

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

Number 2048

Konkoly Observatory
Budapest
1981 December 2
HU ISSN 0374-0676

THE ACTUAL PHOTOMETRIC BEHAVIOUR OF CH CYGNI

With this notice, we want to call the attention of all kinds of observers for the unusual member of the group of symbiotic variable stars, CH Cyg. Observers who are interested to learn about the history of the star, are referred to the papers of Luud (1979) and Anderson et al. (1980).

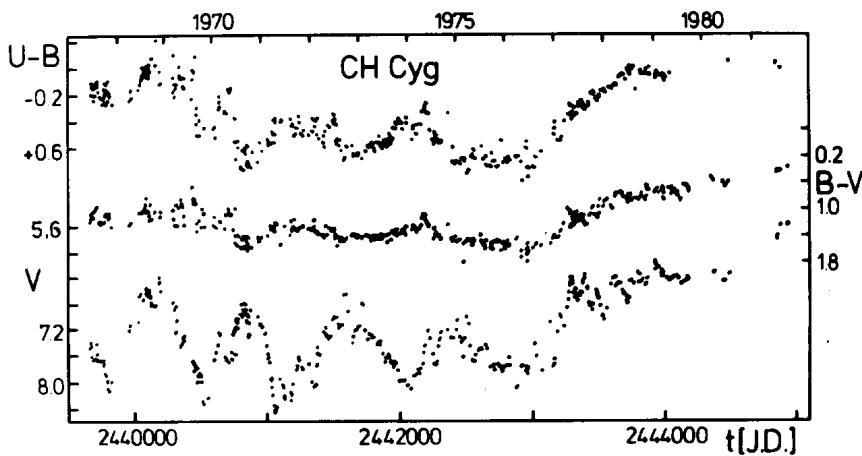


Figure 1

Luud's (1979) light and colour curves updated by the observations of this paper (Table II). One clearly sees the SRA light changes in the first part of the figure and the outburst light curve since May 1977.

In May 1977 the star began a new outburst. In Figure 1 we show the excellent light and colour curves of Luud (1979), up-dated by our own photoelectric UB_V measurements made with the 75 cm telescope of the Wilhelm Foerster Observatory Berlin and the 36 cm Cassegrain telescope of the Observatorium Hoher List. Both telescopes are equipped with uncooled 1P21 photomultipliers behind the usual Schott filter combinations for the UB_V system and with usual DC amplifier techniques.

Our comparison star data are given in Table I.

Table I
Comparison star data for CH Cyg

Star	V	B-V	U-B	Sp.	Reference
A = BD+49 ^o 2994	6.50	-0.07		B8V	M.N.R.A.S. 185.591 ^{&}
	6.54	-0.08	-0.37	B9	Observatory 88.111
	6.52	-0.08	-0.23	B9	Tokyo Astron.Bull. II, No.258
			-0.08	B9	ApJ 137.530
	6.28	-0.08	-0.37	B8V	PASP 86.233
	6.46	-0.09	-0.37		this paper
C = BD+49 ^o 3012	7.27	+0.46	-0.16	F5	" "
E = BD+49 ^o 3034	5.53	+1.16	+1.19	K0	" "

[&]There are given also V-R and R-I values.

Star A was also used by several other observers and there is no real consensus about the V magnitude and the U-B colour. Therefore we made an own determination of these values as listed in the Table I. In addition we checked all magnitude differences A-C in our measurements for possible variability of A, but we found no sufficient evidence to judge for variability. In Table II we present V and B-V observations made in 25 nights between 1977 and 1981 and four U measurements made with the 36 cm Cassegrain telescope. They are plotted in the figure together with Luud's values.

From Figure 1 one can make the following primary conclusions:

- i) CH Cyg is still in outburst, more than 1600 days after its beginning.
- ii) Actually, CH Cyg is brighter than observed so far

- iii) B-V has decreased continuously since the beginning of the outburst up to now which means that the blue continuum source has brightened since more than 1600 days continuously and can actually be well observed.
- iv) Actually, CH Cyg lies in an unusual area in the two colour diagram (compare the two colour diagram of Cester (1969), for instance).

Table II : New UBV measurements of CH Cyg

Jul. Date	V	B-V	U-B	n	Observatory
24 43287.55	6.57	+1.31		1	Berlin
289.44	6.43	+1.32		3	"
319.45	6.67	+1.29		2	"
328.42	6.60	+1.19		2	"
996.54	6.31	+0.78		1	"
44044.46	6.53	+0.70		1	"
045.47	6.60	+0.76		1	"
048.51	6.60	+0.78		1	"
053.40	6.53	+0.74		1	"
057.41	6.51	+0.76		1	"
097.36	6.46	+0.86		1	"
105.39	6.54	+0.92		2	"
132.44	6.71	+0.71		1	"
146.47	6.66	+0.72		2	"
168.27	6.54	+0.80		1	"
173.29	6.59	+0.77		2	"
370.48	6.36	+0.56		1	"
373.41	6.36	+0.60		2	"
445.41	6.54	+0.61		1	"
456.48	6.53	+0.70		1	"
24 44489.45	6.35	+0.60	-0.68	2	Hoher List
851.38	5.78	+0.48	-0.66	4	" "
854.40	5.85	+0.48	-0.67	2	" "
871.39	5.64	+0.44	-0.60	2	" "
928.29	5.60	+0.36		1	Berlin

As there exist two different models for CH Cyg in the literature - a spotted single star model and a binary model with mass accretion - and as it is even not yet clear if CH Cyg belongs to the symbiotic stars or belongs to an other stage of stellar evolution, observers are asked to have a close eye on CH Cyg during the actual interesting stage of its light curve.

U. HOPP, S. WITZIGMANN
Wilhelm Foerster Sternwarte
Munsterdamm 90
D 1000 Berlin - 41, F.R.G.

References:

- Anderson, C.M., Oliverson, N.A., Nordsieck, K.H.:1980, *Astrophys. J.* 242.188
Cester, B.:1969, *Astrophys. Space Sci.* 3.198.
Luud, L.:1979, in: van Horn, H.M., Weidemann, V. (eds.)
Proceedings IAU Coll. No.53, p.459.