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ON THE VARIABILITY OF THE 5200 Å STRUCTURE FOR α^2CVn

The magnetic star α^2CVn has been investigated at Toruń Observatory in order to look for the variability of the broad absorption structure at about 5200 Å. The observations were made in May-July 1982 by means of the Canadian Copernicus Spectrograph on the 90 cm Schmidt-Cassegrain telescope. The spectrograph has an image-slicer of 3 arcsec aperture, giving the reciprocal dispersion of about 160 Å/mm. The spectra were taken on Kodak IIa-F preflashed plates.

The standard stars αLyr, αAql and γUMa were observed along with α^2CVn to remove the influence of emulsion sensitivity, instrument transmission characteristics and atmospheric extinction.

For resulting spectra of α^2CVn the continua have been drawn as straight lines between 4900 and 6200 Å, according to Mihalas' (1966) model of A star. The equivalent widths of the range 4900-5400 Å have been computed. Their phase dependence is shown in Figure 1. The phases are computed according to the ephemeris found by Farnsworth (1932).

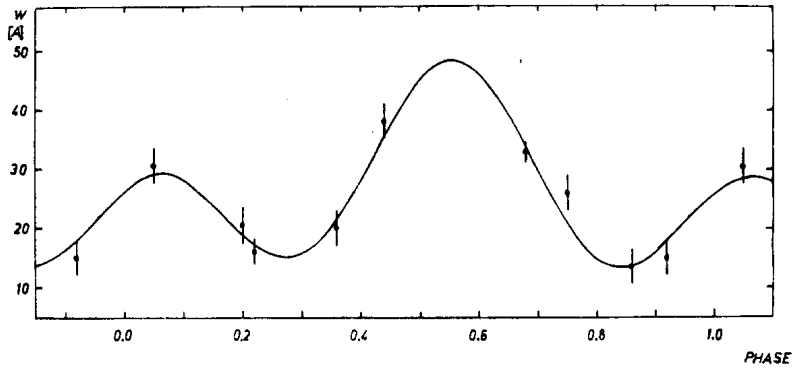

Figure 1: Phase variation of equivalent width of the 4900-5400 Å region in the spectrum of α^2CVn. Standard deviations are indicated. The solid line is a best fitted double-wave obtained by least squares method.

The Pearson's approximation quality parameter χ^2 is 2.74 in this case. Because of the small number of observational points we checked the reliability of our results trying to approximate the sets of casual points located at the same phases and with the same errors like in the case of observations, by the double-wave. This procedure has been applied to 100 various sets. The mean χ^2 for them is of an order of magnitude greater than for the observations.

As can be seen the variability of the 5200 Å structure is clear. The maxima of the double-wave are in good agreement with those obtained by Burbidge and Burbidge (1955) and Cohen et al. (1969) for equivalent widths of individual elements. The maximum at $\varphi = 0.05$ corresponds to group A elements (rare earths, Ti, Mn) and that at $\varphi = 0.55$ to group B (Fe, Cr).

Further observations are still running and a detailed discussion will be published elsewhere.

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