THE ECLIPSE OF CI CYGNI IN 1980 ON THE OBJECTIVE PRISM SPECTRA

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The observations of CI Cyg were carried out with the Toruń 60/90 cm Schmidt telescope with the objective prism giving a dispersion of 250 A/mm at H-gamma. Intensity traces of 20 selected spectra, made on the Kodak IIa-O plates, were made. The results were corrected for all instrumental effects and the interstellar extinction. The relative emission lines intensities have been obtained from the tracings after normalization to H-beta = 100.

The spectra were typical for the quiet symbiotic star. So, all changes in the spectrum were caused by geometrical effects (eclipse).

The preliminary analysis of obtained spectra leads to following results:

1) The high-temperature emission lines HeII 4686 and NIII 4641 disappeared in the eclipse. The changes of the brightness in the HeII 4686 line presents fig. 1 and fig. 2 shows the changes of the intensity of this line in relation to H-beta. We have estimated the rough phases of first and second contact as 0.93 and 0.97 respectively what gives the minimal radius of HeII line formation region about 0.4 r_c (where r_c is the radius of the cool component).
2) The Balmer emission lines were about 3 times weaker in relation to the same lines outside of the eclipse (fig. 1). Basing on that we have estimated the minimal radius of the HII region as 1.22 r_c.
3) The nebular lines of [OIII] and [NeIII] in principle have not changed their brightnesses (fig. 1).
4) On the ground of 10 spectra made outside of the eclipse we have derived [OIII] 5007+4959/4363 = 1.41±0.08. Using the formula given by Boyarchuk et al. (1963) and assuming as usual T_e=17000 K we have obtained N_e about $2 \times 10^7 cm^{-3}$.
5) The same 10 spectra were used to the temperature determination of the exciting star. From relative intensities of H-beta, HeI 4471 and HeII 4686 lines (Iijima, 1981a) we have obtained $T_{hot} = 15.2 \times 10^4$ K.

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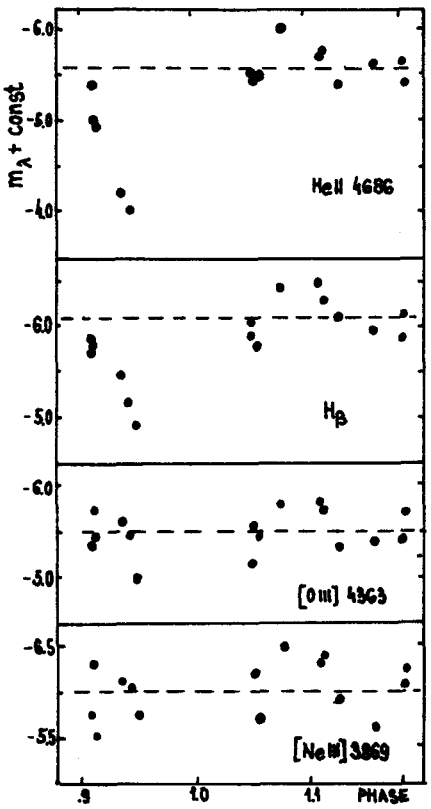
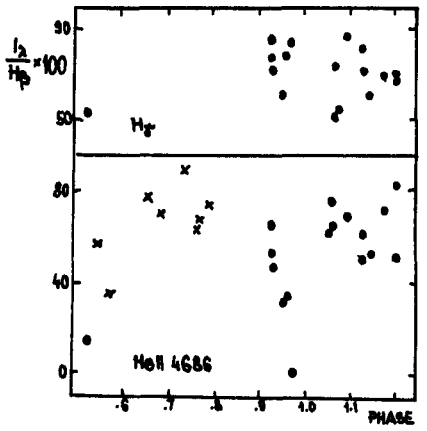


Fig. 1 (left). Changes of brightness in selected emission lines. The dashed line marks the average brightness outside of the eclipse.

Fig. 2 (bottom). Changes of HeII 4686 relative intensity. Crosses mark Iijima (1981b) observations. The relative intensities of Hγ are given for comparison.



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