



WRITING AND RESEARCH

Locating Your Star In An Image – Variable Stars and Exoplanets





WRITING AND RESEARCH - Locating Your Star - Variable Stars and Exoplanets

Overview

This lesson will assume a membership with the AAVSO.

Their focus is on all things variable. However, their tools are excellent in printing maps of your surrounding area of interest.

On these maps they will indicate known comparison stars for your consideration in your photometry project.

WRITING AND RESEARCH - Locating Your Star - Variable Stars and Exoplanets



AAVSO

This lesson will rely on using the AAVSO tools for locating your Variable Star and/or Exoplanet.

This assumes you have a membership to the AAVSO.

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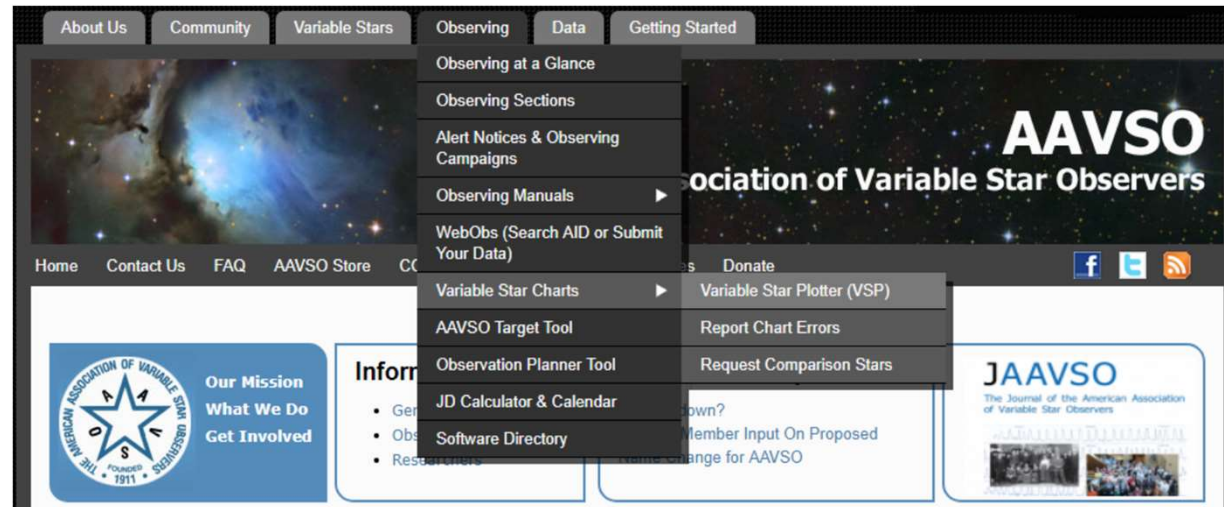


WRITING AND RESEARCH - Locating Your Star - Variable Stars and Exoplanets

AAVSO Variable Star Plotter (VSP)

Locating the VSP:

1. Go to the AAVSO Home Page (AAVSO.org)
2. Select "Observing"
3. Scroll down to "Variable Star Charts"
4. Select "Variable Star Plotter (VSP)"



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Filling out the Request

There are two charts on this page:

- Plot a quick chart (necessary)
- Advanced Options (not necessary)

You will need to enter all fields on the “Plot a Quick Chart” form.

NOTE: Ensure you select CCD Chart Orientation and Photometry.

Home / VSP

Variable Star Plotter

[VSP Help Guide](#) [Request a Sequence](#) [Report chart errors](#)

PLOT A QUICK CHART

WHAT IS THE NAME, DESIGNATION OR AUID OF THE OBJECT?
Required if no coordinates are provided below

RIGHT ASCENSION DECLINATION
Allowed Formats: HH:MM:SS, HH MM SS, DDD.XXXX. Required if no name is given above. Allowed Formats: ±DD:MM:SS, ±DD MM SS, ±DD.XXXX. Required if no name is given above

CHOOSE A PREDEFINED CHART SCALE
Select one...
A is larger, slower; G is smaller, faster

CHOOSE A CHART ORIENTATION
 Visual Reversed CCD

PLOT A FINDER CHART OR A TABLE OF FIELD PHOTOMETRY? *
 Chart Photometry

CHART ID
A Chart ID will allow you to reproduce prior charts. Overrides all other fields in this form.

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Example

In this example, we will locate AR And, a Cataclysmic Variable.

