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UBV PHOTOMETRY OF HR 8752

The variable G-type hypergiant HR 8752 (= HD 217476 = V509 Cas) is among the brightest stars in the Galaxy (Humphreys, 1978). Its spectrum has undergone remarkable changes recently (Lambert and Luck, 1978).

We present here photoelectric UBV photometry of this star. The observations were made in 1978-81 and 1984-85 with the 60 cm telescope in Budapest and the 1 m telescope in Piszkestető, respectively. The star used for comparison was HR 8761, with $V = 6.20$, $B-V = 1.50$ and $U-B = 1.53$ (Argue, 1966). The observations are given in the Table (the magnitude differences are in the sense variable minus comparison).

Table

J.D.	ΔV	$\Delta(B-V)$	$\Delta(U-B)$
2443739.544	-1.327	-0.029	
3797.325	-1.333	-0.011	
3848.210	-1.341	-0.040	
4083.526	-1.399	-0.062	
4113.444	-1.409	-0.138	
4128.340	-1.471	-0.133	
4133.562	-1.471	-0.125	-0.428
4158.431	-1.463	-0.144	-0.364
4166.508	-1.448	-0.145	-0.382
4172.296	-1.454	-0.134	-0.393
4499.565	-1.344	-0.172	-0.433
4511.437	-1.343	-0.175	
4514.385	-1.349	-0.163	-0.473
4541.289	-1.343	-0.142	-0.450
4854.535	-1.317	-0.070	-0.296
5952.458	-1.372	-0.209	-0.522
5957.471	-1.386	-0.224	-0.461
5989.434	-1.365	-0.233	-0.492
5990.358	-1.367	-0.237	-0.553
5990.366	-1.369	-0.227	-0.554

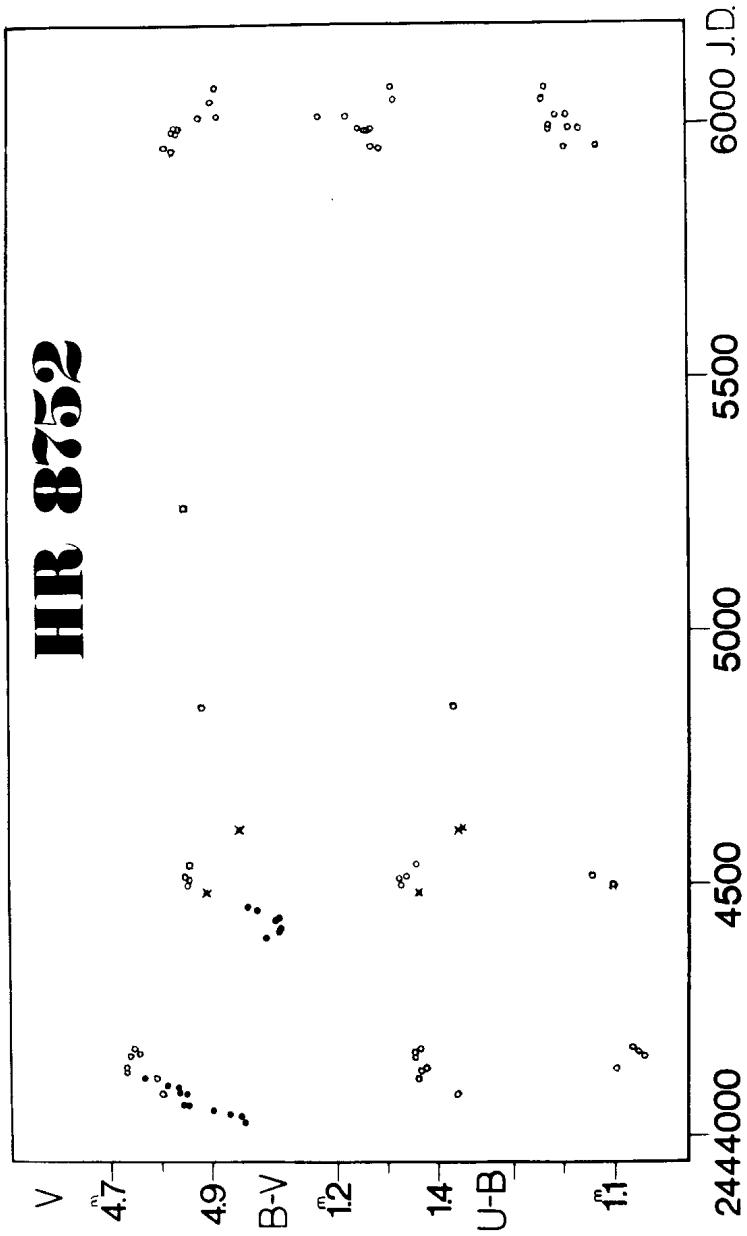


Figure: Light and colour curves of HR 8752 vs. J.D.† Symbols: dots - Percy and Welch(1981), crosses - Parsons and Montemayor(1982), square - Walker (1984), circles - present paper.

Table (cont.)

J.D.	ΔV	$\Delta(B-V)$	$\Delta(U-B)$
5991.373	-1.366	-0.232	-0.554
5993.370	-1.353	-0.249	-0.512
6018.306	-1.321	-0.276	-0.539
6019.245	-1.279	-0.329	-0.510
6049.508	-1.294	-0.179	-0.564
6074.222	-1.288	-0.183	-0.551

The light curve contains points from five cycles from mid-1979. It is, however, evident from the Figure that neither the period (about one year, obtained by Percy and Welch, 1981), nor the amplitude of the variation remains constant.

According to Lambert et al. (1981), HR 8752 has been pulsating. They compared the star with models of long-period variables. The spectrum of HR 8752 shows, however, features characteristic for stars earlier than those. Smolinski et al. (1982) found the shape of the H α profile to be similar to that in long-period cepheids. Similar phenomenon was observed at the beginning of this century: Adams and Joy (1919) found the spectrum of HR 8752 to be nearly the same as that of δ Cephei and ζ Geminorum.

The pre-1979 behaviour of HR 8752 seems to be quite different. The 1976-78 observations of Walker (1983) and the first three lines in the Table (which are not plotted in the Figure) apparently do not show the same type of variation. It may be in connection with the shell ejected sometime between 1973 and 1975 (Lambert et al., 1981).

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