

The Light Curve Classification of TT Oph and UZ Oph

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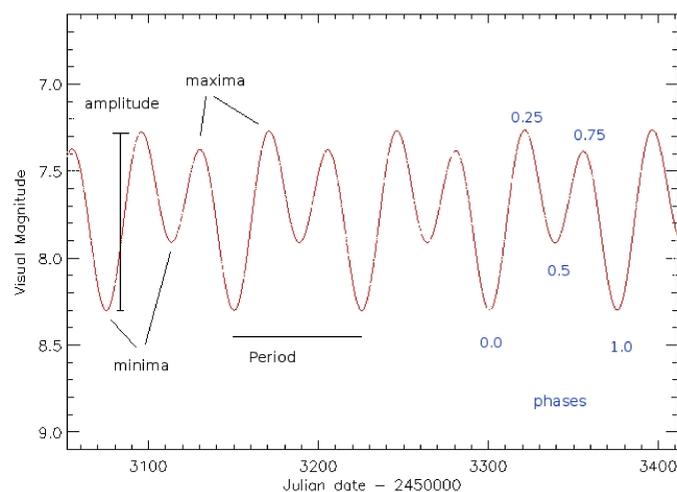
Abstract

We have examined two variable stars TT Oph and UZ Oph. These stars are officially classified as RV Tauri variable stars but articles in the literature have questioned this classification. Some authors describe the light curves of these two stars as semi-regular variable stars which are closely related to RV Tauri. To examine the stars we used data from AAVSO gathered over more than 60 years. We will present our conclusion at the Congress.

Background

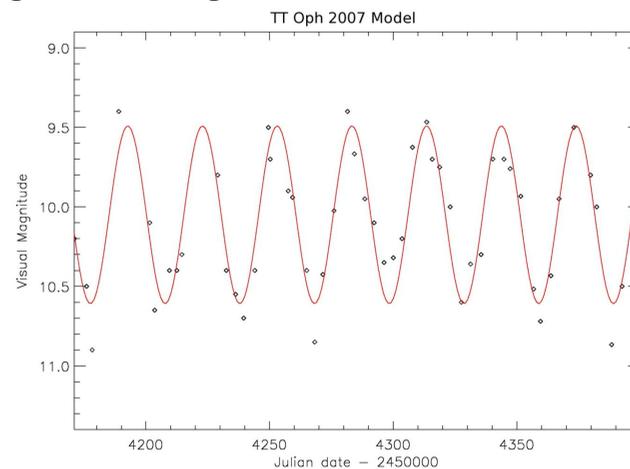
Variable Stars are stars that change in brightness over a period of time. There are two kinds of variable stars which are intrinsic and extrinsic. The type of stars that I'm going to be talking about are intrinsic pulsating stars. *Intrinsic* variable stars are stars that their brightness change is due to physical changes in the star or stellar system, the type of pulsating stars that we researched are RV Tauri. These types of variable stars have alternating deep and shallow minima. TT Oph and UZ Oph have some irregularities in their light curve and have been questioned if they are RV Tauri or Semi-regular variable stars

Ideal Light Curve



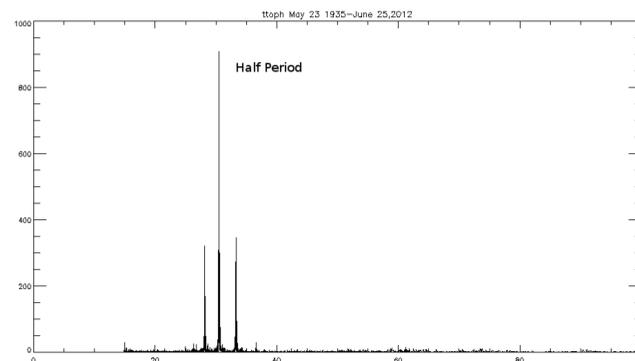
TT Oph

TT Oph is one of the RV Tauri Star that we have researched. I used data from AAVSO from 1935 till 2012. The light curve had a lot of inconsistencies with deep and shallow minima. In some spots of the light curve you have the minima that are constant and some that are irregular to the light curve.



Fourier

The light curve has a period of 60.98 and a magnitude range of 9.35-10.96V. We put the data from AAVSO into IDL where I took out the entire color band except the V and Visible Band. Then we used TS12 to get a light curve fit so I could see the deep and shallow minima.

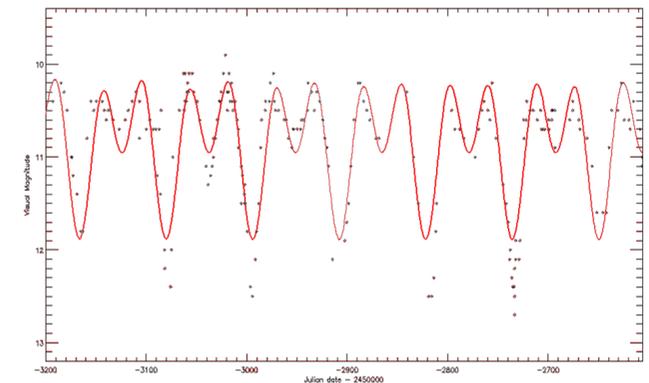


Acknowledgment

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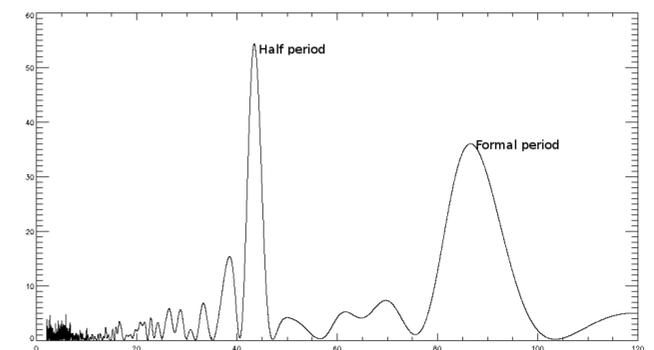
UZ Oph

UZ Oph is the other light curve we been working on. I gathered UZ Oph data from AAVSO from 1969 to 2012. It shows clear deep and shallow minima through most of the light curve. The light curve has some irregularities but few of them.



Fourier

The light curve has period of 87.35 and magnitude range of 9.93-13.1. I gathered the data from AAVSO and put it in IDL. After taking all other bands except the V band and Visible band I put the data into TS12 to get the current model fit of the light curve.



Conclusion

From the light curve that we have been observing the conclusion that we came up with is that TT Oph could be classified as a semi-regular variable star because of the irregularities through most of the light curve. UZ Oph we believe that could still be classified as an RV Tauri with some irregularities because it shows good alternating deep and shallow minima through most of the light curve.