If the designator is placed in the Name, the RA and Dec are not necessary. This designator can be located on the AAVSO Target Tool webpage.

If the designator is unknown, the RA and Dec are required.

NOTE: 120 arcmin is sufficient for most images.

Select PLOT CHART

Variable Star Plotter

[VSP Help Guide](#) [Request a Sequence](#) [Report chart errors](#)

PLOT A QUICK CHART

WHAT IS THE NAME, DESIGNATION OR AUID OF THE OBJECT?

AR And

Required if no coordinates are provided below

RIGHT ASCENSION

01 45 03

Allowed Formats: HH:MM:SS, HH MM SS, DDD.XXXX. Required if no name is given above

DECLINATION

+37 56 33

Allowed Formats: ±DD:MM:SS, ±DD MM SS, ±DD.XXXX. Required if no name is given above

CHOOSE A PREDEFINED CHART SCALE

C (120arcmin)

A is larger, slower; G is smaller, faster

CHOOSE A CHART ORIENTATION

Visual Reversed CCD

PLOT A FINDER CHART OR A TABLE OF FIELD PHOTOMETRY? *

Chart Photometry

CHART ID

AR And

A Chart ID will allow you to reproduce prior charts. Overrides all other fields in this form.

Plot Chart

Clear Form



WRITING AND RESEARCH - Locating Your Star - Variable Stars and Exoplanets

Example

The next page will show the comparison stars in relation to the target.

Below this section, the VSP page will provide source data for this information.

Select “STAR CHART FOR THIS TABLE”

Variable Star Plotter

[Plot Another Chart](#) [Star Chart for this Table](#)

Field photometry for **AR And** from the AAVSO Variable Star Database

Data includes all comparison stars within 1.0° of RA: **01:45:03.27 [26.26363°]** & Dec: **37:56:33.4 [37.9426°]**

Report this sequence as **X1999ABM** in the chart field of your observation report.

AUID	RA	Dec	Label	V	B-V	Comments
000-BBD-290	01:48:38.98 [27.16241646°]	37:57:10.2 [37.95283127°]	59	5.940 (0.100) ²²	0.970 (0.173)	
000-BBD-267	01:44:23.14 [26.09641647°]	37:40:06.5 [37.66847229°]	72	7.193 (0.100) ²⁴	-0.072 (0.173)	
000-BJX-07	01:44:09.38 [26.03908348°]	38:31:19.1 [38.52197266°]	78	7.836 (0.032) ¹	0.985 (0.058)	
000-BKL-943	01:40:17.78 [25.07408333°]	38:43:40.9 [38.72802734°]	98	9.792 (0.044) ¹	0.589 (0.086)	
000-BBD-265	01:43:47.49 [25.94787407°]	38:07:27.6 [38.12433243°]	99	9.896 (0.076) ¹⁶	0.769 (0.137)	
000-BBD-285	01:45:39.54 [26.41474915°]	37:51:46.0 [37.86277771°]	100	9.967 (0.082) ¹⁶	0.311 (0.126)	
000-BBD-270	01:44:44.52 [26.18549919°]	38:02:06.3 [38.03508377°]	111	11.119 (0.071) ¹⁶	0.413 (0.103)	
000-BBD-284	01:45:20.97 [26.33737564°]	37:58:18.7 [37.97186279°]	118	11.790 (0.102) ¹⁶	1.015 (0.183)	

- **AUID** is the AAVSO Unique Identifier for the star. When reporting a problem, please include this AUID.
- Coordinates are in J2000 sexagesimal format, followed by decimal degrees
- [Search for variable stars in this field via VSX](#)
- **Label** is that star's label when plotted on an AAVSO chart, usually (but not always) its V magnitude rounded to the nearest tenth.

