COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 3466

Konkoly Observatory
Budapest
24 May 1990
HU ISSN 0374 - 0676

RECENT PHOTOMETRIC BEHAVIOUR OF MWC 560

MWC 560 is an unusually interesting star which has not been paid enough attention to till now. After having been discovered as emission line object (Merrill and Burwell, 1943), quite little but very interesting observational data have been published. From spectra taken with objective prism, Sanduleak and Stephenson (1973) noticed very strong violet-shifted absorption and variable emission components of Balmer lines. In the visual and near infrared spectral regions they observed strong TiO bands, which they considered as belonging to the spectrum of M4ep star. Their rough estimation of the visual brightness of MWC 560 is about $12^m.5$.

The observations of Bond et al. (1984) show absorptions of H_β and highest members of the Balmer series, widened at least up to 3000km/s, while near H_α the M spectrum dominates. They observe a strong ultraviolet continuum on which low-excitation absorption lines are superposed. They have estimated the visual star brightness about 11^m and reported a flickering of amplitude up to about $0^m.2$ and a time scale of some minutes. They suppose MWC 560 is a symbiotic-like system consisting of an M giant and a compact companion. Because of the very high mass transfer rate a part of the transferred matter is ejected from the system as a strong variable high-speed wind.

Nevertheless MWC 560 has been neglected by the observers. Only after the announcement of Tomov (1990) something like a new era in the observational history of the star began. A lot of astronomers in different observatories began intensive photometric and spectral observations (Michalitsianos, Maran and Oliversen, 1990a,b; Feast and Marang, 1990; Maran, Michalitsianos and Oliversen, 1990; Kontizas et al. 1990; Michalitsianos et al.1990; Buckley et al. 1990; Dapergolas et al. 1990; Szkody and Mateo 1990; Mochnacki and Thomson 1990; Sanduleak, 1990; Maran and Michalitsianos, 1990). The goal of the present paper is to draw attention to the photometric behaviour of the star in the period February-May 1990 on the basis of all ours as well as the published observations until now.

We carried out observations of MWC 560 in the standard UBV system (Table 1) using two identical one-channel photometers attached to 60cm telescopes in the National

Astronomical Observatory Rozhen and Belogradchik Astronomical Observatory. HD59380 ($V=5^m.86$, $B-V=0^m.48$, $U-B=-0^m.04$) was used as a comparison star and the check star has coordinates $\alpha_{1950}= 7^h\ 23^m\ 22^s$ and $\delta_{1950}= -7^o 30\ 15$ ($V\sim10^m.2$, $B-V\sim0^m.05$, $U-B\sim0^m.10$). The data processing has been made by the Kirov, Antov and Genkov's (1990) program.

Table 1.

DATE	JD2447000+	V	(B-V)	(U-B)	OBS.
8 Feb 1990	931.440	10.1:	0.3:	-0.3:	R
24 Feb	947.479	9.65	0.28	-0.48	B
25 Feb	948.380	9.83	0.31	-0.41	B
26 Feb	949.365	9.93	0.29	-0.51	B
26 Feb	949.381	9.83	0.27	-0.52	R
28 Feb	951.354	9.80	0.26	-0.56	B
3 Mar	954.265	9.66	0.34	-0.54	B
4 Mar	955.384	9.54	0.31	-0.50	B
5 Mar	956.351	9.65	0.28	-0.51	B
5 Mar	956.346	9.62	0.30	-0.46	R
10 Mar	961.370	9.4:	0.2:	-0.5:	R
14 Mar	965.274	9.82	0.33	-0.43	R
14 Mar	965.351	9.84	0.35	-0.46	R
19 Mar	970.303	9.58	0.27	-0.54	R
24 Mar	975.308	9.64	0.28	-0.52	B
1 Apr	983.291	9.29	0.29	-0.41	B
2 Apr	984.256	9.21	0.24	-0.41	R
27 Apr	1009.282	9.46	0.34	-0.36	R
5 May	1017.288	9.45	0.35	-0.29	B

