


# DASCH Plug-In for VStar

DASCHObservationSource is a VStar observation source plug-in tool which reads DASCH (Digital Access to a Sky Century @ Harvard) data from an input source in tab-delimited "Starbase table" (.txt) format. See bugs-and-features #439 on SourceForge for VStar. More information is available at <http://dasch.rc.fas.harvard.edu/project.php>.


Install the DASCH plug-in by going to the *Tool* menu and selecting *Plug-in Manager*. AAVSO login is required. Scroll to and select DASCH file reader and click on Install. After installation, restart VStar.

To obtain a DASCH data file, go to the web page <http://dasch.rc.fas.harvard.edu/lightcurve.php>

1/11/2019 Harvard College Observatory Plate Lightcurve Generator



**DASCH**  
Digital Access to a Sky Century @  
Harvard  
*A New Look at the Temporal Universe*



[Data Release Description](#) [Search Magnitudes and Lightcurves](#) [Search Images](#) [Project Page](#)

---

## DASCH Lightcurve Access

Enter the J2000 object position or a Simbad-searchable reference in the box below and press "Search" to obtain the lightcurve query results in a separate window. The search center is currently restricted to [released regions](#), a maximum of ten entries, and a maximum search radius is 60 arcsec. Note that the positions returned by Simbad may not necessarily match the DASCH positions because of discrepancies between catalogs. DASCH positions are corrected by UCAC4 proper motions.

XX Dor

N >= 1      d <= 5      arcsec

Source: APASS Input Catalog (B-band) ▼

☒ Use frame format    ☐ Use separate tabs

We are currently using the [AAVSO Photometry All-Sky Survey \(APASS\)](#) Release 8 Catalog, the Kepler Input Catalog (KIC), and the GSC2.3.2 Catalog for photometry calibration. The APASS calibration gives the best photometric accuracy over the entire sky. The KIC calibration gives comparable accuracy for the field of the Kepler satellite. Finally, the GSC2.3.2 catalog provides magnitudes for objects outside the 9 to 15 magnitude range of APASS. An overview of DASCH calibration appears in [Laycock, S. et al. "Digital Access to a Sky Century at Harvard. II: Initial Photometry and Astrometry"](#) and in [Sumin Tang et al. "Improved Photometry for the DASCH pipeline"](#). An overview of the DASCH pipeline appears in the project [photometry page](#).

Objects in the Kepler field calibrated with the Kepler Catalog (KIC) have g-band magnitudes; objects calibrated with APASS have B-band magnitudes; and objects calibrated with GSC2.3.2 have JpgMag (IllaJ) magnitudes.

To access photometric data enter object ID's (one per line) in the window above. Valid identifications are: **J2000 RA DEC** (5.45 -81.5 or 5:26:50 -81:35:12 or 8 41 43.8 +19 43 33.5 where a "+" declination sign is mandatory in the third case only), **GSC2.3.2 ID** (for the gsc2.3.2 dataset only; e.g. N2312220195 or N120013341), **Kepler Input Catalog ID** (for the KIC dataset only; e.g. K3433237), **APASS Catalog ID** (for the APASS dataset only; e.g. APASS\_J115140.7+020334), **Simbad-searchable object name** (XX Dor), or **DASCH object** (DASCH\_J123349.2-113822), i.e. an object which does not have a matching catalog entry. All stars within d arcsecs from center, having more than N measurements will be listed. Because of astrometry issues inherent in the processing of old photographic plates, measurements of interest may appear in adjacent lightcurves. To obtain object's light curve, click on its listed ID in the query results window. Data tables for all points

<http://dasch.rc.fas.harvard.edu/lightcurve.php> 1/2

Enter a J2000 object position or a SIMBAD-searchable reference in the box and press "Search" to deliver the query results in a separate window.

