Navigate to your file and select it.

Click: UPLOAD

Astrometry.net

Home Explore Upload API Support Search

Upload

Select a file or url to upload

Choose File No file chosen

file
 url

The following file types are supported:

- **JPEG, GIF, PNG, or FITS image**
- **FITS binary table**, containing a BINTABLE of detected objects, with X and Y pixel positions in "D" (double) or "E" (float) columns, with one object per row
- **text list**, containing two columns of digits separated by commas or whitespace, listing the X,Y positions of sources, sorted with the brightest sources first
- **tarball (.tar, .gz)**, containing files of any of the above types

Upload

[Advanced Settings \[+\]](#)

WCS Using Astrometry.Net



Using Astrometry.net

This next page will show you a thumbnail of what you uploaded.

It will also display: **WAITING FOR PROCESSING TO START.**

Astrometry.net

NOTE: signins should be working again... but read about [account migration](#). Not signed in | [Sign In](#)

Home | Explore | Upload | API | Support | Search

Submission 2202801

This page will automatically refresh every 10 seconds. [Stop](#)

Submitter:	(1)	Upload Settings	
Date Submitted:	2018-08-16T11:52:10Z	Parity:	try both simultaneously
Filename:	ESPC WASP-1245.000secs00000004.fit	Scale Units:	width of the field (in degrees)
		Scale Type:	bounds
		Scale Lower Bound:	0.1
		Scale Upper Bound:	180.0
		Downsample Factor:	2

[Go to results page](#)
Waiting for processing to start...



WCS Using Astrometry.Net

Using Astrometry.net

When it is done, you will see the green word: SUCCESS

Click on: GO TO RESULTS PAGE

Astrometry.net

NOTE: signins should be working again... but read about account migration. Not signed in | Sign In

Home Explore Upload API Support Search

Submission 2202801

Submitter:	(1)	Upload Settings
Date Submitted:	2018-08-16T11:52:10Z	Parity: try both simultaneously
Filename:	ESPC WASP-1245.000secs00000004.fit	Scale Units: width of the field (in degrees)
		Scale Type: bounds
		Scale Lower Bound: 0.1
		Scale Upper Bound: 180.0
		Downsample Factor: 2

[Go to results page](#)
Job 2726277:
Success

Source extraction image (fullsize)
Log file tail [-]
(full)

```
B =      0      0 -4.8706e-06
      0 1.0938e-06
-1.3458e-07
AP = -0.00014204 4.4863e-06 2.5079e-06
      7.5841e-07 -1.5733e-07
      -2.2322e-06
BP = -0.00073474 8.8095e-06 4.8799e-06
      -1.712e-06 -1.0967e-06
      1.3514e-07
sqrt(det(CD))=0.574885 [arcsec]
Found tag-along columns from field: FLUX BACKGROUND
Field 1: solved with index index-204-05.fits.
Field 1: tried 71 quads, matched 1551 codes.
Spent 0.22 s user, 0.008 s system, 0.228 s total, 0.22778 s wall time.
Writing 21 rows (of 369 field and 21 index objects) to correspondence file.
cx<=dx constraints: 0
meanx constraints: 252
RA,Dec constraints: 0
AB scale constraints: 0
Spent 0.23593 seconds on this field.
```

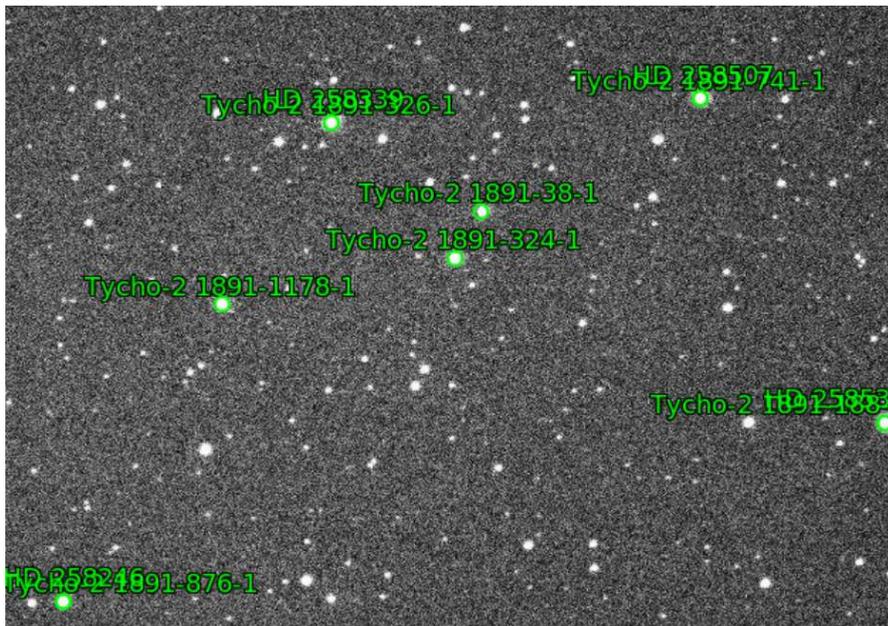
[Log file 2](#)