In Fig.1 the V, B-V and U-B curves of MWC 560 are shown. The most remarkable is the rising of the star brightness in V by about 1^m reaching a maximum of about $9^m.1$ at the end of March - the beginning of April. The scattering of the points is considerable and we regard it to be due to real brightness variations from night to night, as well as to the observed flickering of an amplitude in U about $0^m.3$ and characteristic times from <10 minutes to ≥1 hour (Tomov et al., 1990; Buckley et al., 1990). The changes in the B-V and U-B colours are smaller. B-V values are practically constant with an average value about $0^m.3$. The scattering of the U-B data is larger but in our opinion it may result from the observational conditions. These colours are not corrected for the interstellar reddening, so we can not determine precisely the star temperature and the spectral class in the optical region.

But it is obvious that the contribution of the M star to the brightness in the UBV system region is negligible, while the observations of Buckley et al. (1990) show that the red giant is the main light source in the infrared.

The photometric behaviour of MWC 560 is the evidence of its increased activity at the moment. Unfortunately, the period of regular observations is rather short and almost nothing is known about the brightness variations before the beginning of 1990.

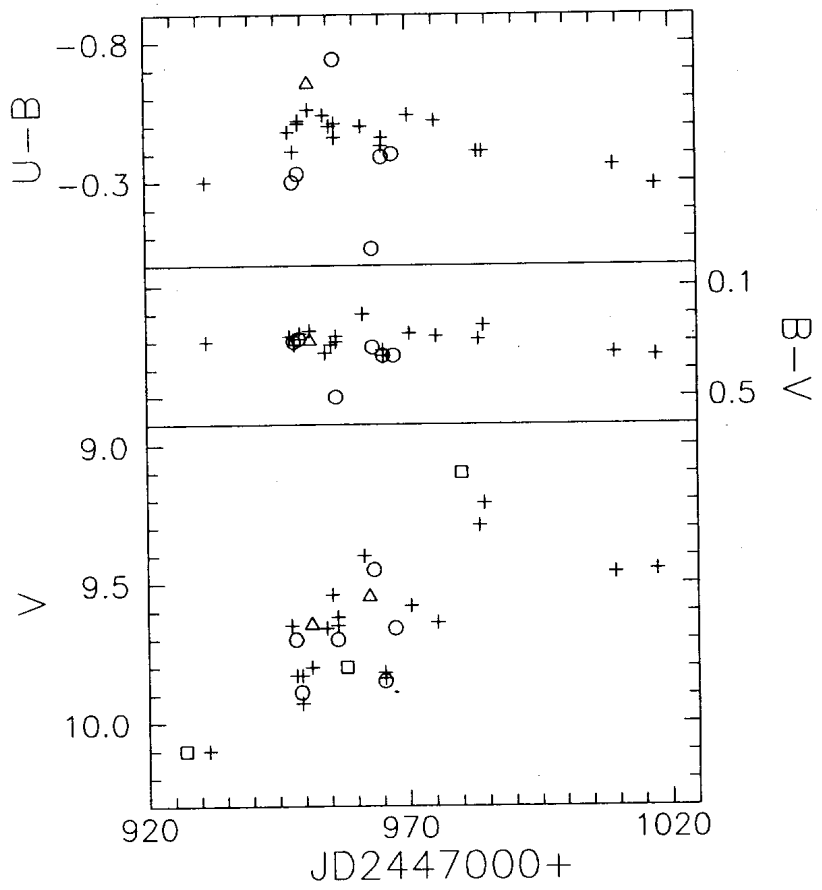

Fig.1: V, B-V and U-B curves of MWC 560 in February-May 1990.
(crosses - our data; circles - Kontizas et al. 1990, Dapergolas et al. 1990; triangles - Feast and Marang 1990, Buckley et al. 1990; squares - Michalitsianos, Maran and Oliversen 1990, Michalitsianos et al. 1990)

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