

COMMISSION 27 OF THE I. A. U.  
INFORMATION BULLETIN ON VARIABLE STARS  
Number 2056

Konkoly Observatory  
Budapest  
1981 December 11  
HU ISSN 0374-0676

PHOTOELECTRIC OBSERVATIONS OF CI Cyg

From July 11 to October 20, 1980 (JD 2444432 - 2444541) a series of photoelectric observations of the symbiotic star CI Cyg was accomplished on the 50 cm telescope of the Byurakan Astrophysical Observatory. The observations were made close to the standard u,b,v bands and in the r and H $\alpha$  bands, characterized by the following data:

	r	H $\alpha$
Halfwidth	270 Å	12 Å
$\lambda_{\max}$	6563 Å	6563 Å
Transmission coefficient at $\lambda_{\max}$	42 %	60 %

HD 226117 = BD +35<sup>o</sup>3828 and HD 226172 = BD +35<sup>o</sup>3834 served as comparison stars.

Due to bad weather conditions a part of the final phase of the eclipse was missed. In Figure 1 the results of our observations are presented. Each point in this figure presents the mean value of 2-4 comparisons with both comparison stars. The corresponding values of  $3\sigma$  (the bars on the right hand side in Fig.1) are presented as well.

On the light curves one can discern four phases.

During the first interval (JD 2444432-455) the brightness of CI Cyg increased continuously in all the observed bands. On the H $\alpha$  curve a relatively short lived brightness decrease was well noticeable. The  $\Delta(u-b)$ ,  $\Delta(b-v)$  and  $\Delta(v-r)$  colour values decreased i.e. the star became bluer.

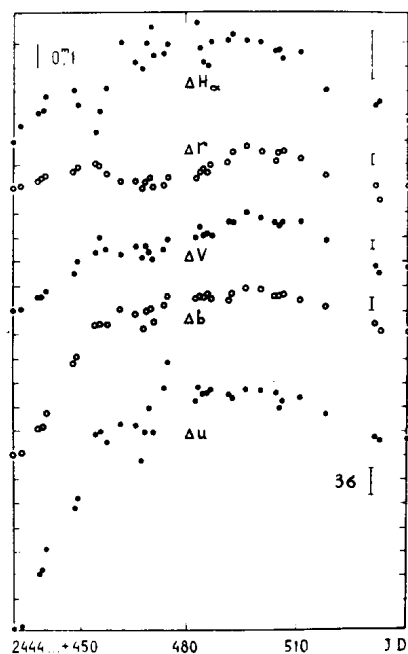


Figure 1

During the second interval (JD 2444455-473) the brightness increase continued in general at a smaller rate and with some irregularities in all the bands except in  $r$ . The brightness in  $r$  decreased by 0.1 magnitude. The colours of the star continued to decrease but at a smaller rate, as well.

During the third interval (JD 2444473-497) the brightness in  $H\alpha$  remained constant on its maximum level. In the bands,  $r, v, b$  and  $u$  the brightness increased by small amounts, the greatest increase being in the  $b$  band - 0.15 magnitudes. In the  $u$  band a short lived brightness increase of the order of  $3\sigma$  ( $\Delta m = 0.17$  mag.) was noticed. During this interval the colours of the star remained on a constant minimum level.

During the fourth interval (JD 2444497-542) a systematic brightness decrease in all the bands was observed the amplitudes being  $\Delta u = 0.20$ ,  $\Delta b = 0.17$ ,  $\Delta v = 0.21$ ,  $\Delta r = 0.20$  and  $\Delta H\alpha = 0.30$  magnitudes. It should be noticed that, except maybe in the  $H\alpha$  band, the amplitude of brightness decrease in all the bands was the same. At the end of this interval the brightness levels of

the star in the bands  $H\alpha$  and r are almost equal to those observed in these bands at the beginning of our observations, i.e. to those corresponding to a phase close to minimum. In this interval the colours  $\Delta(v-r)$  and  $\Delta(u-b)$  increased a little, indicating a slight reddening of the star. The colour  $\Delta(b-v)$  increased as well at the beginning of this interval, but went back to its normal value at the end.

The above presented data allow to conclude:

1. During the minimum the hot component was eclipsed.
2. The fact that the amplitude of brightness decrease after the maximum is almost the same in all the bands allows to admit that the decrease is due to a neutrally absorbing agent.
3. The short lived brightness changes in  $H\alpha$  and u can be due to an interaction between the hot component of CI Cyg and the surrounding nebula.

G.H. GEVORKIAN  
Byurakan Astrophysical Observatory  
Byurakan, Armenian SSR  
USSR