As an example, entering "XX Dor" tells the search facility to search for variable stars using the APASS Input Catalog (B-band) for that object. Other catalogs include the Kepler Input Catalog (KIC), DASCH

object, and GSC2.3.2 catalog. Additionally, J2000 RA/DEC coordinates (e.g., 8 41 43.8 +19 43 33.5) are valid identifications. The resulting window containing three frames is produced.

1/11/2019

Harvard College Observatory Plate Lightcurve Generator

**DASCH (apass) Catalog Query Results (5")**

'XX Dor' ra: 04:59:13.6 dec: -69:35:43 approx. plates: 3638

arcsec	Nobs	Nplot	mag	id	(nearbyObjects [(mag)] [-object type])
0	3879	3066	11.82	<a href="#">APASS J045913.6-693543</a>	(XX Dor:RRC @ 0.3)
1	2	2	11.86	<a href="#">APASS J045913.7-693542</a>	(XX Dor:RRC @ 1.5)

[Display this table as a text file](#)  
[Display this table as a VOTable](#)  
[Download all points in table form.](#)

Select an object from the upper left panel and a plot of the DASCH magnitude measure will appear here.

Click on a point in the plot in the upper right panel and the object image will appear here.

[http://dasch.rc.fas.harvard.edu/lightcurve\\_frame.php?coo=XX+Dor&nmin=1&box=5&source=apass&frameformat=frame&submit=Search](http://dasch.rc.fas.harvard.edu/lightcurve_frame.php?coo=XX+Dor&nmin=1&box=5&source=apass&frameformat=frame&submit=Search)

1/1

In the top left hand frame, three sets of results and some display / download options are shown. Choose the option "Download all points in table form", and the resultant page lists several file options (A - H) for each of the three result sets.



**DASCH**  
Digital Access to a Sky Century @ Harvard  
*A New Look at the Temporal Universe*



[Data Release Description](#) [Search Magnitudes and Lightcurves](#) [Search Images](#) [Project Page](#)

## DASCH Photometry Data for Catalog Query

DASCH lightcurve data is presented as a [tab-delimited ASCII "Starbase" table format](#) or as a [VOTable](#) suitable for loading into VO tools such as [topcat](#).

Starbase tables may be displayed in the browser window or downloaded as a gzipped file. Tables may be displayed in short or long form. The following columns appear in the short form table.

Date	Heliocentric Julian Date
year	Ephemeris Date
magcal_magdep	DASCH magnitude.
magcal_local_rms	Magnitude error estimate.
limiting_mag_local	Limiting magnitude estimate.
ra	Right Ascension in degrees
dec	Declination in degrees
THETA_J2000	Image angle in degrees East of North.
ELLIPTICITY	1 - ((image width)/(image length))
Plate	Plate identification
versionId	Photometry pipeline version tag
AFLAGS	Photometry warning flags
AFLAGSBits	Bits set in photometry warning flags
BFLAGS	Photometry processing flags
BFLAGSBits	Bits set in photometry processing flags
quality	Plate quality flags
qualitybits	Bits set in plate quality flags
timeAccuracy	Accuracy of logbook time in days

The following tables list all observations in summary form.

The full listing shows all of the observation measurement parameters stored in the DASCH photometry database.

[See the database contents page for definitions of column headers.](#)

Note that the "quality" and "mosaicNumber" are invalid for catalog query data. Lightcurves of unmatched catalog points may not be complete near the edge of the search radius.

The following list provides six options for each object return by the catalog query. The file names use the form "(search center)\_(catalog designation)\_(distance from the search center in arcsec)"

- A: Short form Starbase (tab-delimited ASCII) table for display in the browser window
- B: Short form Starbase table for download as a text file

[http://dasch.rc.fas.harvard.edu/lightcurve\\_data.php?dbfilename=/tmp/ll9Wow/object\\_ll9Wow.db&vofilename=/tmp/ll9Wow/object\\_ll9Wow.xml.gz&tmpd...](http://dasch.rc.fas.harvard.edu/lightcurve_data.php?dbfilename=/tmp/ll9Wow/object_ll9Wow.db&vofilename=/tmp/ll9Wow/object_ll9Wow.xml.gz&tmpd...) 1/2

