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A RECENT BRIGHTENING FOR THE HERBIG Be STAR HD 53367

HD 53367 is one of the brightest of the Herbig Be stars: objects thought to be either zero-age or pre-main sequence stars. Alternately known as MWC 166 and RST 3489 (separation = 0.6 arc sec; $\Delta m = 1.3$ with a B1 Ve star), the star is associated with the nebulosity IC 2177 and is a member of the CMa OB1 association. Spectral types for the star range from B0 IVe (Buscombe 1980) to B1ne (Merrill & Burwell 1933).

Halbedel (1989) has previously published photometry of HD 53367 which shows it to be variable. This paper continues these observations and reports on a recent brightening that the star has undergone. Differential photometry has been carried out by the author for the past six observing seasons with the 0.6-m. telescope of the Corralitos Observatory and its ambient temperature EMI 9924A-based pulse-counting photometer. Standard stars utilized were HD 53240 ($V=6.441$; $B-V=-.083$) and HD 53302 ($V=8.164$; $B-V=+.227$). These stars were stable over the time period of observation to within 0.017 V and 0.020 B-V magnitudes. HD 53367 is sufficiently bright that short integration times could be used. Therefore, there is likely no interference from the surrounding nebulosity which at no time could be seen by the eye.

The previously published four seasons' magnitudes as well as those from the two most recent observing seasons appear in Figure 1, while the newest magnitudes are listed

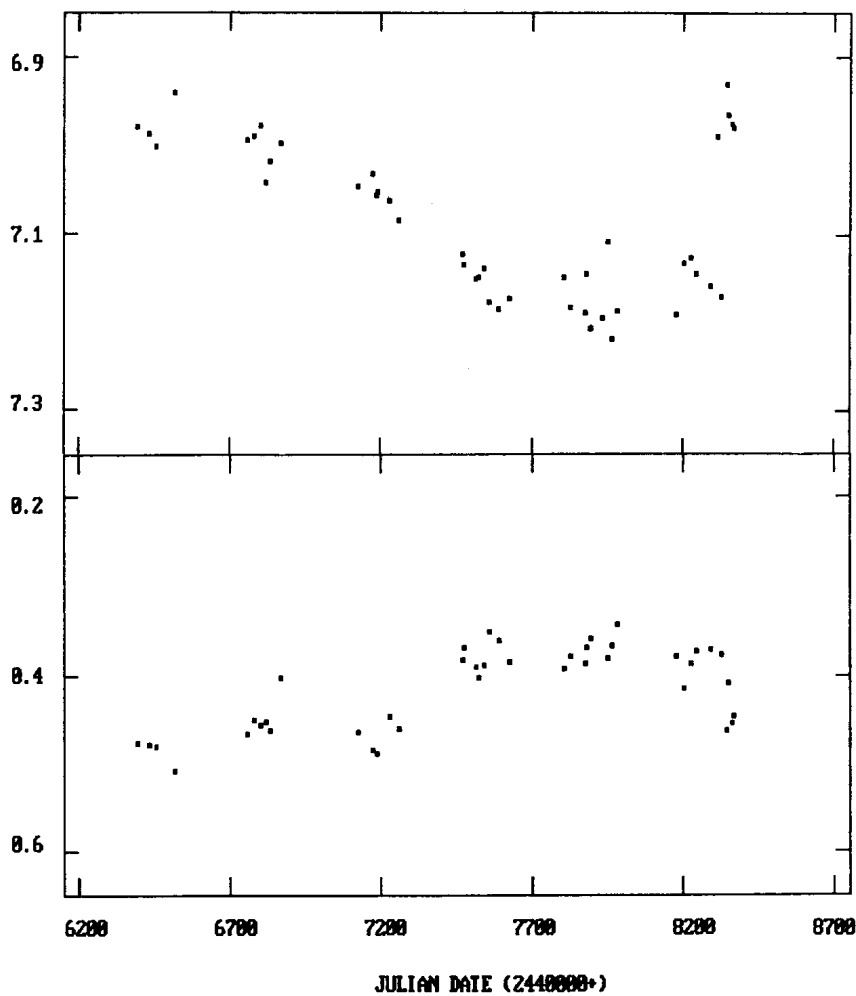


FIGURE 1: MAGNITUDES FOR HD 53367. THE TOP DIAGRAM SHOWS V MAGNITUDE, THE BOTTOM B-V.

in Table 1. It may be seen that the relatively steady decline in V mag has reversed itself dramatically. Observing season 6 reveals a sudden brightening of 0.239 magnitudes in

TABLE 1: MAGNITUDES FOR HD 53367

JD (2440000+)	V	B-V	JD (2440000+)	V	B-V
7806.95833	7.148	+ .393	8205.88680	7.132	+ .415
7828.00000	7.182	.379	8225.89097	7.125	.386
7878.92013	7.187	.386	8243.80625	7.142	.373
7881.78750	7.142	.368	8292.83194	7.158	.371
7896.80208	7.205	.358	8313.75606	6.989	----
7933.62291	7.194	----	8328.69792	7.170	.378
7952.66805	7.107	.381	8347.66111	6.931	.462
7965.70417	7.217	.367	8348.67500	6.965	.408
7985.63472	7.186	.343	8364.63611	6.976	.454
8176.96250	7.190	.379	8367.62917	6.980	.446

a time period of 19 days. The B-V magnitudes show anti-correlation with the V mag: as the star brightens, its color reddens. This is likely indicative of an increase in optical depth of circumstellar material.

It should be recalled that HD 53367 is visually binary with another Be star whose potential light variations may be influencing the situation since it is only a magnitude and a half fainter than its primary. Perhaps some of the variation proceeds from this source.

HD 53367 will continue to be observed at the Corralitos Observatory in the future in order that its long-term behavior may be understood.

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