1- Light Variation Study of the Eclipsing System (W - Serpentis)

Layth T. H. Kadouri **Talib H. Kadouri**

Abstract

Light curve has been analyzed for the previously available photometric observations of (W-Serp.) system on the base that the system is a triple eclipsing variable and its components are moving to form an open eight figure orbit (∞) . The results of this research demonstrate that there is no evidence supports this idea. The light curve is also analyzed on the base that the system is an eclipsing binary. Photometric physical and geometrical parameters, as well as, the spectral identity of the secondary star and the position of its components on (H-R) diagram are obtained for the first time.

2- Changing the Physical and Engineering Elements of Eclipsing Binaries and it's influence on the related Light Curve

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Abstract

This study includes calculation and drawing theoretical light curves for three eclipsing systems (SZ Psc) ، (HP Aur) and (44i Boo)belonging to three different types (Algol) , (β – Lyrae) and (W-UMa) consecutively. Of values of elements (L_2,L_1,i,R_2,R_1) have been changed in order to optain the influence of the change that occurs on the theoretical curve shape to use that in deducing the direction of change to match it with the observed curved for eclipsing stars of similar type. The results indicates that the temperature change effects the spectral type of the system , and the change in inclination angle shows whether the eclipse is total or partial or there is no eclipse , and the relative radius influence in the depth of the primary and secondary eclipse for all systems, except the system (SZ Psc) which shows changing in the region outside the eclipse , because the effect of reflectivity phenomena in smaller systems.

3- Determination of the Spectral Type , Surface Temperature and Elements of the Stars : HD124320 , HD37767 , HD35619 , HD23733 , HD24189, HD107399 , HD240344 and HD17647

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Abstract:

This research aims to determine the spectral type of eight stars : HD124320 , HD37767 , HD35619 , HD23733 , HD24189 , HD107399 , HD240344 , HD17647 and HD66171 by comparing the spectrum of these stars in the range wavelength (3800-4600) Å with (32) standard stars in the same wavelength range , to determine the effective temperature (T_{eff}) and bolometric magnitude of each star , and to identify the obvious absorption lines in the stars spectrum and to calculate the absolute radius , absolute mass and absolute luminosity of each star and knowing there location on the (H-R) diagram.

4- The Effect of Meteorological Parameters on Solar Radiation in Babylon

Layth T. H. Kadouri

Abstract

Meteorological parameters like monthly mean global solar radiation, monthly average daily sunshine duration, monthly average of the daily temperature, monthly average of the daily relative humidity, difference of maximum to minimum daily temperature and difference of maximum to minimum daily relative humidity was measure from the meteorological station of the (University of Babylon/College of Science/Department of Physics) during the period from the first of June 2009 to the first of June 2010.

Eight model's were developed for the location of the station to predict the calculated monthly mean global solar radiation and compare it with the observed value.

A good argument with model five where the value of the mean bias error (MBE) is (0.1852) , t-statistic was the smallest at (0.121) , correlation coefficient (r) value of (0.9125) and the correlation determination (R^2) with the value of (0.8325).