- C: Short form Starbase table for download as a gzipped file
- D: Short form VOTable for download as a gzipped XML file
- E: Long form Starbase table for display in the browser window
- F: Long form Starbase table for download as a text file
- G: Long form Starbase table for download as a gzipped file
- H: Long form VOTable table for download as a gzipped XML file

If there are more than one query objects, the end of the list provides ways to download all of the results in a single Starbase or xml table or to download all of the Starbase or xml files in a single tarball. Note that the TOPCAT Virtual Observatory tool can read gzipped XML files.

**XX\_Dor\_APASS\_J045913.6-693543\_0000 with 3879 points at 0 arcsec from search center**

A: [short\\_XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.db](#)  
 B: [short\\_XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.txt](#)  
 C: [short\\_XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.db.gz](#)  
 D: [short\\_XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.xml.gz](#)  
 E: [XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.db](#)  
 F: [XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.txt](#)  
 G: [XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.db.gz](#)  
 H: [XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.xml.gz](#)

**XX\_Dor\_APASS\_J045913.7-693542\_0001 with 2 points at 1 arcsec from search center**

A: [short\\_XX\\_Dor\\_APASS\\_J045913.7-693542\\_0001.db](#)  
 B: [short\\_XX\\_Dor\\_APASS\\_J045913.7-693542\\_0001.txt](#)  
 C: [short\\_XX\\_Dor\\_APASS\\_J045913.7-693542\\_0001.db.gz](#)  
 D: [short\\_XX\\_Dor\\_APASS\\_J045913.7-693542\\_0001.xml.gz](#)  
 E: [XX\\_Dor\\_APASS\\_J045913.7-693542\\_0001.db](#)  
 F: [XX\\_Dor\\_APASS\\_J045913.7-693542\\_0001.txt](#)  
 G: [XX\\_Dor\\_APASS\\_J045913.7-693542\\_0001.db.gz](#)  
 H: [XX\\_Dor\\_APASS\\_J045913.7-693542\\_0001.xml.gz](#)

**Table of all the data:**

A: [short\\_output\\_I19Wow.db](#)  
 B: [short\\_output\\_I19Wow.txt](#)  
 C: [short\\_output\\_I19Wow.db.gz](#)  
 D: [short\\_output\\_I19Wow.xml.gz](#)  
 E: [output\\_I19Wow.db](#)  
 F: [output\\_I19Wow.txt](#)  
 G: [output\\_I19Wow.db.gz](#)  
 H: [output\\_I19Wow.xml.gz](#)

**Collections of the above Files**

B: [short\\_all\\_txt\\_I19Wow.tar](#)  
 C: [short\\_all\\_db\\_I19Wow.tar](#)  
 D: [short\\_all\\_xml\\_I19Wow.tar](#)  
 F: [all\\_txt\\_I19Wow.tar](#)  
 G: [all\\_db\\_I19Wow.tar](#)  
 H: [all\\_xml\\_I19Wow.tar](#)  
[Return to DASCH Home Page](#)

[http://dasch.rc.fas.harvard.edu/lightcurve\\_data.php?dbfilename=/tmp/I19Wow/object\\_I19Wow.db&vofilename=/tmp/I19Wow/object\\_I19Wow.xml.gz&tmpd...](http://dasch.rc.fas.harvard.edu/lightcurve_data.php?dbfilename=/tmp/I19Wow/object_I19Wow.db&vofilename=/tmp/I19Wow/object_I19Wow.xml.gz&tmpd...) 2/2

This plug-in is designed to read files of type A, such as "short\_XX\_Dor\_APASS\_J045913.6-693543\_0000.db".

