**VSX (Variable Star Index) Submission Guidelines:**

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You are ready to submit your discovery to the VSX when your light curve has double coverage (two data points) on all parts of the curve. Before starting the submission process, check to make sure the variable star is not already registered in the VSX database. To search the VSX using coordinates, on the search page, scroll to the bottom and click more to enable coordinate based searches.

0.5. To make your plot, go into configurations->photometry->miscellaneous and check “Heliocentric time” and “Period in days.” Assure that you replot after you make these changes before saving. If you do this, ignore steps 12 and 16d.

1. Create a VSX account. After you create an account, you must wait for the activation email, which can take days to come, so make an account as soon as possible.

2. Primary Name: always use GSC ID (if your star doesn’t have one, use the 2MASS)

2.5 always include the 2MASS ID as a secondary name. Search page [here.](http://vizier.u-strasbg.fr/cgi-bin/VizieR?-source=B/2mass) You will also need CRTS, USNO-B1.0, and UCAC4 identifiers (find these two by putting the catalog name and coordinates into Vizier).

3. Position: always give the UCAC4 coordinates not the coordinates generated by MPO. You can get these using [VizieR](http://vizier.u-strasbg.fr/viz-bin/VizieR) service and inputting UCAC4 into the catalog search. Search by your MPO coordinates and then use the VizieR-given coordinates.

3.5. You should use all existing data in your lightcurve, so if Catalina Sky Survey has data, get it into your plot. Also search for publications with 2MASS ID. MPO Userguide page 215 gives instructions for incorporating CSS data into your lightcurve.

4. Variable Type:

a. With eclipsing binaries: do not just write E, look at the chart and specify which type of variable you have. For example, my first variable star submission was an EW (Ursae Majoris-type eclipsing binary).

5. Custom variable type: leave blank

6. Spectral type: leave blank

7. Maximum magnitude: with the MPO light curves, there is no need to use < or >. The maximum and minimum are not approximations on the light curves. Take into account scatter when deciding maximum/minimum (so find the mean idk how but estimate?).

8. Maximum Magnitude Passband: CR (wide band R mag) is the passband from the PAO

9. Custom Maximum Passband: leave blank

10. Minimum Magnitude Passband: also CR

11. Custom Minimum Passband: leave blank

11.5. Amplitude is given on the bottom of the MPO plot. This one runs off the Fourier curve which sometimes goes wonky when using CRTS data, so you probably need to calculate your own (min - max). I think that one is acceptable.

12. Period: convert the MPO generated period (in hours) to days. Use the appropriate number of significant figures from the original period written in hours.

12.5. In the MPO Plotting Options, there is an option to start plot at the minimum value. You must choose this option. Replot the lightcurve to update.

13. Epoch: use the JDo(LTC) (or the JDo(HJD) if you did step 0.5) number at the bottom of the light curve plot

14. Rise/Eclipse Duration: leave blank

15. Outburst (nova) year: leave blank

16. Uploaded files: Upload the light curve -there are a few conventions you must adhere to when submitting the light curve:

a. Make sure that TWO cycles of the full period are graphed. MPO defaults to graphing one cycle. To change the number of cycles, go into configuration settings and plot options. The VSX will take light curves with 1.5 or 2 cycles.

b. If the images were taken using a clear filter, you will have to change the Y-axis title from (R) to (CR) (You have to do this because the MPO comp stars are measured in R mags)

i. To do this open Windows Paint (on a PC) and open the light curve

ii. Use the Select tool to draw a region around the current Y-axis title, i.e., “Magnitude (R) alpha (?)”