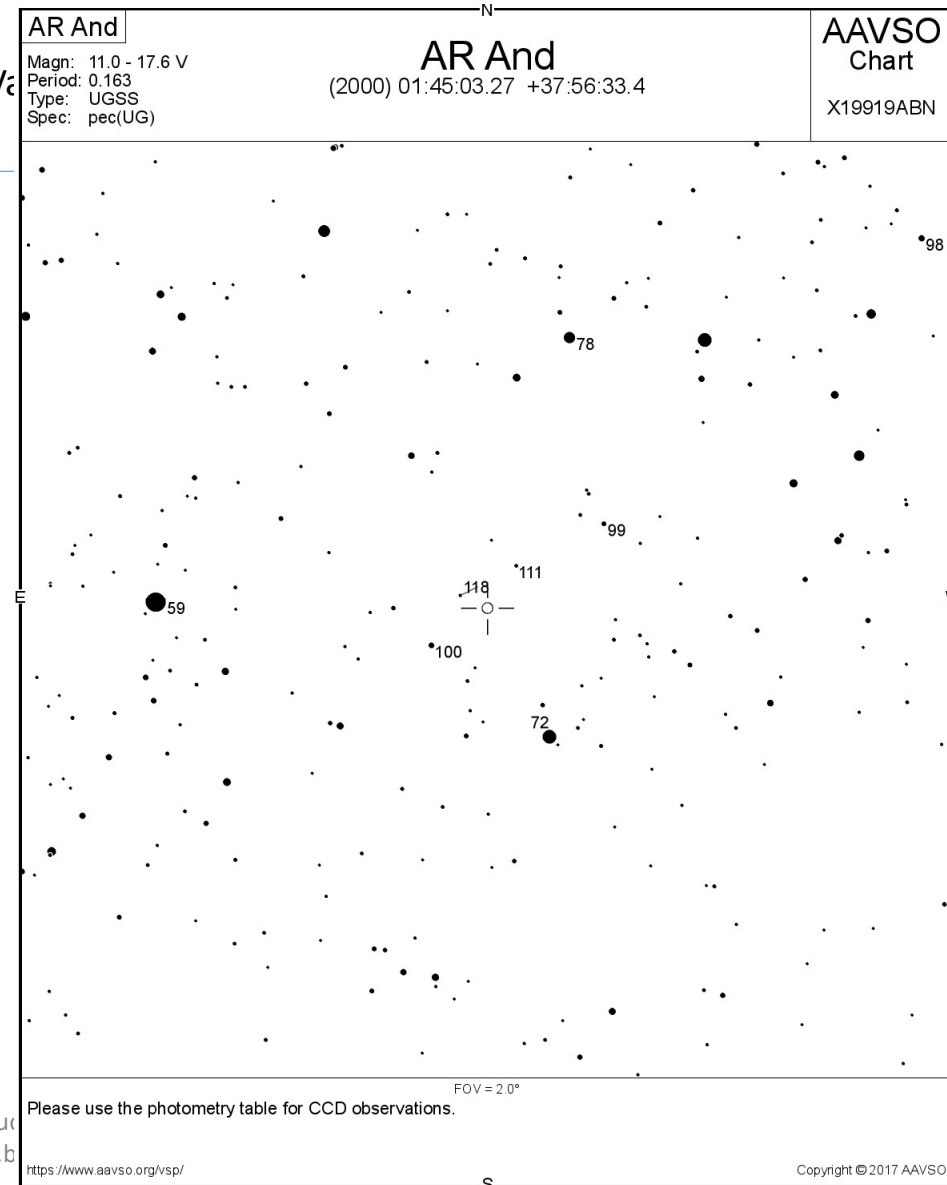


WRITING AND RESEARCH - Locating Your Star - V

Example

The resultant chart will show:

- Target Star (in the bull's eye)
- Comparison Stars (with magnitude numbers)
 - NOTE: These magnitude numbers do not contain decimals. Place a decimal to the left of the last number. For example, 111 is magnitude 11.1
- The Magnitude of the target, its period, type of star, and spectral classification are provided in the upper portion of the chart.
- The Cardinal Directions are provided on the sides of the chart embedded in the boarder.