The plug-in can read this either as a local file on your PC or Mac (once you download it), or as the appropriate URL, in this case:

[http:// dasch.rc.fas.harvard.edu/tmp/rv1tC9/short\\_XX\\_Dor\\_APASS\\_J045913.6-693543\\_0000.db](http://dasch.rc.fas.harvard.edu/tmp/rv1tC9/short_XX_Dor_APASS_J045913.6-693543_0000.db).

Note that these URLs are available only on a temporary basis. Other instances of the same query may produce a different URL. Downloading a file to your PC looks like:

1/10/2019 dasch.rc.fas.harvard.edu/tmp/UIC5Xc/short\_XX\_Dor\_APASS\_J045913.6-693543\_0000.db

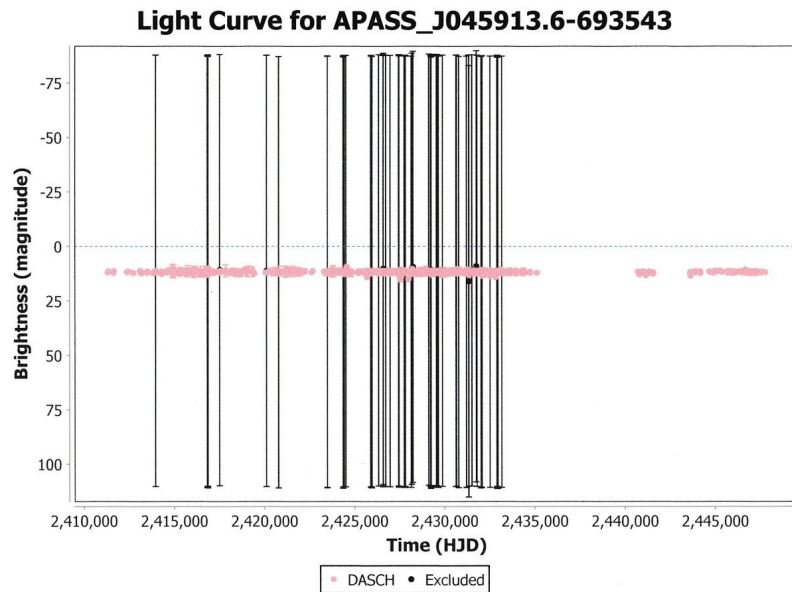
title Photometry data for APASS\_J045913.6-693543 from search centered on XX\_Dor using the apass calibration catalog

