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SEVEN COLOUR PHOTOELECTRIC PHOTOMETRY OF THE RED VARIABLE
GLIESE 83.3

Recently Oláh (1980) announced that the red star Gliese 83.3 (HD 12208=V 598 Cas) changes its light with a period of 2.825 days and an amplitude of about $0^m.12$ in V and B. Determined previously, the spectral type of the star was K5V and therefore its classification as BY Dra type variable seemed naturally. However, later Bopp (1980) challenged the spectral classification. He found a spectral type M3-4III for the star and suggested further photoelectric observations because here one is confronted by a unique case when M-type giant changes light with unusually short period.

We had opportunity to observe the star photoelectrically in the Vilnius seven-colour photometric system UPXYZVS (see description of the system by Straižys and Sviderskiene (1972)). Our observations have been carried out on 12 nights during September, 1980 on the 48 cm reflector at Mt. Maidanak (Uzbekhian SSR). The variable was measured relative to the nearby G8III comparison star HD 11865, already used by Oláh. Corrections due to difference in air mass and spectral type between the comparison star and the variable are negligible. Determined magnitudes of Gliese 83.3 are presented in the following table, where the corresponding effective wavelength in microns is also indicated for each passband:

J.D.	U	P	X	Y	Z	V	S
2444000+	0.34	0.37	0.40	0.47	0.52	0.54	0.66
485.35	-	-	10.64	8.80	7.99	7.47	6.18
487.35	-	-	10.66	8.81	8.00	7.48	6.20
488.28	-	-	10.65	8.82	8.01	7.49	6.20
489.33	13.11	12.08	10.75	8.85	8.03	7.51	6.21
490.34	13.15	12.12	10.74	8.83	8.03	7.49	6.22
493.33	13.15	12.12	10.71	8.83	8.02	7.50	6.21
494.39	13.20	12.14	10.74	8.89	8.01	7.50	6.20
495.30	13.22	12.16	10.73	8.82	8.02	7.50	6.20
497.39	13.20	12.12	10.74	8.84	8.03	7.49	6.20
499.36	13.24	12.16	10.76	8.85	8.04	7.51	6.22
500.40	13.27	12.19	10.79	8.86	8.06	7.54	6.24
502.37	13.23	12.18	10.76	8.85	8.05	7.52	6.22

Evaluated from repeated measures, errors are $0^m.02$ for the colour U and no greater than $0^m.01$ for the other colours. It should be noted that magnitude V in the Vilnius system is practically equivalent to such one in Johnson's UBV system. The range in light variability, we have found, is from $0^m.06$ in the red colours to $0^m.13$ in the ultraviolet. Our measures contain no clear evidence for some several-day periodicity, rather the patterns of light curves bear more resemblance to small amplitude irregular variability, so common among early M-type giants.

In the Vilnius system one has possibility from reddening invariant combinations of colour indices to determine the spectral type and the absolute magnitude of stars. From our observations we have found for Gliese 83.3 spectral type M3.5 and $M_V = -1^m.1$ (in Schmidt-Kaler's calibration of absolute magnitudes). Though being close to the galactic plane ($b=0^{\circ}.16$) the star has small reddening $A_V = 0^m.15$. So in agreement with Bopp's conclusion the variable indeed is a giant, not a dwarf and as having distance 480 pc the star should be cancelled from Gliese's catalog of nearby stars.

We want to conclude with notice that to get ultraviolet colours free from contamination one must observe the variable through small diaphragm, for the variable has a faint ($V-12^m$) blue companion, situated at north, $19''$ apart.

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