

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

Number 2718

Konkoly Observatory
 Budapest
 13 May 1985
 HU ISSN 0374 - 0676

PHOTOMETRIC BEHAVIOR OF HR 8752 = V509 Cas

One of the most luminous of all galactic stars, the supergiant HR 8752 is a known light and spectrum variable. The spectral type has been observed to change from G0 Ia in 1950 to G5 in 1970 (Keenan, 1971) to K2-5 Ia in 1973 and finally to late F by 1977 (Lambert and Luck, 1978). Evidence for a hotter companion (approximate spectral type B1 V) was found in IUE low resolution spectra by Strickland and Harmer (1978). Shorter term variations in various spectral features have been reported by various observers (e.g., Smolinski et al., 1979 and Barden and Ramsey, 1980).

Photometrically, the star varies in V and (B-V) magnitudes in a manner which appears to be uncorrelated with the spectral changes. The previous photometric behavior is well summarized by Walker (1983). Briefly, the star has been found to slowly vary in an irregular fashion from V = 4.6 to 5.4 and in (B-V) from +1.29 to 1.73. Shorter variations on the time scale of days are not ruled out.

HR 8752 was observed on 22 nights during July, 1984 to February, 1985 in B and V magnitudes with the 0.6-m telescope of the Corralitos Observatory. The single channel photon-counting photometer is equipped with an uncooled EMI 9924A photomultiplier tube. Comparison stars were HR 8761 (V = 6.20; B-V = +1.50) and HR 8778 (V = 6.43; B-V = +0.90). The observations were corrected for extinction and converted to BV magnitudes by observations of standard stars. Standard errors for the comparison stars of ± 0.01 in both ΔV and $\Delta(B-V)$ for each night's observations were noted.

Table I

JD (2440000+)	V	(B-V)	JD (2440000+)	V	(B-V)
5911.9045	4.86	+1.35	6025.6938	4.88	+1.31
5939.7865	4.81	1.32	6029.6028	4.89	1.32
5957.7778	4.81	1.33	6031.5931	4.88	1.33
5959.8042	4.82	1.32	6034.6069	4.90	1.33
5961.7111	4.82	1.33	6050.6201	4.90	1.38
5962.7802	4.82	1.32	6082.5951	4.91	1.37
5964.7243	4.83	1.28	6083.5878	4.93	1.39
5967.7049	4.82	1.30	6084.6024	4.94	1.37
5985.6639	4.83	1.31	6085.5990	4.94	1.37
6009.6368	4.86	1.30	6101.5854	4.97	1.38
6012.6170	4.87	1.31	6102.6066	4.98	1.38

Over the period in question, HR 8752 was found to vary in a smooth fashion from a maximum of $V = 4.81$ to a minimum of 4.98 and in $(B-V)$ from +1.28 to +1.39. Figure 1 shows these changes and Table I their values. The variation in $(B-V)$ appears to approximately follow the V magnitudes.

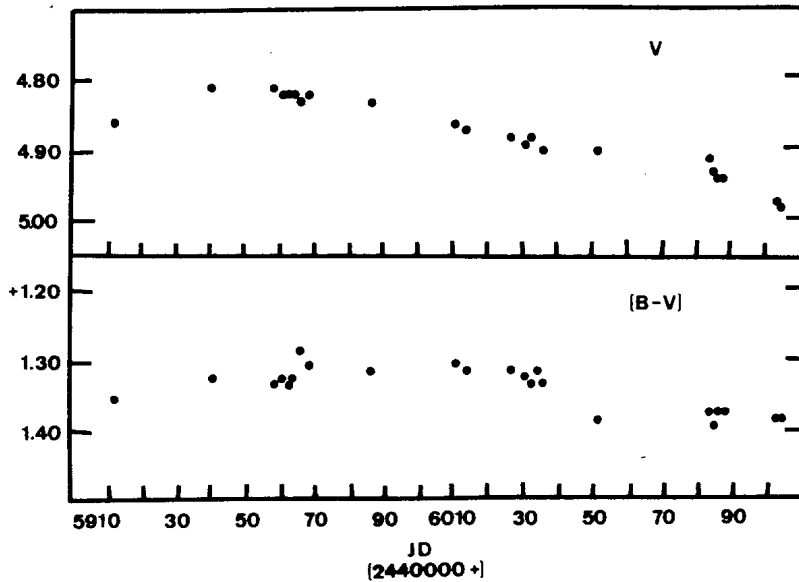


Figure 1: Variations in V and $(B-V)$ magnitudes for HR 8752 = V509 Cas.

E.M. HALBEDEL
 Corralitos Observatory
 P.O.Box 16314
 Las Cruces, NM 88004 USA

References:

- Barden, S.C. and Ramsey, L.W. (1980), *Publ.Astr.Soc.Pacific*, 92, 497.
 Keenan, P.C. (1971), *Contr.Kitt Peak Nat.Obs.*, No. 554.
 Lambert, D.L. and Luck, R.E. (1978), *Mon.Not.Roy.Astr.Soc.*, 184, 405.
 Smolinski, J., Climenhaga, J.L. and Funahawa, H. (1979), *IAU Circ. No.3382*
 Strickland, D.J. and Harmer, D.L. (1978), *Astr. and Ap.*, 70, L53.
 Walker, E.N. (1983), *Mon.Not.Roy.Astr.Soc.*, 203, 403.