REF	Date	year	magcal	magdep	magcal_local_rms	limiting_mag	local	ra	dec
THETA_J2000	ELLIPTICITY	Plate	versionId	AFLAGS	BFLAGS	quality	time	Accuracy	
AFLAGSBits	BFLAGSBits	quality	bits	catalogNumber					
----	----	-----	-----	-----	-----	-----	-----	---	---
APASS_J045913.6-693543	2411298.814265	1889.809080	12.04	0.16	14.51	74.80344			
-69.59726	-48.4	0.142	b04502	130	524416	1483607040	584	0.000700	7,19
10,11,17,18,19,21,22,27,28,30	3,6,9	2							
APASS_J045913.6-693543	2411298.849584	1889.809177	12.01	0.17	14.20	74.80366			
-69.59716	85.3	0.246	b04503	130	524288	1349388288	512	0.000700	19
11,17,18,19,21,22,28,30	9	2							
APASS_J045913.6-693543	2411322.750550	1889.874659	11.47	0.24	12.43	74.80212			
-69.59705	-74.0	0.163	b04638	130	268959744	1349124098	640	0.000700	
19,28	1,17,19,21,22,28,30	7,9	2						
APASS_J045913.6-693543	2411621.896002	1890.694236	12.21	0.13	14.29	74.80271			
-69.59693	-74.8	0.133	b05710_s1	130	524416	1349386240	641	0.000000	
7,19	17,18,19,21,22,28,30	0,7,9	2						
APASS_J045913.6-693543	2411621.896002	1890.694236	12.18	0.21	14.85	74.80295			
-69.59711	81.8	0.305	b05710	130	524416	1349389312	641	0.000700	7,19
10,11,17,18,19,21,22,28,30	0,7,9	2							
APASS_J045913.6-693543	2411623.909577	1890.699752	12.11	0.12	14.72	74.80288			
-69.59722	-0.7	0.166	b05720	130	524288	1349388288	512	0.000700	19
11,17,18,19,21,22,28,30	9	2							
APASS_J045913.6-693543	2411635.867388	1890.732513	11.43	0.12	13.67	74.80313			
-69.59736	0.7	0.099	b05814	130	524288	1349386240	640	0.000700	19
17,18,19,21,22,28,30	7,9	2							
APASS_J045913.6-693543	2412371.816462	1892.746766	11.90	0.25	13.10	74.81953			
-69.59784	-87.1	0.613	b08672	136	281575552	1080690691	4625	0.007500	
7,15,19,22,23,28	0,1,11,17,19,21,22,30	0,4,9,12	2						
APASS_J045913.6-693543	2412446.499690	1892.950819	11.54	0.28	14.52	74.80774			
-69.59709	-69.1	0.591	b08872	136	9962112	1886260226	593	1.000000	
7,9,19,20,23	1,10,11,17,18,19,21,22,28,29,30	0,4,6,9	2						
APASS_J045913.6-693543	2412697.848381	1893.639311	12.14	0.15	16.29	74.80265			
-69.59709	-83.0	0.131	b10208	136	524416	1349389312	593	0.000700	7,19
10,11,17,18,19,21,22,28,30	0,4,6,9	2							
APASS_J045913.6-693543	2412722.866254	1893.707853	12.24	0.29	15.86	74.80277			
-69.59723	-19.7	0.207	b10273	136	268959872	1345192960	721	0.007500	
7,19,28	10,17,18,19,21,28,30	0,4,6,7,9	2						
APASS_J045913.6-693543	2413087.807007	1894.707690	11.41	0.11	13.22	74.80363			
-69.59707	39.5	0.364	b12192	136	268992640	1076494336	657	0.000700	
7,15,19,28	17,19,21,30	0,4,7,9	2						
APASS_J045913.6-693543	2413119.837804	1894.795446	12.01	0.17	15.13	74.80258			
-69.59683	50.3	0.149	b12324	136	524416	1349388288	529	0.000700	7,19
11,17,18,19,21,22,28,30	0,4,9	2							
APASS_J045913.6-693543	2413142.757446	1894.858240	11.48	0.24	11.83	74.80297			
-69.59724	29.6	0.324	b12458	136	269000832	1080688640	657	0.000700	
7,13,15,19,28	17,19,21,22,30	0,4,7,9	2						
APASS_J045913.6-693543	2413176.648315	1894.951091	12.45	0.14	12.54	74.79890			
-69.59381	-45.6	0.455	b12705	136	344498304	1080688643	657	0.000700	
7,13,15,19,23,26,28	0,1,17,19,21,22,30	0,4,7,9	2						
APASS_J045913.6-693543	2413479.796414	1895.781634	12.04	0.07	13.43	74.80319			
-69.59705	-51.1	0.626	b14818	136	524416	1349386240	4753	0.000700	7,19
17,18,19,21,22,28,30	0,4,7,9,12	2							
APASS_J045913.6-693543	2413479.805764	1895.781660	12.21	0.10	14.99	74.80310			
-69.59700	-2.2	0.156	b14819	136	524416	1349389312	593	0.000700	7,19
10,11,17,18,19,21,22,28,30	0,4,6,9	2							
APASS_J045913.6-693543	2413479.839698	1895.781753	11.69	0.05	13.34	74.80354			
-69.59684	46.5	0.450	b14823	136	524416	1349388288	529	0.000700	7,19
11,17,18,19,21,22,28,30	0,4,9	2							
APASS_J045913.6-693543	2413482.707514	1895.789610	12.07	0.14	12.97	74.80239			
-69.59680	33.9	0.530	b14869	130	524416	1483603968	648	0.000700	7,19