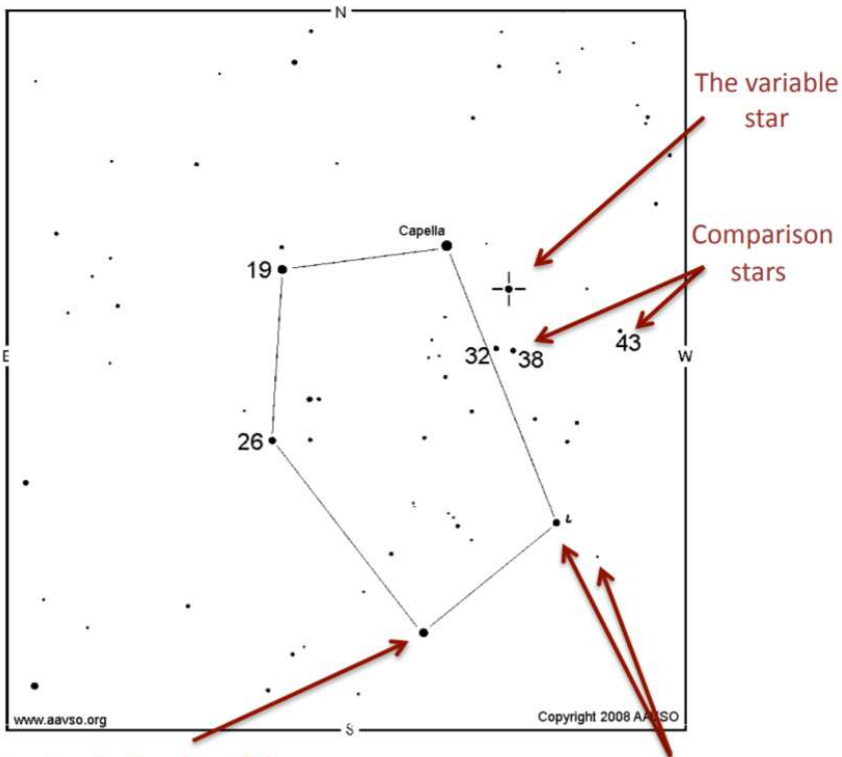


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WRITING AND RESEARCH - Locating

