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LONG PERIOD VARIABLE CARBON STARS AT GALACTIC LONGITUDE 86°

To search for light variations and study variability of carbon stars the 80 cm Schmidt telescope at the Baldone station of the Radioastrophysical Observatory was used for monitoring all known accessible C-stars situated in five-degree wide zone stretched perpendicular to the galactic equator between latitudes $+9.5^{\circ}$ and -9.5° and centered at longitude 86° . In each of the five partly overlapping fields of 5° -diameter 50-75 red plates, 13-32 visual films and 20-23 blue plates were taken. The observations span 11 years from 1972 to 1983. Because of the largest number of observations the red (m_R) magnitudes, best of all, indicate the existence of light variations and display their properties. Preliminary results for some of the stars were given earlier (Alksne et al., 1983).

Characteristics of variations observed in red light for long period variable stars are summarized in Table I. The name for known or suspected variables or the (four-digit) number according to Stephenson (1973) or the number according to the catalogue of Baldone carbon (BC) stars (Alksne et al., 1980, 1983; Alksnis and Ozolina, 1983; Star catalogue and files available at the stellar data center, 1982), the epoch of the maximum brightness (M_0), the period in days (P), the m_R -magnitude at maximum (\bar{m}_R max) and minimum (\bar{m}_R min) light of the mean light curve and the total range (Δm_R) of m_R -variations are given.

Additional information for several stars follows.

V Cyg. After J.D. 2 444 150 \bar{m}_R max = $6^m.9$, \bar{m}_R min = $8^m.8$ and the shape of the mean light curve differs from the earlier observed one, in addition, secondary oscillations with $P_2 \approx 2P$ and m_R -range of $1^m.2$ seem to start.

BC 48. Very large range ($2^m.0$) secondary variations with maxima at J.D. 2 442 050 and 2 443 550.

U Cyg. Slow secondary variations, m_R -range $0^m.5$, time scale about 6P.

V1426 Cyg = CIT 13 = IRC+40 485 = AFGL 2781.

2946. Stable light curve, bump at phase 0.7 .

Table I

Star	M ₂₄₄ J.D. 244	P	\bar{m}_R max	\bar{m}_R min	Δm_R
V Cyg	1091*	421 ^d .43*	7 ^m .70	9 ^m .80	3 ^m .7
BC48	2050	496	11.44	12.94	3.0
U Cyg	2246	462.4*	6.08	8.44	2.9
V1426 Cyg	1420	482	9.24	11.04	2.5
2946	1917	424	11.74	13.02	2.0
BC245	2000	350	12.2	13.3	2.0
BC236	1775	401	13.20	14.16	1.9
BC244	1940	356	11.2	13.1	1.9
V1555 Cyg	1559	518	12.39	13.89	1.9
BC240	1924	457	13.38	14.28	1.6
V1554 Cyg	1690	330	11.4	12.6	1.4
BC40	2250	345	10.40	11.23	1.1
BC242	1847	405	12.24	13.40	1.1
BC243	2675	361	12.3	13.0	0.8
BC41	3305	381	10.5	10.9	0.7
NSV 12973	2250	413	8.60	9.00	0.6
V1541 Cyg	1550	370	10.16	10.50	0.4

* from Kukarkin et al., 1976, III Suppl. to the III Edition of the General Catalogue of Variable Stars.

BC 245. Secondary variations with m_R -range 1^m.6 and large changes of amplitude in different cycles.

BC 236. Variations of the light curve from cycle to cycle and gradual brightening of the star by about 0^m.5 during the observing interval.

BC 244. Stable light curve, steep ascending branch ($M-m=0.35$) not typical for carbon long period variables as observed also for MQ Cyg.

V1555 Cyg. Secondary variations with m_R -range 1^m.4 and possible cycle length 4-5 P.

BC 240. Large dispersion observed in ascending branch of the mean light curve.

V1554 Cyg. Rather stable light curve.

BC 40. Small (0^m.4) secondary variations with time scale about 5-6 P.

BC 242. Small change of the shape of the mean light curve after J.D.

2443 900.

NSV 12973. Very slow gradual fading by about 0^m.3 during our observing interval.

For the 39 carbon stars not included in Table I the m_R -ranges are $0.3^m - 0.9^m$ and light variations less regular or irregular. The rest seven of the measured carbon stars seem to be non-variable judging from dispersion of their m_R and m_V values.

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References:

- Alksne, Z., Alksnis, A., Eglitis, I. 1980, Investigations of Sun and Red Stars, 13, 5. Russian.
 Alksne, Z., Alksnis, A., Eglitis, I. 1983, Nauchnye Informacii, Riga, Zinatne, 52, 138. Russian.
 Alksnis, A., Ozolina, V. 1983, Investigations of Sun and Red Stars, 19, 40. Russian.
 Star catalogs and files available at the stellar data center, 1982, Bull. Inform. Centre de Données Stellaires, No.23, 108.
 Stephenson, C.B. 1973, Publ. Warner and Swasey Obs., 1, No. 4.