iii. Press <DELETE> to make the axis title go away and click on the text tool

iv. Click the mouse in a blank area of the plot and set the font to ‘Arial’ size 16 and bold the font

v. Do NOT click on the plot again, just start typing your text e.g., “Magnitude (CR)”

vi. Click on the plot outside the text region rectangle and use the selection tool to outline the region around the text

vii. Select rotate left 90° from the tool bar

viii. Move the mouse over the text region so that you see the 4-way cross cursor and drag the region to the left side of the plot to replace the old y-axis title

c) Edit the title to be the primary name of your star (Arial black, 24 font)

d) Convert the period to days and make that edit (remember to change the units too). (Arial, 18 font, bold)

e). If you have a CRTS session, change your label to indicate that (Arial, 12 font, bold)

f) If your plot has an amplitude on there, it is calculating the Fourier amplitude. This is not the amplitude that you are inputting with your max/min. Change it. (probably Arial, 18 font, bold).

g) If you used CRTS/CSS data, the header of the legend might be wrong (“Year: …”). Change it to the years of your personal observations

h) Save the new plot.

17. Discoverers: Your name, any student collaborators, Caroline Odden, John Briggs (if applicable)

17.5. You must also cite CRTS if you use their data:

Reference Name: Drake, A. J.; et al., 2009, Catalina Real-time Transient Survey

Reference citation: 2009ApJ...696..870D

Reference URL: <http://adsabs.harvard.edu/abs/2009ApJ...696..870D>

18. Submit! A VSX employee will email you back within the next day or two with corrections (if any)

**Example Star:**

In the VSX search the star name 2MASS J07174816+0900096 to see an example of a Phillips Academy submission.

|  |  |
| --- | --- |
|  | Dear Hyung Joon,  Thanks for submitting this new variable star to VSX.  There are some things to improve before we can approve it.  First of all, you don't give a magnitude range in the table. Please, add it.  What is the source of the R magnitudes? The software is not a source per se.  Are those magnitudes from USNO-B1.0 or USNO-A2.0?  Are you working with filters or without filters? If you work with filters,  are they Johnson (R) or Cousins (Rc) filters?  If you work without filters, the passband to give should be CR.  Actually if you used Rc filters but R comp stars from USNO, since the result  wouldn't be stuck to the Rc scale, the best solution would be to mention the  USNO (or whatever source) magnitude as the maximum magnitude value (which  should be taken as a mean value in this case) and then add the amplitude in  Rc with the "Minimum is an amplitude" box marked.  All of this depends on your set up.  Take scatter into account to determine the range or amplitude. It would be  15.80 - 16.45 (or 0.65 mag.) according to your plot.  About your light curve and elements.  You should determine a time of primary minimum not a time of maximum as is  shown in your phase plot.  The phase plot should show that epoch of minimum as phase 0 and that should  be the epoch given in the table.  Also, since you have used CRTS data, the best approach would be combining  CRTS and your data in a single plot. This would show that the period is okay  and you could even improve it due to the longer time baseline of the CRTS  data plus your observations. Just shift the CRTS data to your zero point  (Remember that CRTS dates are MJD so you need to add 2400000.5 and apply the  HJD correction to those observations).  You omit adding other names.  Add the CRTS, USNO-B1.0 and UCAC4 identifiers.  Give the UCAC4 position: 07 05 58.33 +24 38 33.7 instead of 07 05 58.33 +24  38 33.8.  Information of your star (positions, identifications, spectra, photometry)  in all available catalogues can be found making a positional search in  VizieR:  <http://vizier.u-strasbg.fr/viz-bin/VizieR>  You can also add the CRTS reference since their data were used in the  analysis:  Reference Name: Drake, A. J.; et al., 2009, Catalina Real-time Transient  Survey  Reference citation: 2009ApJ...696..870D  Reference URL: <http://adsabs.harvard.edu/abs/2009ApJ...696..870D>  Please add a title to the file you are uploading (e.g.: "Phase plot and  additional information").  To edit the information, delete and replace the file, you should clik on the  My submissions link on the main VSX page.  Best wishes,  Sebastian  -----------------------  Sebastian Otero  VSX Team  American Association of Variable Star Observers |
|  | Description: Macintosh HD:Users:IsabelTaylor:Desktop:WarnerVersion2.PNG |