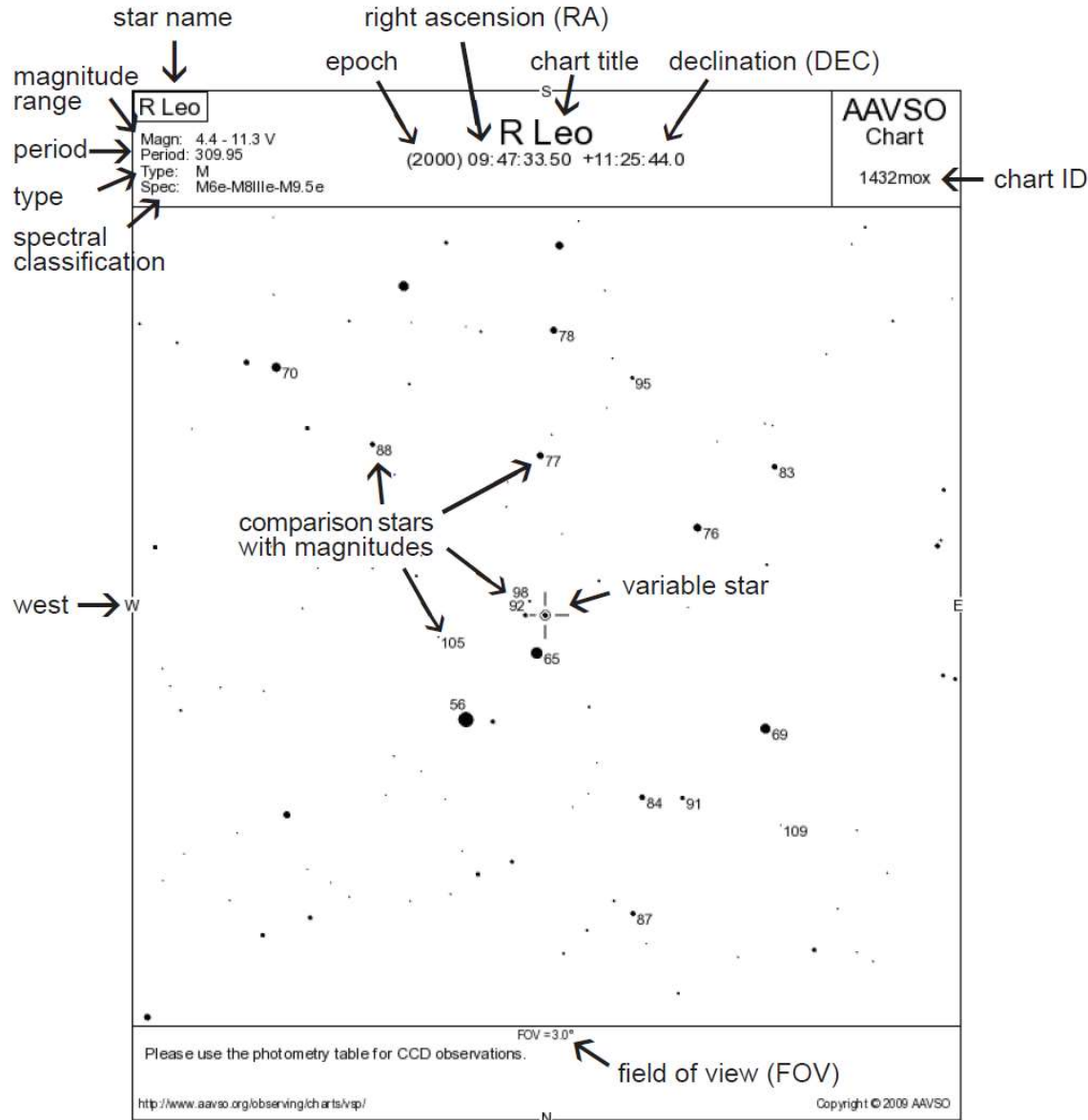


VSP Chart Legend



Brighter stars in the sky will have bigger dots on the chart, like this one

Other stars in the sky

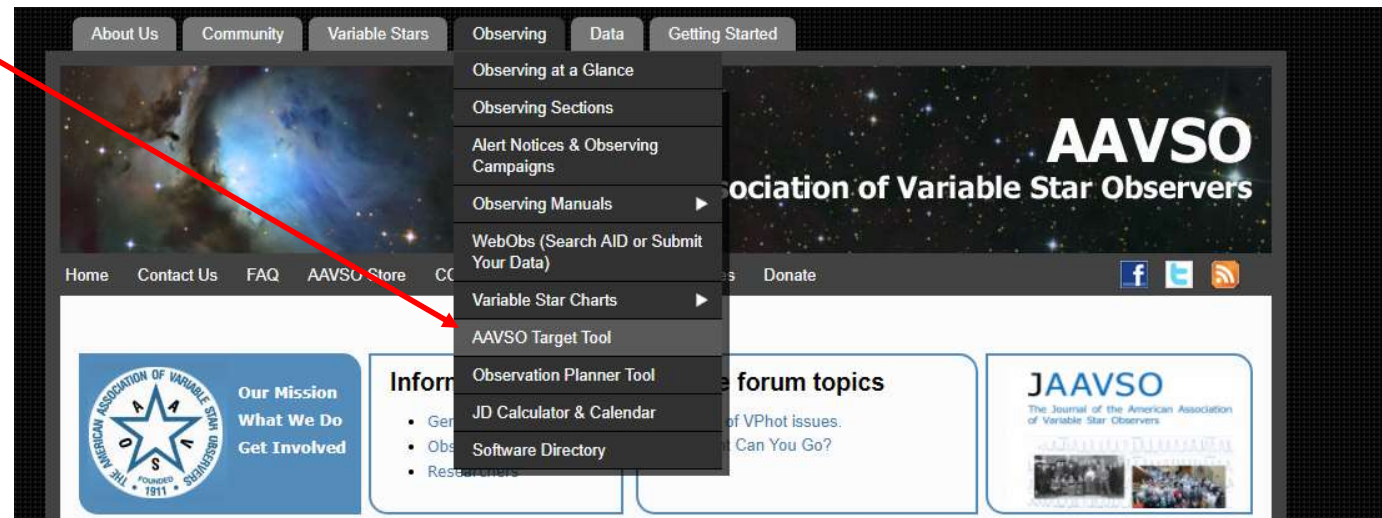




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With the star located, and its associated Comp Stars, you are ready to begin scheduling your observing sessions.

The AAVSO Target Tool should be consulted for assistance in scheduling observations.



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AAVSO Target Tool

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AAVSO Target Tool

One of the most commonly asked questions by AAVSO observers is "What should I observe tonight?" With the easy-to-use AAVSO Target Tool, we hope that you will find the answer!

