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THE LONG TERM BEHAVIOUR OF MWC 560

The emission line star MWC 560 was discovered by Merrill and Burwell (1943). It shows an interesting spectrum with P-Cygni profiles, widened Balmer absorption lines and an M-Type spectrum in the red region. In the ultraviolet the star shows a strong continuum. In the U-band flickering with an amplitude of ≈ 0.2 mag has been observed (Bond et al. 1984).

The observed properties led to the assumption that MWC 560 is a symbiotic-like object.

Although this star might be an interesting object, it has been forgotten by the astronomers in recent years. Early in 1990, MWC 560 attracted attention by remarkable rise in brightness. The star has been observed photoelectrically and spectroscopically by Tomov et al. since January 1990. The general rise in brightness is superimposed by rapid variations with an amplitude of some tenth of a magnitude. The spectrum also varies. Remarkable is the presence of strong blue shifted (up to -6000 km/h) Balmer lines with strongly varying profiles (Tomov et al. 1990a). Lack of observational data makes these phenomena difficult to explain.

I studied the photometric behaviour of MWC 560 on about 750 plates of the Sonneberg sky patrol covering the epoch from 1928 to the beginning of 1990 (see figure 1).

The star shows a Z And-like lightcurve with long time-scale variations of about 3 mag. There were two outbursts prior to J.D. ≈ 243 7000. Then the shape of the lightcurve changed. The brightness rose by about 2 mag during about 1000 days. The decrease to the quiet light came off much more slowly within about 4000 days. The process repeated itself, but with a short flash during decrease at J.D. ≈ 244 4000. Smaller variations of short period have occasionally been observed. This kind of variability was absent during the great outbursts in the past. Since J.D. ≈ 244 4750 the star rapidly gained in brightness and is now about 3 mag brighter than during its quiet stage.

Tomov et al. discussed a model of this star (Tomov et al. 1990b). They assume a symbiotic object consisting of an M-giant and a hot compact companion (e.g. a white dwarf). There is an accretion disk around it because of mass transfer from the giant to the hot star. This assumption is supported by the

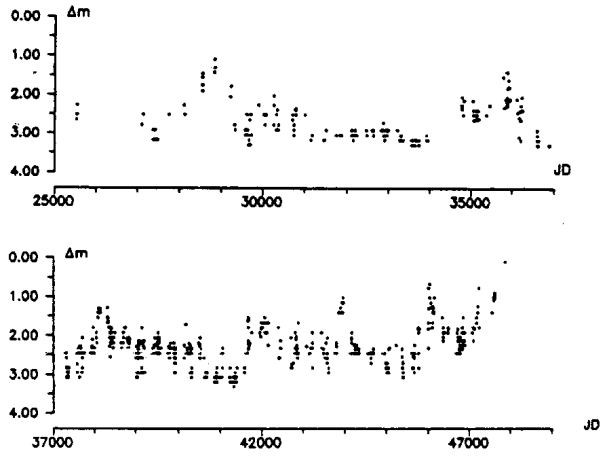

Figure 1 Photographic lightcurve of MWC 560

short-period variations in brightness with small amplitude. On account of the early constant radial velocities of the emission lines they assume that we see the disk "face on". In that case the accretion disk contributes most of the light, especially in the shorter wavelength range. Non-stable mass transfer from the M-giant might produce the long time-scale variations in brightness because of a variable accretion disk.

Without detailed spectroscopic and photometric studies it will be impossible to understand this interesting object.

R. LUTHARDT
Sonneberg Observatory
O-6400 Sonneberg/Thür.
Germany

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