WCS Using Astrometry.Net

Using Astrometry.net

The program will identify the stars in the image that were used to place the image in the correct part of the sky and confirm the WCS coordinates.



Astrometry.net

Home Explore Upload API Support

Images > ESPC WASP-1245.000sec...04.fit

Submitted by (1)
on 2018-08-18T11:52:10Z
as "ESPC WASP-1245.000sec...04.fit"
(Submission 2202801)
under Attribution 3.0 Unported

Job Status
Job 2726277:
Success

Calibration

Center (RA, Dec):	(97.701, 29.664)
Center (RA, hms):	06 ^h 30 ^m 48.182 ^s
Center (Dec, dms):	+29° 39' 49.800"
Size:	13.2 x 10.5 arcmin
Radius:	0.141 deg
Pixel scale:	0.575 arcsec/pixel
Orientation:	Up is 1.37 degrees E of N
WCS file:	wcs.fits
New FITS image:	new-image.fits
Reference stars nearby (RA,Dec table):	rdls.fits
Stars detected in your images (x,y table):	axy.fits
Correspondences between image and reference stars (table):	corr.fits
KMZ (Google Sky):	image.kmz
World Wide Telescope:	view in WorldWideTelescope

Nearby Images (View All)

Comments
No comments.
Please Sign In to post comments.

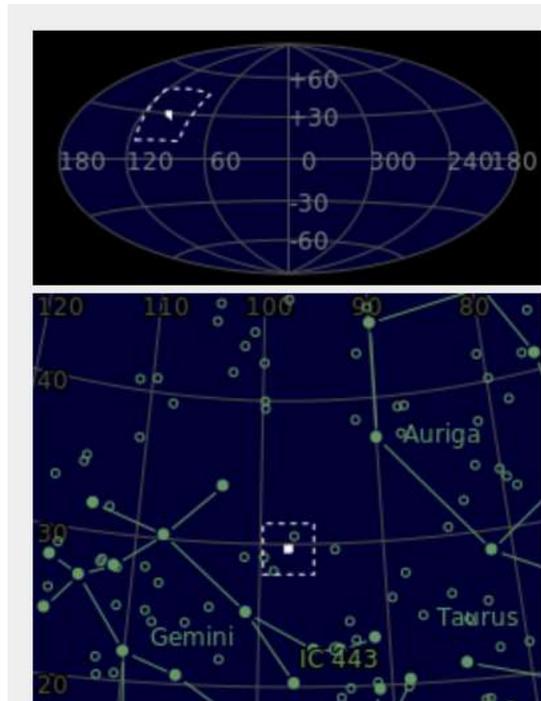
(c) Boyce Research Initiatives and Education Foundation.
Visit: Boyce Astro @ <http://www.boyce-astro.org>



WCS Using Astrometry.Net

Using Astrometry.net

On another area of this page, you will see where the image you took is located in the night sky.



(c) Boyce Research Initiatives and Education Foundation.
Visit: Boyce Astro @ <http://www.boyce-astro.org>



WCS Using Astrometry.Net

Summary

Astrometry.net can be very effective.

However, it can be a slow process as you have to take one image at a time.

One way around this is to open multiple windows and process multiple at the same time. There is no prohibition against this. In fact, we recommend this practice.



WCS Using Astrometry.Net

Questions?