AAVSO Target Tool

AAVSO Target Tool: [Home](#) [Add Target](#) [Add Multiple Targets](#) [Delete Multiple Targets](#) [User List](#) [Filter](#) [Export CSV](#) [Help](#) [Welcome](#)

Observing section: [Alert/Campaigns \(17\)](#) [Eclipsing \(8\)](#) [Eclipsing Variables \(20\)](#) [Eclipsing Variables \(EB\) \(7\)](#) [Short Period Pulsars \(SPS\) \(7\)](#) [Long Period Variables \(LPV\) \(7\)](#)
[Young Stellar Objects \(YSO\) \(7\)](#) [High Energy Targets \(HET\) \(7\)](#) [All \(42\) \(100% selected\)](#)

Observability: [Magnitude at the observing location \(42.000, 70.968\) will start at 21.504 and continue until 03.048](#)
[Show only targets that are observable](#) [Close toolbar](#)

Star Name	RA (J2000.0)	Dec (J2000.0)	Const. abbreviation	Var. Type	Min Mag	Max Mag	Period (d)	Observing Cadence (d)	Observing Section	Filter/Make	Last Observed	High Priority	Notes
Orion	19°24'33"	-07°14'20"	Cyg	2020-V	10.1 V	5.6 V	3.0	Alert/Campaign	B	Filtergraph			B and V especially needed Alert Notice #14 Special Notice #320
HD 204	16°50'41"	+46°48'10"	Orion	2020-V	10.3 V	7.9 V	546.65	1.0	Alert/Campaign	B			Alert Notice #12
AS 17g	24°53'01"	+12°37'32"	Fog	2020-V	8.4 V	6.9 V	816.5	1.0	Alert/Campaign	B			Alert Notice #21
RR Aur	07°50'49"	+07°24'00"	Aur	CT18-V	13.6 g	9.6 g	2.64	1.0	Alert/Campaign	B			Alert Notice #14 Special Notice #462
R Aur	07°49'49"	+07°17'04"	Aur	4020-V	12.4 V	5.2 V	367.0	10.0	Alert/Campaign	B			Multi-year observing campaign Alert Notice #10
Proxima Cent	14°29'33"	+42°40'31"	Cent	B1	11.3 V	11.5 V	82.8	8.3	Alert/Campaign	F			© Paul Johnson Transfer of ownership Proxima Cent 1 See Alert Notice for ephemeris information Alert Notice #21

Getting Started

1. Click the blue button above or visit: <https://filtergraph.com/aaavso>
2. Click "Log in" then "Sign up" (Please note that this account is **not** the same as your AAVSO website account).
3. Fill out the form and click the "Sign Up" button.
4. Once you are logged in, select the star list(s) that interest you and click "Filter Observing Sections". Note that you can toggle the "All" checkbox to select or deselect all sections.

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Target Tool Main Page

AAVSO Target Tool Print- Export CSV Help

Observing section: Alerts/Campaigns Exoplanets (EP) Cataclysmic Variables (CV) Eclipsing Variables (EB) Short Period Pulsators (SPP) Long Period Variables (LPV) Young Stellar Objects (YSO) High Energy Targets (HET) All Filter observing sections

Observability: To show only targets that are visible tonight at your telescope location, [sign up](#) or [login](#).

Star Name	RA (J2000.0)	Dec (J2000.0)	Constellation	Var. Type	Min Mag	Max Mag	Period (d)	Observing Cadence (d)	Observing Section	Filter/Mode	Last Observed	High Priority	Notes
AR And	01 ^h 45 ^m 03 ^s	+37° 56' 33"	And	UGSS	17.6 V	11.0 V	0.163	5.0	CV	All	4 days ago		
DX And	23 ^h 29 ^m 46 ^s	+43° 45' 04"	And	UGSS	15.5 V	11.0 V	0.440502	5.0	CV	All	1 day ago		
EG And	00 ^h 44 ^m 37 ^s	+40° 40' 45"	And	ZAND+E	7.8 V	6.97 V	482.57	10.0	CV	All	3 days ago		
FN And	01 ^h 11 ^m 57 ^s	+35° 17' 24"	And	UGSS	19.3 V	12.9 V		5.0	CV	All	2 days ago		
FO And	01 ^h 15 ^m 32 ^s	+37° 37' 35"	And	UGSU	17.5 V	13.1 V	0.07161	5.0	CV	All	2 days ago		
LS And	00 ^h 32 ^m 10 ^s	+41° 58' 11"	And	UGWZ:	20.2 B	11.7 B		5.0	CV	All	1 day ago		



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AAVSO Target Tool

If you already know the type of Variable Star you are selecting, its designator, and its RA and Dec, you can proceed to locating the chart.

If you do not know these elements yet, you will need this information before selecting a chart.