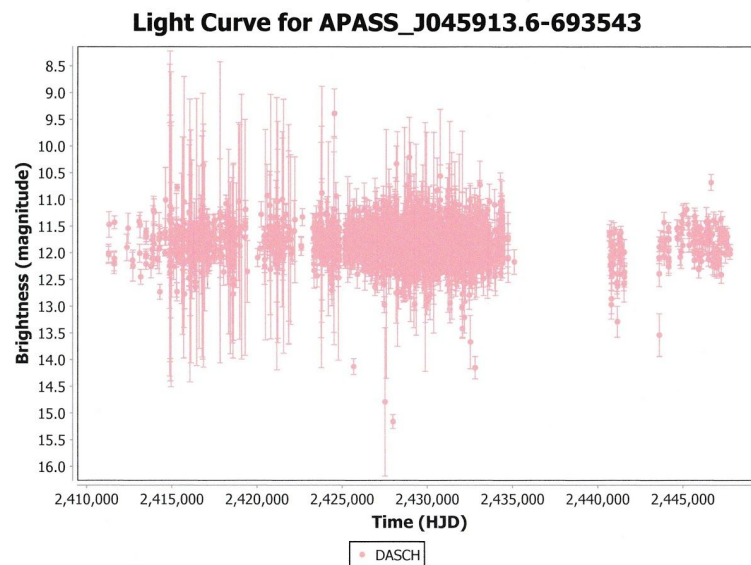
http://dasch.rc.fas.harvard.edu/tmp/UIC5Xc/short\_XX\_Dor\_APASS\_J045913.6-693543\_0000.db 1/180

In VStar, to use this plugin, select “New Star from DASCH file ...” from the *File* menu. The plugin will display a dialog box, asking you to select a file or input a full URL. The DASCH data will then become available in VStar for analysis.

In the DASCH data, some of the observations show a “magErr” of 99, indicating that the observed magnitude lies beyond the range of the limiting magnitudes for the original plates. The plug-in flags these observations as “excluded. For the above example, the initial plot looks like the following, somewhat distorted by the resultant large error bars.

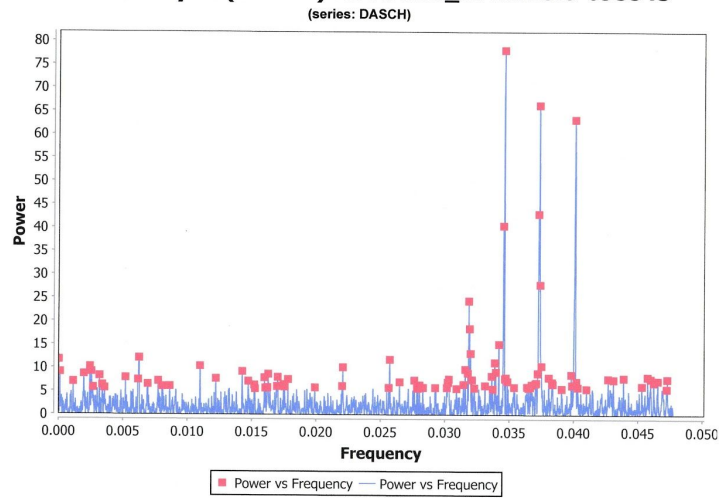


If you then select *Plot Control* from the *View* menu and un-check the “Excluded” box under Visibility of Data, the new plot will look much more “reasonable”.



From there, a variety of analyses is available in VStar. For example, if period analysis is desired, go to the VStar *Analysis* drop down menu and select “DC DFT Standard Scan”. This will yield:

### Period Analysis (DC DFT) for APASS\_J045913.6-693543



Selecting the “Top Hits” option will yield the following phase plot.

### Phase Plot for APASS\_J045913.6-693543

