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ONE MORE CRITERION FOR DISTINGUISHING  
 BETWEEN W VIRGINIS STARS (CW) AND CLASSICAL CEPHEIDS (C $\delta$ )

As is known the study of morphological peculiarities and space-kinematical characteristics of cepheids cannot always lead to a reliable distinguishing between the CW and C $\delta$  stars, due to which about 1/3 of cepheids from GCVS (1969) have no corresponding designation.

We proposed a criterion of cepheids distinguishing according to the maximum width of the loop in the U-B, B-V plane, namely  $L_{U-B}$ . The dependence of the  $L_{U-B}$  from  $\log P$  was investigated for all cepheids with available U,B,V photometry. Fig. 1 shows that the CW loops are wider than the C $\delta$  ones of corresponding periods. However, the loop width of some reliable CW, such as UY Eri, V553 Cen,  $\times$  Pav, AP Her and AL Vir is comparable with that of C $\delta$ .

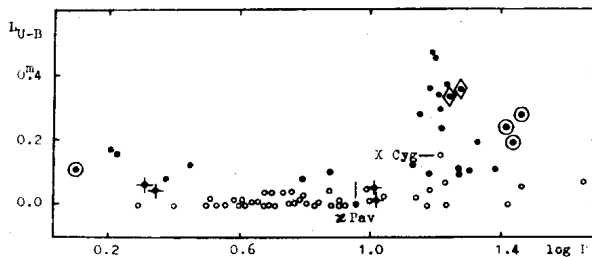


Fig.1. The loop width  $L_{U-B}$  in the U-B, B-V diagrams vs. logarithm of the period. The filled and open circles show the Cepheids of types CW and C $\delta$ , respectively. The signes marked with crosses mean the cepheids without hydrogen emission lines in their spectra, ones placed in the circles and rhombes - the presence of weak and strong hydrogen emission, respectively.

According to Wallerstein (1958) and Lloyd Evans et al. (1972) there is no hydrogen emission of these stars (\* Pav lacks for information of hydrogen emission). In the same paper Wallerstein found that the hydrogen emission seems to have a marked maximum among stars of period 20-30 days. Among CW stars of short period a weak hydrogen emission was found by Abt and Hardie (1960) for BL Her. We know of the only classical cepheid which was found to have very weak hydrogen emission (Kraft, 1956), X Cyg. All the other C $\delta$  stars have only metall emission lines in their spectra and no hydrogen emission.

As Fig.1 shows, there is a correlation between the loop width  $L_{U-B}$  and the strength of the hydrogen emission lines. Hydrogen emission and the ultraviolet excess are likely to display one and the same phenomenon connected with the shock wave propagation in the atmosphere of these stars. The effect of the shock waves on the colour indices is considered by Klimishin (1972). Our calculations of the shock wave front emission provide the value of the ultraviolet excess, which agrees in the order with the observed  $L_{U-B}$  (Batyushkova, in press).

The dependence  $L_{U-B}$  on  $\log P$  shown in Fig.1 may be used as a criterion of distinguishing between CW and C $\delta$  variables in addition to the existing criteria. However, our criterion is not simple. The presence of the ultraviolet excess, which exceeds  $0^m.05$  and  $0^m.08$  for the stars of  $P < 10^d$  and  $P > 10^d$ , respectively, is the cause for classifying them as CW. The lack of such excess in a cepheid variable cannot be the evidence of its adherence to C $\delta$  class.

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