TO find a Variable Star, assuming you do not have one already picked out, visit the AAVSO Target Tool and make a selection: AAVSO Home Page – Observing – AAVSO Target Tool

AAVSO Target Tool

Print - Export CSV Help Feedback Log In -

Observing section: Alerts/Campaigns Exoplanets (EP) Cataclysmic Variables (CV) Eclipsing Variables (EB) Short Period Pulsators (SPP) Long Period Variables (LPV) Young Stellar Objects (YSO) High Energy Targets (HET) All

Observability: To show only targets that are visible tonight at your telescope location, [sign up](#) or [login](#).

Star Name	RA (J2000.0)	Dec (J2000.0)	Constellation	Var. Type	Min Mag	Max Mag	Period (d)	Observing Cadence (d)	Observing Section	Filter/Mode	Last Observed	High Priority
AR And	01 ^h 45 ^m 03 ^s	+37° 56' 33"	And	UGSS	17.6 V	11.0 V	0.163	5.0	CV	All	2 days ago	
DX And	23 ^h 29 ^m 46 ^s	+43° 45' 04"	And	UGSS	15.5 V	11.0 V	0.440502	5.0	CV	All	1 day ago	
EG And	00 ^h 44 ^m 37 ^s	+40° 40' 45"	And	ZAND+ E	7.8 V	6.97 V	482.57	10.0	CV	All	19 hours ago	
FN And	01 ^h 11 ^m 57 ^s	+35° 17' 24"	And	UGSS	19.3 V	12.9 V		5.0	CV	All	2 days ago	
FO And	01 ^h 15 ^m 32 ^s	+37° 37' 35"	And	UGSU	17.5 V	13.1 V	0.07161	5.0	CV	All	1 day ago	
LS And	00 ^h 32 ^m 10 ^s	+41° 58' 11"	And	UGWZ:	20.2 B	11.7 B		5.0	CV	All	1 day ago	
PQ And	02 ^h 29 ^m 29 ^s	+40° 02' 39"	And	UGWZ+ ZZ/GWL IB	19.2 V	10.0 V	0.056	5.0	CV	All	2 days ago	
RX And	01 ^h 04 ^m 35 ^s	+41° 17' 57"	And	UGZ	14.8 V	10.3 V	0.209893	5.0	CV	All	8 hours ago	
Z And	23 ^h 33 ^m 39 ^s	+48° 49' 05"	And	ZAND	11.3 V	7.7 V		5.0	CV	All	15 hours ago	
DH Aql	19 ^h 26 ^m 10 ^s	-10° 15' 28"	Aql	UGSU	17.0 p	12.5 p		5.0	CV	All	3 days ago	
FO Aql	19 ^h 16 ^m 38 ^s	+0° 07' 37"	Aql	UGSS	17.5 p	13.6 p	0.217735	5.0	CV	All	14 hours ago	
KX Aql	19 ^h 33 ^m 53 ^s	+14° 17' 47"	Aql	UGSU	—	12.5 p	0.06035	5.0	CV	All	14 hours ago	
UU Aql	19 ^h 57 ^m 18 ^s	-9° 19' 21"	Aql	UGSS	17.0 V	11.0 V	0.163532	5.0	CV	All	2 days ago	
V0603 Aql	18 ^h 48 ^m 54 ^s	+0° 35' 02"	Aql	NA	12.4 V	-1.4 V	0.13820103	5.0	CV	All	14 hours ago	
V0725 Aql	19 ^h 56 ^m 45 ^s	+10° 49' 32"	Aql	UGSU	16.2 p	13.7 p	0.0944	5.0	CV	All	12 hours ago	
V1413 Aql	19 ^h 03 ^m 46 ^s	+16° 26' 17"	Aql	ZAND+ E	15.1 V	10.6 V	434.1	10.0	CV	All	14 hours ago	
VY Aqr	21 ^h 12 ^m 09 ^s	-8° 49' 36"	Aqr	UGSU	17.52 V	10.0 V	0.06309	5.0	CV	All	14 hours ago	
VZ Aqr	21 ^h 30 ^m 24 ^s	-2° 59' 17"	Aqr	UGSS	18.4 V	12.0 V	0.1606	5.0	CV	All	1 day ago	

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Summary

This lesson assumes that you have an AAVSO membership.

Their tools are excellent for photometric work.

Once the star plot has been obtained, use that to reference your CCD image to locate the target star.



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Questions?